

Computer algebra independent integration tests

$3\text{-Logarithms}/3.2.2\text{-}f+g\text{-}x^m\text{-}h+i\text{-}x^q\text{-}A+B\text{-}\log\text{-}e\text{-}a+b\text{-}x\text{-}\text{over}\text{-}c+d\text{-}x^n\text{-}$
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3.83	$\int \frac{(ci+dix)^3 \left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)^2}{(ag+bgx)^7} dx$	799
3.84	$\int \frac{(ag+bgx)^3 \left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)^2}{ci+dix} dx$	813
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3.86	$\int \frac{(ag+bgx) \left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)^2}{ci+dix} dx$	837
3.87	$\int \frac{\left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)^2}{ci+dix} dx$	847
3.88	$\int \frac{\left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)^2}{(ag+bgx)(ci+dix)} dx$	856
3.89	$\int \frac{\left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)^2}{(ag+bgx)^2(ci+dix)} dx$	866
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- 3.118 $\int (ag+bgx)^2(ci+dx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right) dx \dots\dots\dots .1169$
- 3.119 $\int (ag+bgx)(ci+dx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right) dx \dots\dots\dots .1177$
- 3.120 $\int (ci+dx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right) dx \dots\dots\dots .1183$
- 3.121 $\int \frac{(ci+dx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{ag+bgx} dx \dots\dots\dots .1188$
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- 3.125 $\int \frac{(ci+dx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(ag+bgx)^5} dx \dots\dots\dots .1213$
- 3.126 $\int \frac{(ci+dx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(ag+bgx)^6} dx \dots\dots\dots .1220$
- 3.127 $\int (ag+bgx)^3(ci+dx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right) dx \dots\dots\dots .1228$
- 3.128 $\int (ag+bgx)^2(ci+dx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right) dx \dots\dots\dots .1240$
- 3.129 $\int (ag+bgx)(ci+dx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right) dx \dots\dots\dots .1249$
- 3.130 $\int (ci+dx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right) dx \dots\dots\dots .1256$
- 3.131 $\int \frac{(ci+dx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{ag+bgx} dx \dots\dots\dots .1261$
- 3.132 $\int \frac{(ci+dx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(ag+bgx)^2} dx \dots\dots\dots .1268$
- 3.133 $\int \frac{(ci+dx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(ag+bgx)^3} dx \dots\dots\dots .1275$

- 3.134 $\int \frac{(ci+dix)^3 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ag+bgx)^4} dx \dots\dots\dots .1282$
- 3.135 $\int \frac{(ag+bgx)^3 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{ci+dix} dx \dots\dots\dots .1289$
- 3.136 $\int \frac{(ag+bgx)^2 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{ci+dix} dx \dots\dots\dots .1296$
- 3.137 $\int \frac{(ag+bgx) \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{ci+dix} dx \dots\dots\dots .1302$
- 3.138 $\int \frac{A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{ci+dix} dx \dots\dots\dots .1308$
- 3.139 $\int \frac{A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{(ag+bgx)(ci+dix)} dx \dots\dots\dots .1313$
- 3.140 $\int \frac{A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{(ag+bgx)^2(ci+dix)} dx \dots\dots\dots .1318$
- 3.141 $\int \frac{A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{(ag+bgx)^3(ci+dix)} dx \dots\dots\dots .1324$
- 3.142 $\int \frac{A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{(ag+bgx)^4(ci+dix)} dx \dots\dots\dots .1331$
- 3.143 $\int \frac{(ag+bgx)^3 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ci+dix)^2} dx \dots\dots\dots .1339$
- 3.144 $\int \frac{(ag+bgx)^2 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ci+dix)^2} dx \dots\dots\dots .1346$
- 3.145 $\int \frac{(ag+bgx) \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ci+dix)^2} dx \dots\dots\dots .1353$
- 3.146 $\int \frac{A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{(ci+dix)^2} dx \dots\dots\dots .1359$
- 3.147 $\int \frac{A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{(ag+bgx)(ci+dix)^2} dx \dots\dots\dots .1363$
- 3.148 $\int \frac{A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{(ag+bgx)^2(ci+dix)^2} dx \dots\dots\dots .1370$
- 3.149 $\int \frac{A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{(ag+bgx)^3(ci+dix)^2} dx \dots\dots\dots .1377$
- 3.150 $\int \frac{A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{(ag+bgx)^4(ci+dix)^2} dx \dots\dots\dots .1385$
- 3.151 $\int \frac{(ag+bgx)^3 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ci+dix)^3} dx \dots\dots\dots .1394$

- 3.152 $\int \frac{(ag+bgx)^2 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ci+dix)^3} dx \dots\dots\dots .1402$
- 3.153 $\int \frac{(ag+bgx) \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ci+dix)^3} dx \dots\dots\dots .1409$
- 3.154 $\int \frac{A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{(ci+dix)^3} dx \dots\dots\dots .1414$
- 3.155 $\int \frac{A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{(ag+bgx)(ci+dix)^3} dx \dots\dots\dots .1418$
- 3.156 $\int \frac{A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{(ag+bgx)^2(ci+dix)^3} dx \dots\dots\dots .1425$
- 3.157 $\int \frac{A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{(ag+bgx)^3(ci+dix)^3} dx \dots\dots\dots .1433$
- 3.158 $\int \frac{A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{(ag+bgx)^4(ci+dix)^3} dx \dots\dots\dots .1442$
- 3.159 $\int (ag+bgx)^3 (ci+dix) \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx \dots\dots\dots .1452$
- 3.160 $\int (ag+bgx)^2 (ci+dix) \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx \dots\dots\dots .1462$
- 3.161 $\int (ag+bgx) (ci+dix) \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx \dots\dots\dots .1470$
- 3.162 $\int (ci+dix) \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx \dots\dots\dots .1478$
- 3.163 $\int \frac{(ci+dix) \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{ag+bgx} dx \dots\dots\dots .1485$
- 3.164 $\int \frac{(ci+dix) \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag+bgx)^2} dx \dots\dots\dots .1494$
- 3.165 $\int \frac{(ci+dix) \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag+bgx)^3} dx \dots\dots\dots .1503$
- 3.166 $\int \frac{(ci+dix) \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag+bgx)^4} dx \dots\dots\dots .1511$
- 3.167 $\int \frac{(ci+dix) \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag+bgx)^5} dx \dots\dots\dots .1520$
- 3.168 $\int (ag+bgx)^3 (ci+dix)^2 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx \dots\dots\dots .1531$

- 3.169 $\int (ag + bgx)^2 (ci + dix)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx \dots\dots\dots 1542$
- 3.170 $\int (ag + bgx)(ci + dix)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx \dots\dots\dots 1552$
- 3.171 $\int (ci + dix)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx \dots\dots\dots 1561$
- 3.172 $\int \frac{(ci+dix)^2 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{ag+bgx} dx \dots\dots\dots 1568$
- 3.173 $\int \frac{(ci+dix)^2 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag+bgx)^2} dx \dots\dots\dots 1579$
- 3.174 $\int \frac{(ci+dix)^2 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag+bgx)^3} dx \dots\dots\dots 1589$
- 3.175 $\int \frac{(ci+dix)^2 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag+bgx)^4} dx \dots\dots\dots 1600$
- 3.176 $\int \frac{(ci+dix)^2 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag+bgx)^5} dx \dots\dots\dots 1611$
- 3.177 $\int \frac{(ci+dix)^2 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag+bgx)^6} dx \dots\dots\dots 1624$
- 3.178 $\int (ag + bgx)^3 (ci + dix)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx \dots\dots\dots 1640$
- 3.179 $\int (ag + bgx)^2 (ci + dix)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx \dots\dots\dots 1652$
- 3.180 $\int (ag + bgx)(ci + dix)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx \dots\dots\dots 1663$
- 3.181 $\int (ci + dix)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx \dots\dots\dots 1673$
- 3.182 $\int \frac{(ci+dix)^3 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{ag+bgx} dx \dots\dots\dots 1680$
- 3.183 $\int \frac{(ci+dix)^3 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag+bgx)^2} dx \dots\dots\dots 1692$
- 3.184 $\int \frac{(ci+dix)^3 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag+bgx)^3} dx \dots\dots\dots 1705$
- 3.185 $\int \frac{(ci+dix)^3 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag+bgx)^4} dx \dots\dots\dots 1714$

- 3.186 $\int \frac{(ag+bgx)^3 \left(A+B \log \left(e^{\left(\frac{a+bx}{c+dx} \right)^n} \right) \right)^2}{ci+dix} dx \dots\dots\dots .1724$
- 3.187 $\int \frac{(ag+bgx)^2 \left(A+B \log \left(e^{\left(\frac{a+bx}{c+dx} \right)^n} \right) \right)^2}{ci+dix} dx \dots\dots\dots .1737$
- 3.188 $\int \frac{(ag+bgx) \left(A+B \log \left(e^{\left(\frac{a+bx}{c+dx} \right)^n} \right) \right)^2}{ci+dix} dx \dots\dots\dots .1748$
- 3.189 $\int \frac{\left(A+B \log \left(e^{\left(\frac{a+bx}{c+dx} \right)^n} \right) \right)^2}{ci+dix} dx \dots\dots\dots .1758$
- 3.190 $\int \frac{\left(A+B \log \left(e^{\left(\frac{a+bx}{c+dx} \right)^n} \right) \right)^2}{(ag+bgx)(ci+dix)} dx \dots\dots\dots .1767$
- 3.191 $\int \frac{\left(A+B \log \left(e^{\left(\frac{a+bx}{c+dx} \right)^n} \right) \right)^2}{(ag+bgx)^2(ci+dix)} dx \dots\dots\dots .1777$
- 3.192 $\int \frac{\left(A+B \log \left(e^{\left(\frac{a+bx}{c+dx} \right)^n} \right) \right)^2}{(ag+bgx)^3(ci+dix)} dx \dots\dots\dots .1789$
- 3.193 $\int \frac{\left(A+B \log \left(e^{\left(\frac{a+bx}{c+dx} \right)^n} \right) \right)^2}{(ag+bgx)^4(ci+dix)} dx \dots\dots\dots .1802$
- 3.194 $\int \frac{(ag+bgx)^3 \left(A+B \log \left(e^{\left(\frac{a+bx}{c+dx} \right)^n} \right) \right)^2}{(ci+dix)^2} dx \dots\dots\dots .1816$
- 3.195 $\int \frac{(ag+bgx)^2 \left(A+B \log \left(e^{\left(\frac{a+bx}{c+dx} \right)^n} \right) \right)^2}{(ci+dix)^2} dx \dots\dots\dots .1829$
- 3.196 $\int \frac{(ag+bgx) \left(A+B \log \left(e^{\left(\frac{a+bx}{c+dx} \right)^n} \right) \right)^2}{(ci+dix)^2} dx \dots\dots\dots .1840$
- 3.197 $\int \frac{\left(A+B \log \left(e^{\left(\frac{a+bx}{c+dx} \right)^n} \right) \right)^2}{(ci+dix)^2} dx \dots\dots\dots .1850$
- 3.198 $\int \frac{\left(A+B \log \left(e^{\left(\frac{a+bx}{c+dx} \right)^n} \right) \right)^2}{(ag+bgx)(ci+dix)^2} dx \dots\dots\dots .1857$
- 3.199 $\int \frac{\left(A+B \log \left(e^{\left(\frac{a+bx}{c+dx} \right)^n} \right) \right)^2}{(ag+bgx)^2(ci+dix)^2} dx \dots\dots\dots .1869$
- 3.200 $\int \frac{\left(A+B \log \left(e^{\left(\frac{a+bx}{c+dx} \right)^n} \right) \right)^2}{(ag+bgx)^3(ci+dix)^2} dx \dots\dots\dots .1881$
- 3.201 $\int \frac{\left(A+B \log \left(e^{\left(\frac{a+bx}{c+dx} \right)^n} \right) \right)^2}{(ag+bgx)^4(ci+dix)^2} dx \dots\dots\dots .1896$

- 3.202 $\int \frac{(ag+bgx)^3 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ci+dix)^3} dx \dots\dots\dots .1912$
- 3.203 $\int \frac{(ag+bgx)^2 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ci+dix)^3} dx \dots\dots\dots .1923$
- 3.204 $\int \frac{(ag+bgx) \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ci+dix)^3} dx \dots\dots\dots .1935$
- 3.205 $\int \frac{\left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ci+dix)^3} dx \dots\dots\dots .1943$
- 3.206 $\int \frac{\left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag+bgx)(ci+dix)^3} dx \dots\dots\dots .1951$
- 3.207 $\int \frac{\left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag+bgx)^2(ci+dix)^3} dx \dots\dots\dots .1964$
- 3.208 $\int \frac{\left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag+bgx)^3(ci+dix)^3} dx \dots\dots\dots .1979$
- 3.209 $\int \frac{\left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag+bgx)^4(ci+dix)^3} dx \dots\dots\dots .1996$
- 3.210 $\int (ag + bgx)^m (ci + dix)^{-2-m} \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^p dx \dots\dots\dots .2015$
- 3.211 $\int (ag + bgx)^{-2-m} (ci + dix)^m \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^p dx \dots\dots\dots .2018$
- 3.212 $\int (ag + bgx)^m (ci + dix)^{-2-m} \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^3 dx \dots\dots\dots .2021$
- 3.213 $\int (ag + bgx)^m (ci + dix)^{-2-m} \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx \dots\dots\dots .2026$
- 3.214 $\int (ag + bgx)^m (ci + dix)^{-2-m} \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) dx \dots\dots\dots .2030$
- 3.215 $\int \frac{(ag+bgx)^m (ci+dix)^{-2-m}}{A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)} dx \dots\dots\dots .2034$
- 3.216 $\int \frac{(ag+bgx)^m (ci+dix)^{-2-m}}{\left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2} dx \dots\dots\dots .2037$
- 3.217 $\int \frac{(ag+bgx)^m (ci+dix)^{-2-m}}{\left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^3} dx \dots\dots\dots .2041$
- 3.218 $\int (ag + bgx)^{-2-m} (ci + dix)^m \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^3 dx \dots\dots\dots .2045$

- 3.219 $\int (ag + bgx)^{-2-m}(ci + dix)^m \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx \dots \dots \dots .2050$
- 3.220 $\int (ag + bgx)^{-2-m}(ci + dix)^m \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) dx \dots \dots \dots .2054$
- 3.221 $\int \frac{(ag+bgx)^{-2-m}(ci+dix)^m}{A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)} dx \dots \dots \dots .2058$
- 3.222 $\int \frac{(ag+bgx)^{-2-m}(ci+dix)^m}{\left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2} dx \dots \dots \dots .2061$
- 3.223 $\int \frac{(ag+bgx)^{-2-m}(ci+dix)^m}{\left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^3} dx \dots \dots \dots .2065$
- 3.224 $\int \frac{\log^p \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{(a+bx)(c+dx)} dx \dots \dots \dots .2069$
- 3.225 $\int \frac{\log^p \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{ac+(bc+ad)x+bdx^2} dx \dots \dots \dots .2072$
- 3.226 $\int (ag + bgx)^m (ci + dix)^{-2-m} \left(A + B \log (e(a + bx)^n (c + dx)^{-n}) \right)^p dx \dots \dots \dots .2075$
- 3.227 $\int (ag + bgx)^{-2-m} (ci + dix)^m \left(A + B \log (e(a + bx)^n (c + dx)^{-n}) \right)^p dx \dots \dots \dots .2079$
- 3.228 $\int \frac{\left(A+B \log (e(a+bx)^n (c+dx)^{-n}) \right)^3}{(a+bx)(c+dx)} dx \dots \dots \dots .2083$
- 3.229 $\int \frac{\left(A+B \log (e(a+bx)^n (c+dx)^{-n}) \right)^2}{(a+bx)(c+dx)} dx \dots \dots \dots .2087$
- 3.230 $\int \frac{A+B \log (e(a+bx)^n (c+dx)^{-n})}{(a+bx)(c+dx)} dx \dots \dots \dots .2090$
- 3.231 $\int \frac{1}{(a+bx)(c+dx) \left(A+B \log (e(a+bx)^n (c+dx)^{-n}) \right)} dx \dots \dots \dots .2093$
- 3.232 $\int \frac{1}{(a+bx)(c+dx) \left(A+B \log (e(a+bx)^n (c+dx)^{-n}) \right)^2} dx \dots \dots \dots .2096$
- 3.233 $\int \frac{1}{(a+bx)(c+dx) \left(A+B \log (e(a+bx)^n (c+dx)^{-n}) \right)^3} dx \dots \dots \dots .2099$
- 3.234 $\int \frac{\left(A+B \log (e(a+bx)^n (c+dx)^{-n}) \right)^p}{(a+bx)(c+dx)} dx \dots \dots \dots .2103$
- 3.235 $\int \frac{\left(A+B \log (e(a+bx)^n (c+dx)^{-n}) \right)^p}{(af+bfx)(cg+dgx)} dx \dots \dots \dots .2106$
- 3.236 $\int \frac{\left(A+B \log (e(a+bx)^n (c+dx)^{-n}) \right)^p}{acf+(bc+ad)fx+bdfx^2} dx \dots \dots \dots .2109$
- 3.237 $\int \frac{1}{(a+bx)(c+dx) \left(A+B \log (e(a+bx)^n (c+dx)^{-n}) \right)} dx \dots \dots \dots .2112$
- 3.238 $\int \frac{1}{(af+bfx)(cg+dgx) \left(A+B \log (e(a+bx)^n (c+dx)^{-n}) \right)} dx \dots \dots \dots .2115$
- 3.239 $\int \frac{1}{(acf+(bc+ad)fx+bdfx^2) \left(A+B \log (e(a+bx)^n (c+dx)^{-n}) \right)} dx \dots \dots \dots .2118$
- 3.240 $\int \frac{(a+bx)^m (c+dx)^{-2-m}}{\log (e(a+bx)^n (c+dx)^{-n})} dx \dots \dots \dots .2121$

- 3.241 $\int \frac{(a+bx)^3}{(c+dx)^5 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)} dx \dots\dots\dots .2124$
- 3.242 $\int \frac{(a+bx)^2}{(c+dx)^4 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)} dx \dots\dots\dots .2128$
- 3.243 $\int \frac{a+bx}{(c+dx)^3 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)} dx \dots\dots\dots .2131$
- 3.244 $\int \frac{1}{(c+dx)^2 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)} dx \dots\dots\dots .2134$
- 3.245 $\int \frac{1}{(a+bx)(c+dx) \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)} dx \dots\dots\dots .2137$
- 3.246 $\int \frac{1}{(a+bx)^2 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)} dx \dots\dots\dots .2140$
- 3.247 $\int \frac{c+dx}{(a+bx)^3 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)} dx \dots\dots\dots .2143$
- 3.248 $\int \frac{(c+dx)^2}{(a+bx)^4 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)} dx \dots\dots\dots .2146$
- 3.249 $\int \frac{(A+B \log(e(a+bx)^n(c+dx)^{-n}))^4}{(f+gx)(ah+bhx)} dx \dots\dots\dots .2149$
- 3.250 $\int \frac{(A+B \log(e(a+bx)^n(c+dx)^{-n}))^3}{(f+gx)(ah+bhx)} dx \dots\dots\dots .2155$
- 3.251 $\int \frac{(A+B \log(e(a+bx)^n(c+dx)^{-n}))^2}{(f+gx)(ah+bhx)} dx \dots\dots\dots .2161$
- 3.252 $\int \frac{A+B \log(e(a+bx)^n(c+dx)^{-n})}{(f+gx)(ah+bhx)} dx \dots\dots\dots .2167$
- 3.253 $\int \frac{1}{(f+gx)(ah+bhx)(A+B \log(e(a+bx)^n(c+dx)^{-n}))} dx \dots\dots\dots .2172$
- 3.254 $\int \frac{1}{(f+gx)(ah+bhx)(A+B \log(e(a+bx)^n(c+dx)^{-n}))^2} dx \dots\dots\dots .2175$
- 3.255 $\int \frac{\log\left(\frac{c+dx}{a+bx}\right)}{(a+bx)((a-c)h+(b-d)hx)} dx \dots\dots\dots .2178$
- 3.256 $\int \frac{\log\left(\frac{a-cg+(b-dg)x}{a+bx}\right)}{(a+bx)(c+dx)} dx \dots\dots\dots .2182$
- 3.257 $\int \frac{\log\left(1-\frac{g(c+dx)}{a+bx}\right)}{(a+bx)(c+dx)} dx \dots\dots\dots .2186$
- 3.258 $\int \frac{\log\left(\frac{a-cg+bx-dgx}{a+bx}\right)}{(a+bx)(c+dx)} dx \dots\dots\dots .2190$
- 3.259 $\int \frac{(A+B \log(e(a+bx)^n(c+dx)^{-n}))^3}{afh+bghx^2+h(bfx+agx)} dx \dots\dots\dots .2194$
- 3.260 $\int \frac{(A+B \log(e(a+bx)^n(c+dx)^{-n}))^2}{afh+bghx^2+h(bfx+agx)} dx \dots\dots\dots .2200$

3.261	$\int \frac{A+B \log(e(a+bx)^n(c+dx)^{-n})}{afh+bghx^2+h(bfx+agx)} dx$.2206
3.262	$\int \frac{1}{(afh+bghx^2+h(bfx+agx))(A+B \log(e(a+bx)^n(c+dx)^{-n}))} dx$.2212
3.263	$\int \frac{1}{(afh+bghx^2+h(bfx+agx))(A+B \log(e(a+bx)^n(c+dx)^{-n}))^2} dx$.2215
4	Listing of Grading functions	2219
4.0.1	Mathematica and Rubi grading function	.2219
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Chapter 1

Introduction

This report gives the result of running the computer algebra independent integration problems. The listing of the problems are maintained by and can be downloaded from <https://rulebasedintegration.org>

The number of integrals in this report is [263]. This is test number [60].

1.1 Listing of CAS systems tested

The following systems were tested at this time.

1. Mathematica 12.3 (64 bit) on windows 10.
2. Rubi 4.16.1 in Mathematica 12.1 on windows 10.
3. Maple 2021.1 (64 bit) on windows 10.
4. Maxima 5.44 on Linux. (via sagemath 9.3)
5. Fricas 1.3.7 on Linux (via sagemath 9.3)
6. Giac/Xcas 1.7 on Linux. (via sagemath 9.3)
7. Sympy 1.8 under Python 3.8.8 using Anaconda distribution on Ubuntu.
8. Mupad using Matlab 2021a with Symbolic Math Toolbox Version 8.7 under windows 10 (64 bit)

Maxima, Fricas and Giac/Xcas were called from inside SageMath. This was done using SageMath integrate command by changing the name of the algorithm to use the different CAS systems.

Sympy was called directly using Python.

1.2 Results

Important note: A number of problems in this test suite have no antiderivative in closed form. This means the antiderivative of these integrals can not be expressed in terms of elementary, special functions or Hypergeometric₂F₁ functions. RootSum and RootOf are not allowed.

If a CAS returns the above integral unevaluated within the time limit, then the result is counted as passed and assigned an A grade.

However, if CAS times out, then it is assigned an F grade even if the integral is not integrable, as this implies CAS could not determine that the integral is not integrable in the time limit.

If a CAS returns an antiderivative to such an integral, it is assigned an A grade automatically and this special result is listed in the introduction section of each individual test report to make it easy to identify as this can be important result to investigate.

The results given in in the table below reflects the above.

System	solved	Failed
Rubi	% 94.68 (249)	% 5.32 (14)
Mathematica	% 94.68 (249)	% 5.32 (14)
Maple	% 37.26 (98)	% 62.74 (165)
Maxima	% 68.06 (179)	% 31.94 (84)
Fricas	% 59.32 (156)	% 40.68 (107)
Sympy	% 19.01 (50)	% 80.99 (213)
Giac	% 33.46 (88)	% 66.54 (175)
Mupad	% 48.29 (127)	% 51.71 (136)

Table 1.1: Percentage solved for each CAS

The table below gives additional break down of the grading of quality of the antiderivatives generated by each CAS. The grading is given using the letters A,B,C and F with A being the best quality. The grading is accomplished by comparing the antiderivative generated with the optimal antiderivatives included in the test suite. The following table describes the meaning of these grades.

grade	description
A	Integral was solved and antiderivative is optimal in quality and leaf size.
B	Integral was solved and antiderivative is optimal in quality but leaf size is larger than twice the optimal antiderivatives leaf size.
C	Integral was solved and antiderivative is non-optimal in quality. This can be due to one or more of the following reasons <ol style="list-style-type: none"> 1. antiderivative contains a hypergeometric function and the optimal antiderivative does not. 2. antiderivative contains a special function and the optimal antiderivative does not. 3. antiderivative contains the imaginary unit and the optimal antiderivative does not.
F	Integral was not solved. Either the integral was returned unevaluated within the time limit, or it timed out, or CAS hanged or crashed or an exception was raised.

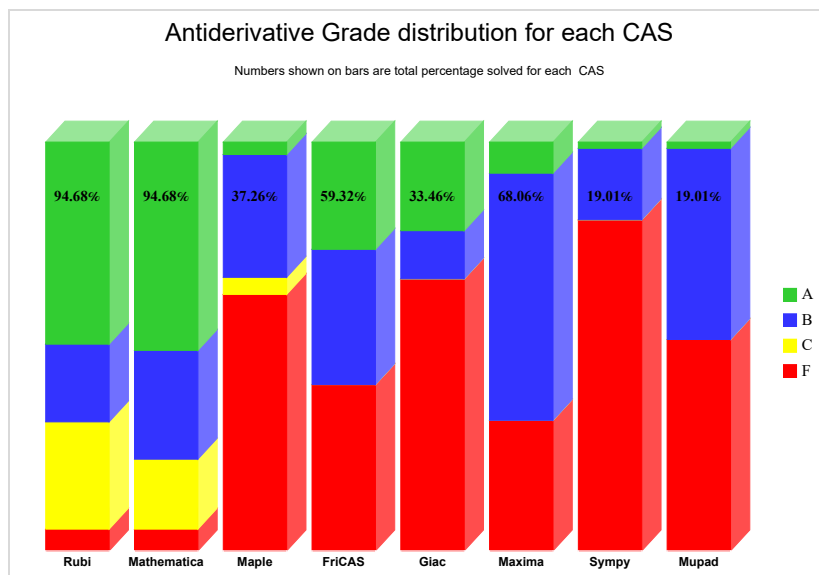
Table 1.2: Description of grading applied to integration result

Grading is implemented for all CAS systems. Based on the above, the following table summarizes the grading for this test suite.

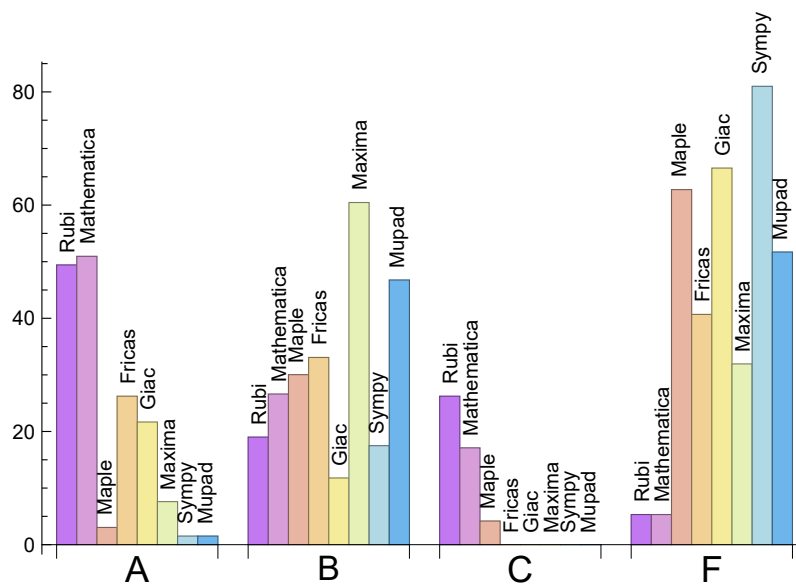
System	% A grade	% B grade	% C grade	% F grade
Rubi	49.43	19.01	26.24	5.32
Mathematica	50.95	26.62	17.11	5.32
Maple	3.04	30.04	4.18	62.74
Maxima	7.60	60.46	0.00	31.94
Fricas	26.24	33.08	0.00	40.68
Sympy	1.52	17.49	0.00	80.99
Giac	21.67	11.79	0.00	66.54
Mupad	1.52	46.77	0.00	51.71

Table 1.3: Antiderivative Grade distribution of each CAS

The following is a Bar chart illustration of the data in the above table.



The figure below compares the CAS systems for each grade level.



The following table shows the distribution of the different types of failure for each CAS. There are 3 types of reasons why it can fail. The first is when CAS returns back the input within the time limit, which means it could not solve it. This is the typical normal failure **F**.

The second is due to time out. CAS could not solve the integral within the 3 minutes time limit which is assigned **F(-1)**.

The third is due to an exception generated. Assigned **F(-2)**. This most likely indicates an interface problem between sagemath and the CAS (applicable only to FriCAS, Maxima and Giac) or it could be an indication of an internal error in CAS. This type of error requires more investigations to determine the cause.

System	Number failed	Percentage normal failure	Percentage time-out failure	Percentage exception failure
Rubi	14	100.00 %	0.00 %	0.00 %
Mathematica	14	100.00 %	0.00 %	0.00 %
Maple	165	96.97 %	3.03 %	0.00 %
Maxima	84	98.81 %	1.19 %	0.00 %
Fricas	107	100.00 %	0.00 %	0.00 %
Sympy	213	13.15 %	84.98 %	1.88 %
Giac	175	18.29 %	80.57 %	1.14 %
Mupad	136	100.00 %	0.00 %	0.00 %

Table 1.4: Time and leaf size performance for each CAS

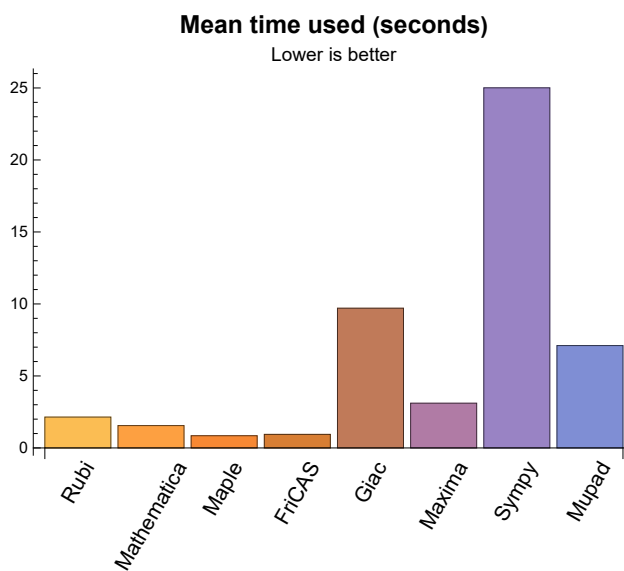
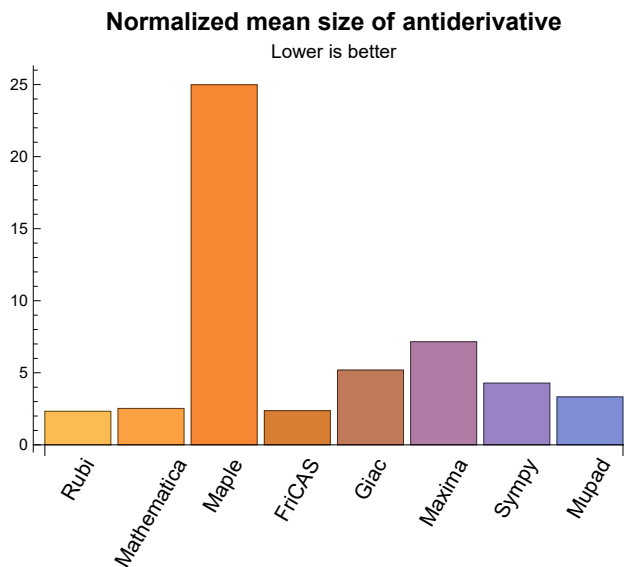
1.3 Performance

The table below summarizes the performance of each CAS system in terms of CPU time and leaf size of results.

System	Mean time (sec)	Mean size	Normalized mean	Median size	Normalized median
Rubi	2.14	697.39	2.33	462.00	1.60
Mathematica	1.55	871.57	2.53	362.00	1.26
Maple	0.85	2692.94	24.99	1456.00	6.25
Maxima	3.11	2183.64	7.15	1386.00	4.82
Fricas	0.94	657.82	2.37	438.00	2.08
Sympy	25.01	1002.40	4.28	850.00	4.29
Giac	9.70	1237.65	5.19	344.50	1.49
Mupad	7.11	1046.72	3.33	638.00	2.70

Table 1.5: Time and leaf size performance for each CAS

The following are bar charts for the normalized leafsize and time used columns from the above table.



1.4 list of integrals that has no closed form antiderivative

{253, 254, 262, 263}

1.5 list of integrals solved by CAS but has no known antiderivative

Rubi {}

Mathematica {}

Maple {}

Maxima {}

Fricas {}

Sympy {}

Giac {}

Mupad {}

1.6 list of integrals solved by CAS but failed verification

The following are integrals solved by CAS but the verification phase failed to verify the anti-derivative produced is correct. This does not mean necessarily that the anti-derivative is wrong, as additional methods of verification might be needed, or more time is needed (3 minutes time limit was used). These integrals are listed here to make it easier to do further investigation to determine why it was not possible to verify the result produced.

Rubi {}

Mathematica {}

Maple Verification phase not implemented yet.

Maxima Verification phase not implemented yet.

Fricas Verification phase not implemented yet.

Sympy Verification phase not implemented yet.

Giac Verification phase not implemented yet.

Mupad Verification phase not implemented yet.

1.7 Timing

The command `AbsoluteTiming[]` was used in Mathematica to obtain the elapsed time for each integrate call. In Maple, the command `Usage` was used as in the following example

```
cpu_time := Usage(assign ('result_of _int',int(expr,x)),output='realtime')
```

For all other CAS systems, the elapsed time to complete each integral was found by taking the difference between the time after the call has completed from the time before the call was made. This was done using Python's `time.time()` call.

All elapsed times shown are in seconds. A time limit of 3 minutes was used for each integral. If the integrate command did not complete within this time limit, the integral was aborted and considered to have failed and assigned an F grade. The time used by failed integrals due to time out is not counted in the final statistics.

1.8 Verification

A verification phase was applied on the result of integration for Rubi and Mathematica. Future version of this report will implement verification for the other CAS systems. For the integrals whose result was not run through a verification phase, it is assumed that the antiderivative produced was correct.

Verification phase has 3 minutes time out. An integral whose result was not verified could still be correct. Further investigation is needed on those integrals which failed verifications. Such integrals are marked in the summary table below and also in each integral separate section so they are easy to identify and locate.

1.9 Important notes about some of the results

1.9.1 Important note about Maxima results

Since these integrals are run in a batch mode, using an automated script, and by using `sagemath` (SageMath uses Maxima), then any integral where Maxima needs an interactive response from the user to answer a question during evaluation of the integral in order to complete the integration, will fail and is counted as failed.

The exception raised is `ValueError`. Therefore Maxima result below is lower than what could result if Maxima was run directly and each question Maxima asks was answered correctly.

The percentage of such failures were not counted for each test file, but for an example, for the Timofeev test file, there were about 14 such integrals out of total 705, or about 2 percent. This percentage can be higher or lower depending on the specific input test file.

Such integrals can be indentified by looking at the output of the integration in each section for Maxima. The exception message will indicate of the error is due to the interactive question being asked or not.

Maxima integrate was run using SageMath with the following settings set by default

```
'besselexpand : true'
'display2d : false'
'domain : complex'
'keepfloat : true'
'load(to_poly_solve)'
'load(simplify_sum)'
'load(abs_integrate)' 'load(diag)'
```

SageMath loading of Maxima `abs_integrate` was found to cause some problem. So the following code was added to disable this effect.

```
from sage.interfaces.maxima_lib import maxima_lib
maxima_lib.set('extra_definite_integration_methods', '[]')
maxima_lib.set('extra_integration_methods', '[]')
```

See <https://ask.sagemath.org/question/43088/integrate-results-that-are-different-from-using-maxima/> for reference.

1.9.2 Important note about FriCAS and Giac/X-CAS results

There are Few integrals which failed due to SageMath not able to translate the result back to SageMath syntax and not because these CAS system were not able to do the integrations.

These will fail With error `Exception raised: NotImplementedError`

The number of such cases seems to be very small. About 1 or 2 percent of all integrals.

Hopefully the next version of SageMath will have complete translation of FriCAS and XCAS syntax and I will re-run all the tests again when this happens.

1.9.3 Important note about finding leaf size of antiderivative

For Mathematica, Rubi and Maple, the builtin system function `LeafSize` is used to find the leaf size of each antiderivative.

The other CAS systems (SageMath and Sympy) do not have special builtin function for this purpose at this time. Therefore the leaf size for Fricas and Sympy and Giac antiderivatives is determined using the following function, thanks to user `slelievre` at <https://>

ask.sagemath.org/question/57123/could-we-have-a-leaf_count-function-in-base-sagemath/

```
def tree_size(expr):
    r"""
    Return the tree size of this expression.
    """
    if expr not in SR:
        # deal with lists, tuples, vectors
        return 1 + sum(tree_size(a) for a in expr)
    expr = SR(expr)
    x, aa = expr.operator(), expr.operands()
    if x is None:
        return 1
    else:
        return 1 + sum(tree_size(a) for a in aa)
```

For Sympy, which is called directly from Python, the following code is used to obtain the leafsize of its result

```
try:
    # 1.7 is a fudge factor since it is low side from actual leaf count
    leafCount = round(1.7*count_ops(anti))

except Exception as ee:
    leafCount = 1
```

1.9.4 Important note about Mupad results

Matlab's symbolic toolbox does not have a leaf count function to measure the size of the antiderivative, Maple was used to determine the leaf size of Mupad output by post processing.

Currently no grading of the antiderivative for Mupad is implemented. If it can integrate the problem, it was assigned a B grade automatically as a placeholder. In the future, when grading function is implemented for Mupad, the tests will be rerun again.

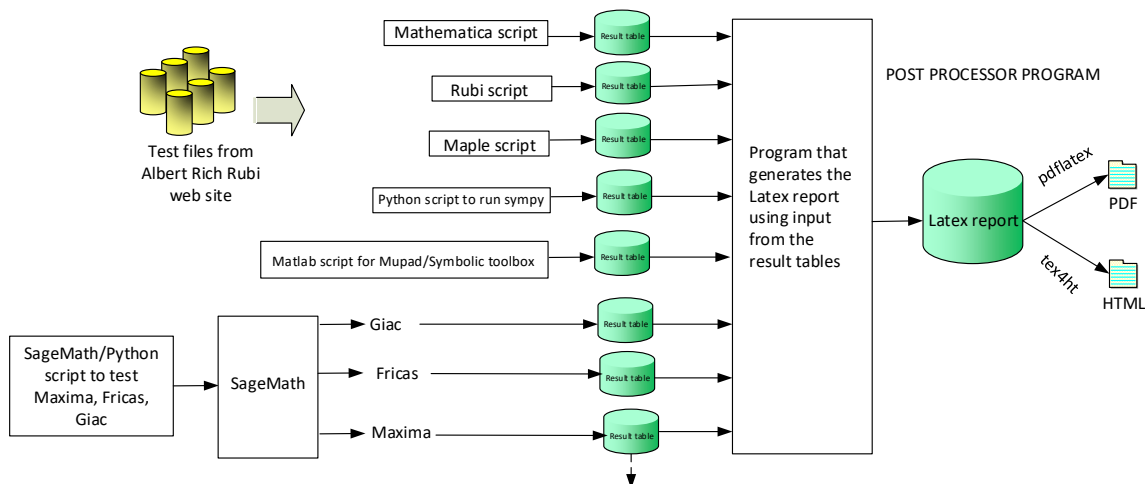
The following is an example of using Matlab's symbolic toolbox (Mupad) to solve an integral

```
integrand = evalin(symengine, 'cos(x)*sin(x)')
the_variable = evalin(symengine, 'x')
anti = int(integrand, the_variable)
```

Which gives $\sin(x)^2/2$

1.10 Design of the test system

The following diagram gives a high level view of the current test build system.



One record (line) per one integral result. The line is CSV comma separated. This is description of each record

1. integer, the problem number.
 2. integer. 0 for failed, 1 for passed, -1 for timeout, -2 for CAS specific exception. (this is not the grade field)
 3. integer. Leaf size of result.
 4. integer. Leaf size of the optimal antiderivative.
 5. number. CPU time used to solve this integral. 0 if failed.
 6. string. The integral in Latex format
 7. string. The input used in CAS own syntax.
 8. string. The result (antiderivative) produced by CAS in Latex format
 9. string. The optimal antiderivative in Latex format.
 10. integer. 0 or 1. Indicates if problem has known antiderivative or not
 11. String. The result (antiderivative) in CAS own syntax.
 12. String. The grade of the antiderivative. Can be "A", "B", "C", or "F"
- The following field present only in Rubi and Mathematica Tables*
13. integer. 1 if result was verified or 0 if not verified.
- The following fields present only in Rubi Tables*
14. integer. Number of rules used.
 15. integer. Integrand leaf size.
 16. real number. Ratio of field 14 over field 15
 17. integer. 1 if result was verified or 0 if not verified.
 18. String of form "{n,n,...}" which is list of the rules used by Rubi

High level overview of the CAS independent integration test build system

Chapter 2

detailed summary tables of results

2.1 List of integrals sorted by grade for each CAS

2.1.1 Rubi

A grade: { 1, 2, 4, 5, 6, 8, 9, 10, 11, 12, 13, 14, 15, 16, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 30, 31, 32, 33, 34, 39, 40, 41, 42, 47, 48, 50, 55, 56, 58, 64, 65, 66, 67, 74, 75, 76, 77, 108, 109, 111, 112, 113, 115, 116, 117, 118, 119, 120, 121, 122, 123, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 143, 144, 145, 146, 151, 152, 154, 159, 160, 162, 168, 169, 170, 171, 178, 179, 180, 181, 214, 220, 224, 225, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 251, 252, 253, 254, 255, 256, 257, 258, 260, 261, 262, 263 }

B grade: { 3, 7, 17, 28, 29, 49, 57, 59, 60, 68, 69, 70, 78, 79, 80, 84, 85, 86, 87, 92, 93, 94, 100, 101, 110, 114, 124, 153, 161, 163, 164, 172, 173, 174, 182, 183, 184, 185, 186, 187, 188, 189, 194, 195, 196, 202, 203, 249, 250, 259 }

C grade: { 35, 36, 37, 38, 43, 44, 45, 46, 51, 52, 53, 54, 61, 62, 63, 71, 72, 73, 81, 82, 83, 88, 89, 90, 91, 95, 96, 97, 98, 99, 102, 103, 104, 105, 106, 107, 139, 140, 141, 142, 147, 148, 149, 150, 155, 156, 157, 158, 165, 166, 167, 175, 176, 177, 190, 191, 192, 193, 197, 198, 199, 200, 201, 204, 205, 206, 207, 208, 209 }

F grade: { 210, 211, 212, 213, 215, 216, 217, 218, 219, 221, 222, 223, 226, 227 }

2.1.2 Mathematica

A grade: { 1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 12, 13, 14, 15, 16, 19, 20, 21, 22, 23, 24, 25, 26, 27, 31, 32, 33, 34, 39, 40, 41, 42, 47, 48, 50, 55, 56, 58, 65, 66, 67, 75, 76, 77, 87, 88, 89, 90, 91, 96, 97, 98, 99, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 115, 116, 117, 118, 119, 120, 121, 122, 123, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 143, 144, 145, 146, 151, 152, 154, 159, 160, 162, 169, 170, 171, 179, 180, 181, 190, 212, 213, 214, 218, 219, 220, 224, 225, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 241, 242, 243, 244, 245, 246, 247, 248, 253, 254, 262, 263 }

B grade: { 7, 17, 18, 28, 29, 30, 49, 57, 59, 60, 64, 68, 69, 70, 74, 78, 79, 80, 84, 85, 86, 92, 93, 94, 100, 101, 114, 124, 125, 153, 161, 163, 164, 168, 172, 173, 174, 178, 182, 183, 184, 185, 186, 187, 188, 189, 191, 192, 193, 194, 195, 196, 198, 199, 200, 201, 202, 203, 206, 207, 208, 209, 251, 252, 255, 256, 257, 258, 260, 261 }

C grade: { 35, 36, 37, 38, 43, 44, 45, 46, 51, 52, 53, 54, 61, 62, 63, 71, 72, 73, 81, 82, 83, 95, 102, 103, 139, 140, 141, 142, 147, 148, 149, 150, 155, 156, 157, 158, 165, 166, 167, 175, 176, 177, 197, 204, 205 }

F grade: { 210, 211, 215, 216, 217, 221, 222, 223, 226, 227, 240, 249, 250, 259 }

2.1.3 Maple

A grade: { 253, 254, 255, 256, 257, 258, 262, 263 }

B grade: { 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 61, 62, 63, 71, 72, 73, 81, 82, 83, 87, 88, 89, 90, 91, 95, 96, 97, 98, 99, 102, 103, 104, 105, 106, 107 }

C grade: { 228, 229, 230, 231, 232, 233, 237, 238, 239, 252, 261 }

F grade: { 55, 56, 57, 58, 59, 60, 64, 65, 66, 67, 68, 69, 70, 74, 75, 76, 77, 78, 79, 80, 84, 85, 86, 92, 93, 94, 100, 101, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 234, 235, 236, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 259, 260 }

2.1.4 Maxima

A grade: { 4, 5, 14, 33, 42, 50, 111, 112, 146, 154, 231, 232, 237, 238, 239, 245, 253, 254, 262, 263 }

B grade: { 1, 2, 3, 7, 8, 9, 10, 11, 12, 13, 15, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30, 31, 32, 35, 36, 37, 38, 39, 40, 43, 44, 45, 46, 47, 49, 51, 52, 53, 54, 55, 56, 57, 58, 61, 62, 63, 64, 65, 66, 67, 71, 72, 73, 74, 75, 76, 77, 81, 82, 88, 89, 90, 91, 95, 96, 97, 98, 99, 102, 103, 104, 105, 106, 107, 108, 109, 110, 114, 115, 116, 117, 118, 119, 120, 121, 122, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 135, 136, 137, 139, 140, 141, 142, 143, 144, 147, 148, 149, 150, 151, 153, 155, 156, 157, 158, 159, 160, 161, 162, 165, 166, 167, 168, 169, 170, 171, 175, 176, 177, 178, 179, 180, 181, 190, 191, 192, 193, 197, 198, 199, 200, 201, 204, 205, 206, 207, 208, 209, 228, 229, 230, 233, 255, 256, 257, 258 }

C grade: { }

F grade: { 6, 16, 27, 34, 41, 48, 59, 60, 68, 69, 70, 78, 79, 80, 83, 84, 85, 86, 87, 92, 93, 94, 100, 101, 113, 123, 134, 138, 145, 152, 163, 164, 172, 173, 174, 182, 183, 184, 185, 186, 187, 188, 189, 194, 195, }

196, 202, 203, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 234, 235, 236, 240, 241, 242, 243, 244, 246, 247, 248, 249, 250, 251, 252, 259, 260, 261 }

2.1.5 FriCAS

A grade: { 3, 4, 10, 11, 12, 22, 35, 36, 37, 38, 42, 43, 44, 45, 50, 51, 52, 89, 90, 91, 95, 96, 97, 98, 103, 104, 105, 139, 140, 141, 146, 147, 148, 154, 155, 197, 198, 215, 216, 220, 221, 222, 224, 225, 230, 231, 232, 234, 235, 236, 237, 238, 239, 241, 242, 243, 244, 245, 246, 247, 248, 253, 254, 255, 256, 257, 258, 262, 263 }

B grade: { 1, 2, 7, 8, 9, 13, 17, 18, 19, 20, 21, 23, 28, 29, 30, 46, 49, 53, 54, 61, 62, 63, 71, 72, 73, 81, 82, 83, 88, 99, 102, 106, 107, 108, 109, 110, 111, 114, 115, 116, 117, 118, 119, 120, 124, 125, 126, 127, 128, 129, 130, 142, 149, 150, 153, 156, 157, 158, 165, 166, 167, 175, 176, 177, 190, 191, 192, 193, 199, 200, 201, 204, 205, 206, 207, 208, 209, 212, 213, 214, 217, 218, 219, 223, 228, 229, 233 }

C grade: { }

F grade: { 5, 6, 14, 15, 16, 24, 25, 26, 27, 31, 32, 33, 34, 39, 40, 41, 47, 48, 55, 56, 57, 58, 59, 60, 64, 65, 66, 67, 68, 69, 70, 74, 75, 76, 77, 78, 79, 80, 84, 85, 86, 87, 92, 93, 94, 100, 101, 112, 113, 121, 122, 123, 131, 132, 133, 134, 135, 136, 137, 138, 143, 144, 145, 151, 152, 159, 160, 161, 162, 163, 164, 168, 169, 170, 171, 172, 173, 174, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 194, 195, 196, 202, 203, 210, 211, 226, 227, 240, 249, 250, 251, 252, 259, 260, 261 }

2.1.6 Sympy

A grade: { 110, 111, 120, 245 }

B grade: { 1, 2, 3, 4, 7, 8, 9, 10, 11, 12, 13, 17, 18, 19, 20, 21, 22, 23, 35, 36, 37, 38, 42, 43, 44, 45, 49, 50, 51, 52, 53, 61, 62, 71, 72, 88, 89, 90, 91, 95, 96, 97, 102, 103, 104, 106 }

C grade: { }

F grade: { 5, 6, 14, 15, 16, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 39, 40, 41, 46, 47, 48, 54, 55, 56, 57, 58, 59, 60, 63, 64, 65, 66, 67, 68, 69, 70, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 92, 93, 94, 98, 99, 100, 101, 105, 107, 108, 109, 112, 113, 114, 115, 116, 117, 118, 119, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263 }

2.1.7 Giac

A grade: { 7, 8, 9, 17, 18, 19, 28, 29, 30, 42, 43, 49, 50, 51, 61, 62, 63, 71, 72, 73, 81, 82, 83, 95, 96, 103, 104, 114, 115, 116, 124, 125, 126, 139, 146, 147, 153, 154, 155, 165, 166, 167, 175, 176, 197, 198, 204, 205, 206, 231, 237, 238, 239, 253, 254, 262, 263 }

B grade: { 1, 2, 3, 4, 10, 11, 12, 13, 20, 21, 22, 23, 35, 88, 102, 108, 109, 110, 111, 117, 118, 119, 120, 127, 128, 129, 130, 190, 232, 233, 245 }

C grade: { }

F grade: { 5, 6, 14, 15, 16, 24, 25, 26, 27, 31, 32, 33, 34, 36, 37, 38, 39, 40, 41, 44, 45, 46, 47, 48, 52, 53, 54, 55, 56, 57, 58, 59, 60, 64, 65, 66, 67, 68, 69, 70, 74, 75, 76, 77, 78, 79, 80, 84, 85, 86, 87, 89, 90, 91, 92, 93, 94, 97, 98, 99, 100, 101, 105, 106, 107, 112, 113, 121, 122, 123, 131, 132, 133, 134, 135, 136, 137, 138, 140, 141, 142, 143, 144, 145, 148, 149, 150, 151, 152, 156, 157, 158, 159, 160, 161, 162, 163, 164, 168, 169, 170, 171, 172, 173, 174, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 191, 192, 193, 194, 195, 196, 199, 200, 201, 202, 203, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 234, 235, 236, 240, 241, 242, 243, 244, 246, 247, 248, 249, 250, 251, 252, 255, 256, 257, 258, 259, 260, 261 }

2.1.8 Mupad

A grade: { 253, 254, 262, 263 }

B grade: { 1, 2, 3, 4, 7, 8, 9, 10, 11, 12, 13, 17, 18, 19, 20, 21, 22, 23, 28, 29, 30, 35, 36, 37, 38, 42, 43, 44, 45, 46, 49, 50, 51, 52, 53, 54, 61, 62, 63, 71, 72, 73, 81, 82, 83, 88, 89, 90, 91, 95, 96, 97, 98, 99, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 114, 115, 116, 117, 118, 119, 120, 124, 125, 126, 127, 128, 129, 130, 139, 140, 141, 142, 146, 147, 148, 149, 150, 153, 154, 155, 156, 157, 158, 165, 166, 167, 175, 176, 177, 190, 191, 192, 193, 197, 198, 200, 201, 204, 205, 206, 207, 208, 209, 228, 229, 230, 231, 232, 233, 237, 238, 239, 245 }

C grade: { }

F grade: { 5, 6, 14, 15, 16, 24, 25, 26, 27, 31, 32, 33, 34, 39, 40, 41, 47, 48, 55, 56, 57, 58, 59, 60, 64, 65, 66, 67, 68, 69, 70, 74, 75, 76, 77, 78, 79, 80, 84, 85, 86, 87, 92, 93, 94, 100, 101, 112, 113, 121, 122, 123, 131, 132, 133, 134, 135, 136, 137, 138, 143, 144, 145, 151, 152, 159, 160, 161, 162, 163, 164, 168, 169, 170, 171, 172, 173, 174, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 194, 195, 196, 199, 202, 203, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 234, 235, 236, 240, 241, 242, 243, 244, 246, 247, 248, 249, 250, 251, 252, 255, 256, 257, 258, 259, 260, 261 }

2.2 Detailed conclusion table per each integral for all CAS systems

Detailed conclusion table per each integral is given by table below. The elapsed time is in seconds. For failed result it is given as F(-1) if the failure was due to timeout. It is given as F(-2) if the failure was due to an exception being raised, which could indicate a bug in the system. If the failure was due to integral not being evaluated within the time limit, then it is given just an F.

In this table, the column **normalized size** is defined as $\frac{\text{antiderivative leaf size}}{\text{optimal antiderivative leaf size}}$

Problem 1	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	212	232	261	7284	1022	504	1158	5682	1195
normalized size	1	1.09	1.23	34.36	4.82	2.38	5.46	26.80	5.64
time (sec)	N/A	0.345	0.221	0.179	1.391	2.373	7.952	1.590	5.377
Problem 2	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	180	200	217	4593	671	370	850	3993	638
normalized size	1	1.11	1.21	25.52	3.73	2.06	4.72	22.18	3.54
time (sec)	N/A	0.294	0.159	0.155	1.232	1.047	5.105	1.190	5.113
Problem 3	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	A	B	B	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	140	294	181	2407	361	226	498	2404	282
normalized size	1	2.10	1.29	17.19	2.58	1.61	3.56	17.17	2.01
time (sec)	N/A	0.344	0.239	0.145	1.196	0.828	3.151	0.849	4.714

Problem 4	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	70	940	144	127	253	1395	126
normalized size	1	1.00	0.86	11.60	1.78	1.57	3.12	17.22	1.56
time (sec)	N/A	0.057	0.033	0.133	1.099	0.909	1.990	0.668	4.639

Problem 5	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	133	213	164	1044	241	0	0	0	-1
normalized size	1	1.60	1.23	7.85	1.81	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.353	0.117	0.121	1.840	0.917	0.000	0.000	0.000

Problem 6	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	142	221	175	1025	0	0	0	0	-1
normalized size	1	1.56	1.23	7.22	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.384	0.153	0.060	0.000	0.871	0.000	0.000	0.000

Problem 7	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	B	B	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	85	191	208	394	570	177	384	117	197
normalized size	1	2.25	2.45	4.64	6.71	2.08	4.52	1.38	2.32
time (sec)	N/A	0.281	0.153	0.048	1.316	0.764	6.246	1.108	5.576

Problem 8	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	173	225	187	804	933	363	629	244	361
normalized size	1	1.30	1.08	4.65	5.39	2.10	3.64	1.41	2.09
time (sec)	N/A	0.342	0.394	0.049	1.376	1.078	11.301	1.456	5.866

Problem 9	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	269	257	210	1226	1386	602	928	391	590
normalized size	1	0.96	0.78	4.56	5.15	2.24	3.45	1.45	2.19
time (sec)	N/A	0.390	0.469	0.049	1.797	0.926	18.731	1.438	6.458

Problem 10	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	423	330	429	9298	1789	724	1727	7651	2473
normalized size	1	0.78	1.01	21.98	4.23	1.71	4.08	18.09	5.85
time (sec)	N/A	0.655	0.358	0.193	1.686	1.377	13.453	1.819	5.887

Problem 11	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	337	296	362	6116	1200	534	1266	5571	1287
normalized size	1	0.88	1.07	18.15	3.56	1.58	3.76	16.53	3.82
time (sec)	N/A	0.508	0.252	0.169	1.474	1.067	7.808	1.362	5.342

Problem 12	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	239	200	216	3439	671	367	850	3856	636
normalized size	1	0.84	0.90	14.39	2.81	1.54	3.56	16.13	2.66
time (sec)	N/A	0.341	0.184	0.153	1.254	1.005	5.075	1.061	5.005

Problem 13	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	118	118	97	1522	280	223	491	2475	290
normalized size	1	1.00	0.82	12.90	2.37	1.89	4.16	20.97	2.46
time (sec)	N/A	0.067	0.040	0.134	1.102	0.951	2.986	0.835	4.586

Problem 14	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	276	354	252	2538	518	0	0	0	-1
normalized size	1	1.28	0.91	9.20	1.88	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.490	0.190	0.154	1.799	0.976	0.000	0.000	0.000

Problem 15	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	247	313	221	1465	992	0	0	0	-1
normalized size	1	1.27	0.89	5.93	4.02	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.518	0.230	0.142	1.909	0.720	0.000	0.000	0.000

Problem 16	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	230	338	244	1495	0	0	0	0	-1
normalized size	1	1.47	1.06	6.50	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.589	0.313	0.064	0.000	0.925	0.000	0.000	0.000

Problem 17	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	B	B	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	89	287	315	406	1515	271	614	114	423
normalized size	1	3.22	3.54	4.56	17.02	3.04	6.90	1.28	4.75
time (sec)	N/A	0.490	0.297	0.048	1.633	0.736	26.252	2.300	6.187

Problem 18	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	181	325	454	828	2218	510	928	238	647
normalized size	1	1.80	2.51	4.57	12.25	2.82	5.13	1.31	3.57
time (sec)	N/A	0.571	0.383	0.052	2.266	0.731	47.655	2.950	6.859

Problem 19	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	281	359	344	1262	3029	807	1300	382	941
normalized size	1	1.28	1.22	4.49	10.78	2.87	4.63	1.36	3.35
time (sec)	N/A	0.678	0.865	0.050	3.036	1.121	92.227	3.512	7.993

Problem 20	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	457	416	586	11172	2637	912	2161	10098	4347
normalized size	1	0.91	1.28	24.45	5.77	2.00	4.73	22.10	9.51
time (sec)	N/A	0.945	0.590	0.200	1.840	1.544	18.759	2.575	6.580

Problem 21	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	371	330	429	7597	1789	722	1727	7963	2465
normalized size	1	0.89	1.16	20.48	4.82	1.95	4.65	21.46	6.64
time (sec)	N/A	0.675	0.320	0.176	1.513	1.212	12.214	1.975	6.045

Problem 22	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	271	232	261	4481	1022	502	1158	5710	1192
normalized size	1	0.86	0.96	16.54	3.77	1.85	4.27	21.07	4.40
time (sec)	N/A	0.341	0.197	0.157	1.342	0.956	7.306	1.440	5.438

Problem 23	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	149	149	120	2172	439	322	706	3969	566
normalized size	1	1.00	0.81	14.58	2.95	2.16	4.74	26.64	3.80
time (sec)	N/A	0.081	0.058	0.142	1.145	0.797	4.124	1.091	4.797

Problem 24	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	356	436	352	4594	850	0	0	0	-1
normalized size	1	1.22	0.99	12.90	2.39	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.602	0.275	0.164	1.846	0.927	0.000	0.000	0.000

Problem 25	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	373	521	374	3141	1501	0	0	0	-1
normalized size	1	1.40	1.00	8.42	4.02	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.696	0.391	0.147	1.837	0.622	0.000	0.000	0.000

Problem 26	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	345	442	314	1855	2302	0	0	0	-1
normalized size	1	1.28	0.91	5.38	6.67	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.718	0.406	0.136	2.509	0.773	0.000	0.000	0.000

Problem 27	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	310	424	308	1929	0	0	0	0	-1
normalized size	1	1.37	0.99	6.22	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.782	0.455	0.066	0.000	0.676	0.000	0.000	0.000

Problem 28	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	B	B	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	89	373	427	406	3107	355	0	117	780
normalized size	1	4.19	4.80	4.56	34.91	3.99	0.00	1.31	8.76
time (sec)	N/A	0.722	0.493	0.051	2.709	0.862	0.000	3.275	7.156

Problem 29	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	B	B	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	181	409	608	828	4218	644	0	244	1053
normalized size	1	2.26	3.36	4.57	23.30	3.56	0.00	1.35	5.82
time (sec)	N/A	0.865	0.602	0.051	3.853	0.595	0.000	3.242	8.312

Problem 30	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	281	445	642	1262	5524	991	0	391	1396
normalized size	1	1.58	2.28	4.49	19.66	3.53	0.00	1.39	4.97
time (sec)	N/A	0.976	1.045	0.049	5.149	0.936	0.000	4.078	9.731

Problem 31	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	252	408	354	4297	790	0	0	0	-1
normalized size	1	1.62	1.40	17.05	3.13	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.626	0.293	0.163	1.789	0.811	0.000	0.000	0.000

Problem 32	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	198	329	254	2309	477	0	0	0	-1
normalized size	1	1.66	1.28	11.66	2.41	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.487	0.177	0.145	1.737	0.519	0.000	0.000	0.000

Problem 33	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	125	213	162	895	221	0	0	0	-1
normalized size	1	1.70	1.30	7.16	1.77	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.355	0.111	0.133	1.682	0.729	0.000	0.000	0.000

Problem 34	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	76	122	95	411	0	0	0	0	-1
normalized size	1	1.61	1.25	5.41	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.215	0.032	0.053	0.000	0.849	0.000	0.000	0.000

Problem 35	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	B	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	44	304	207	201	172	60	170	113	69
normalized size	1	6.91	4.70	4.57	3.91	1.36	3.86	2.57	1.57
time (sec)	N/A	0.584	0.120	0.049	1.136	0.738	1.129	0.349	5.745

Problem 36	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	B	A	B	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	173	437	292	605	424	144	386	0	241
normalized size	1	2.53	1.69	3.50	2.45	0.83	2.23	0.00	1.39
time (sec)	N/A	0.703	0.317	0.048	1.320	1.187	2.512	0.000	5.844

Problem 37	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	B	A	B	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	255	535	418	1040	885	349	889	0	545
normalized size	1	2.10	1.64	4.08	3.47	1.37	3.49	0.00	2.14
time (sec)	N/A	0.877	0.430	0.048	1.715	0.652	6.980	0.000	6.930

Problem 38	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	B	A	B	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	373	620	492	1474	1469	611	1392	0	970
normalized size	1	1.66	1.32	3.95	3.94	1.64	3.73	0.00	2.60
time (sec)	N/A	1.078	0.707	0.052	2.414	0.645	20.689	0.000	9.510

Problem 39	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	341	519	359	2973	1341	0	0	0	-1
normalized size	1	1.52	1.05	8.72	3.93	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.727	0.416	0.156	1.892	0.934	0.000	0.000	0.000

Problem 40	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	260	336	239	1382	886	0	0	0	-1
normalized size	1	1.29	0.92	5.32	3.41	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.532	0.237	0.137	1.900	1.070	0.000	0.000	0.000

Problem 41	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	160	222	175	978	0	0	0	0	-1
normalized size	1	1.39	1.09	6.11	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.403	0.161	0.056	0.000	0.861	0.000	0.000	0.000

Problem 42	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	98	101	104	515	134	88	231	120	106
normalized size	1	1.03	1.06	5.26	1.37	0.90	2.36	1.22	1.08
time (sec)	N/A	0.073	0.045	0.049	1.095	0.913	1.519	0.744	4.885

Problem 43	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	B	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	156	432	292	759	421	151	386	204	247
normalized size	1	2.77	1.87	4.87	2.70	0.97	2.47	1.31	1.58
time (sec)	N/A	0.714	0.284	0.050	1.325	0.886	2.497	1.002	5.813

Problem 44	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	B	A	B	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	261	462	324	1187	859	334	828	0	415
normalized size	1	1.77	1.24	4.55	3.29	1.28	3.17	0.00	1.59
time (sec)	N/A	0.868	0.428	0.053	1.406	0.906	5.837	0.000	6.175

Problem 45	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	B	A	B	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	364	630	453	1635	1721	664	1562	0	984
normalized size	1	1.73	1.24	4.49	4.73	1.82	4.29	0.00	2.70
time (sec)	N/A	1.117	0.731	0.051	2.370	0.878	52.282	0.000	9.113

Problem 46	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	B	B	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	457	705	520	2068	2560	1019	0	0	1679
normalized size	1	1.54	1.14	4.53	5.60	2.23	0.00	0.00	3.67
time (sec)	N/A	1.363	1.340	0.050	3.449	0.770	0.000	0.000	12.438

Problem 47	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	361	442	317	1815	2037	0	0	0	-1
normalized size	1	1.22	0.88	5.03	5.64	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.734	0.443	0.141	2.306	0.991	0.000	0.000	0.000

Problem 48	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	251	340	245	1569	0	0	0	0	-1
normalized size	1	1.35	0.98	6.25	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.607	0.336	0.055	0.000	0.874	0.000	0.000	0.000

Problem 49	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	B	B	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	85	191	207	1049	567	185	382	152	198
normalized size	1	2.25	2.44	12.34	6.67	2.18	4.49	1.79	2.33
time (sec)	N/A	0.292	0.152	0.051	1.201	0.712	5.765	1.066	5.626

Problem 50	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	144	144	111	746	255	221	422	254	208
normalized size	1	1.00	0.77	5.18	1.77	1.53	2.93	1.76	1.44
time (sec)	N/A	0.099	0.118	0.049	1.134	0.915	2.582	0.942	5.433

Problem 51	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	B	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	243	535	418	1287	885	355	889	340	545
normalized size	1	2.20	1.72	5.30	3.64	1.46	3.66	1.40	2.24
time (sec)	N/A	0.898	0.470	0.052	1.690	0.786	6.988	0.742	7.084

Problem 52	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	B	A	B	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	365	631	452	1729	1721	672	1562	0	983
normalized size	1	1.73	1.24	4.74	4.72	1.84	4.28	0.00	2.69
time (sec)	N/A	1.111	0.747	0.055	2.595	0.835	50.558	0.000	9.293

Problem 53	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	B	B	B	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	463	673	533	2182	2380	1011	2106	0	1443
normalized size	1	1.45	1.15	4.71	5.14	2.18	4.55	0.00	3.12
time (sec)	N/A	1.406	1.176	0.051	2.789	1.062	51.406	0.000	12.777

Problem 54	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	B	B	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	563	825	637	2616	3816	1509	0	0	2291
normalized size	1	1.47	1.13	4.65	6.78	2.68	0.00	0.00	4.07
time (sec)	N/A	1.695	1.893	0.053	5.652	1.077	0.000	0.000	16.594

Problem 55	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	539	622	905	0	3186	0	0	0	-1
normalized size	1	1.15	1.68	0.00	5.91	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.780	0.764	2.588	2.598	0.842	0.000	0.000	0.000

Problem 56	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	450	537	680	0	2243	0	0	0	-1
normalized size	1	1.19	1.51	0.00	4.98	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.490	0.541	2.091	2.245	0.942	0.000	0.000	0.000

Problem 57	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	343	1214	869	0	1252	0	0	0	-1
normalized size	1	3.54	2.53	0.00	3.65	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.817	0.732	1.821	2.172	0.929	0.000	0.000	0.000

Problem 58	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	203	283	205	0	633	0	0	0	-1
normalized size	1	1.39	1.01	0.00	3.12	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.433	0.197	1.579	1.965	0.715	0.000	0.000	0.000

Problem 59	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	286	644	987	0	0	0	0	0	-1
normalized size	1	2.25	3.45	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.939	1.301	1.869	0.000	0.605	0.000	0.000	0.000

Problem 60	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	241	705	1407	0	0	0	0	0	-1
normalized size	1	2.93	5.84	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	3.028	2.052	1.695	0.000	0.910	0.000	0.000	0.000

Problem 61	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	B	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	141	639	765	865	1987	289	714	185	469
normalized size	1	4.53	5.43	6.13	14.09	2.05	5.06	1.31	3.33
time (sec)	N/A	1.940	0.911	0.048	2.388	0.850	14.310	1.295	6.183

Problem 62	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	B	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	287	741	1035	1765	3282	601	1387	437	955
normalized size	1	2.58	3.61	6.15	11.44	2.09	4.83	1.52	3.33
time (sec)	N/A	2.291	1.041	0.048	3.462	0.843	29.462	1.321	7.701

Problem 63	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	B	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	445	826	1340	2689	4808	985	0	727	1870
normalized size	1	1.86	3.01	6.04	10.80	2.21	0.00	1.63	4.20
time (sec)	N/A	2.611	1.628	0.051	5.054	1.003	0.000	1.672	10.820

Problem 64	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	711	790	1559	0	5178	0	0	0	-1
normalized size	1	1.11	2.19	0.00	7.28	0.00	0.00	0.00	-0.00
time (sec)	N/A	3.006	1.375	2.857	2.990	0.967	0.000	0.000	0.000

Problem 65	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	761	666	1194	0	3656	0	0	0	-1
normalized size	1	0.88	1.57	0.00	4.80	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.396	0.950	2.559	2.625	0.773	0.000	0.000	0.000

Problem 66	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	589	570	677	0	2259	0	0	0	-1
normalized size	1	0.97	1.15	0.00	3.84	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.587	0.595	2.177	2.340	0.921	0.000	0.000	0.000

Problem 67	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	334	420	287	0	1202	0	0	0	-1
normalized size	1	1.26	0.86	0.00	3.60	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.532	0.220	1.829	2.031	1.087	0.000	0.000	0.000

Problem 68	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	535	1676	1987	0	0	0	0	0	-1
normalized size	1	3.13	3.71	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	5.123	3.674	2.113	0.000	0.795	0.000	0.000	0.000

Problem 69	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	442	1219	2652	0	0	0	0	0	-1
normalized size	1	2.76	6.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	3.887	6.915	2.138	0.000	0.584	0.000	0.000	0.000

Problem 70	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	387	932	3582	0	0	0	0	0	-1
normalized size	1	2.41	9.26	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	4.061	7.129	2.046	0.000	0.968	0.000	0.000	0.000

Problem 71	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	B	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	147	827	1355	890	5532	444	1182	180	1153
normalized size	1	5.63	9.22	6.05	37.63	3.02	8.04	1.22	7.84
time (sec)	N/A	3.132	2.255	0.050	5.280	0.852	69.830	2.204	7.413

Problem 72	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	B	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	299	920	1788	1814	8031	837	2055	425	1940
normalized size	1	3.08	5.98	6.07	26.86	2.80	6.87	1.42	6.49
time (sec)	N/A	3.691	3.104	0.048	8.094	0.886	134.614	2.825	11.199

Problem 73	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	B	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	463	1009	2220	2761	10880	1323	0	709	3434
normalized size	1	2.18	4.79	5.96	23.50	2.86	0.00	1.53	7.42
time (sec)	N/A	4.219	4.697	0.052	12.026	0.684	0.000	3.090	12.769

Problem 74	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1089	896	2330	0	6921	0	0	0	-1
normalized size	1	0.82	2.14	0.00	6.36	0.00	0.00	0.00	-0.00
time (sec)	N/A	4.270	3.599	2.031	3.442	0.909	0.000	0.000	0.000

Problem 75	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	908	825	1555	0	5196	0	0	0	-1
normalized size	1	0.91	1.71	0.00	5.72	0.00	0.00	0.00	-0.00
time (sec)	N/A	3.022	1.381	2.812	2.862	1.378	0.000	0.000	0.000

Problem 76	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	730	655	901	0	3218	0	0	0	-1
normalized size	1	0.90	1.23	0.00	4.41	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.781	0.739	2.359	2.412	0.852	0.000	0.000	0.000

Problem 77	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	420	503	389	0	1789	0	0	0	-1
normalized size	1	1.20	0.93	0.00	4.26	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.617	0.309	1.974	2.186	0.640	0.000	0.000	0.000

Problem 78	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	712	1868	3984	0	0	0	0	0	-1
normalized size	1	2.62	5.60	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	5.687	4.139	2.321	0.000	0.661	0.000	0.000	0.000

Problem 79	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	692	1751	5108	0	0	0	0	0	-1
normalized size	1	2.53	7.38	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	4.816	17.471	2.254	0.000	0.865	0.000	0.000	0.000

Problem 80	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	604	1412	6284	0	0	0	0	0	-1
normalized size	1	2.34	10.40	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	4.926	14.249	2.288	0.000	0.630	0.000	0.000	0.000

Problem 81	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	B	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	147	970	2470	890	11688	559	0	185	1565
normalized size	1	6.60	16.80	6.05	79.51	3.80	0.00	1.26	10.65
time (sec)	N/A	4.541	1.435	0.049	11.336	0.889	0.000	3.222	10.429

Problem 82	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	B	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	299	1061	2289	1814	15765	1045	0	437	3720
normalized size	1	3.55	7.66	6.07	52.73	3.49	0.00	1.46	12.44
time (sec)	N/A	5.195	4.204	0.049	16.438	0.955	0.000	4.341	12.639

Problem 83	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	F(-1)	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	463	1152	2583	2762	0	1610	0	727	6275
normalized size	1	2.49	5.58	5.97	0.00	3.48	0.00	1.57	13.55
time (sec)	N/A	6.077	6.255	0.055	0.000	0.877	0.000	3.692	14.174

Problem 84	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	718	1828	4802	0	0	0	0	0	-1
normalized size	1	2.55	6.69	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	5.616	1.901	2.284	0.000	0.722	0.000	0.000	0.000

Problem 85	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	536	1666	1514	0	0	0	0	0	-1
normalized size	1	3.11	2.82	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	4.825	1.735	1.955	0.000	0.704	0.000	0.000	0.000

Problem 86	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	283	1072	646	0	0	0	0	0	-1
normalized size	1	3.79	2.28	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	4.132	0.721	1.741	0.000	0.990	0.000	0.000	0.000

Problem 87	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	A	B	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	127	721	251	888	0	0	0	0	-1
normalized size	1	5.68	1.98	6.99	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	3.268	0.257	0.056	0.000	1.030	0.000	0.000	0.000

Problem 88	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	A	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	44	1163	79	312	397	87	206	145	96
normalized size	1	26.43	1.80	7.09	9.02	1.98	4.68	3.30	2.18
time (sec)	N/A	5.531	0.370	0.052	1.353	0.875	1.626	0.681	5.760

Problem 89	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	A	B	B	A	B	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	183	1684	186	1201	1008	231	541	0	419
normalized size	1	9.20	1.02	6.56	5.51	1.26	2.96	0.00	2.29
time (sec)	N/A	6.331	0.671	0.050	1.987	0.947	5.144	0.000	6.371

Problem 90	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	A	B	B	A	B	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	343	1899	318	2144	2115	540	1488	0	981
normalized size	1	5.54	0.93	6.25	6.17	1.57	4.34	0.00	2.86
time (sec)	N/A	7.366	1.111	0.055	3.114	0.659	14.175	0.000	8.300

Problem 91	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	A	B	B	A	B	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	507	2044	442	3093	3434	940	2388	0	1882
normalized size	1	4.03	0.87	6.10	6.77	1.85	4.71	0.00	3.71
time (sec)	N/A	8.431	1.458	0.053	4.371	0.861	55.104	0.000	11.446

Problem 92	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	722	2224	5193	0	0	0	0	0	-1
normalized size	1	3.08	7.19	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	6.150	7.415	2.181	0.000	0.908	0.000	0.000	0.000

Problem 93	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	469	1681	1969	0	0	0	0	0	-1
normalized size	1	3.58	4.20	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	5.093	4.208	1.969	0.000	0.586	0.000	0.000	0.000

Problem 94	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	261	1060	1107	0	0	0	0	0	-1
normalized size	1	4.06	4.24	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	4.242	1.708	1.609	0.000	1.178	0.000	0.000	0.000

Problem 95	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	B	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	152	472	315	1236	416	155	432	179	222
normalized size	1	3.11	2.07	8.13	2.74	1.02	2.84	1.18	1.46
time (sec)	N/A	0.782	0.488	0.051	1.304	0.869	3.465	1.271	5.618

Problem 96	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	A	B	B	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	214	1687	187	1633	1004	236	539	349	423
normalized size	1	7.88	0.87	7.63	4.69	1.10	2.52	1.63	1.98
time (sec)	N/A	6.471	0.742	0.053	1.922	0.897	6.195	1.441	6.275

Problem 97	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	A	B	B	A	B	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	365	1521	307	2572	1995	515	1404	0	731
normalized size	1	4.17	0.84	7.05	5.47	1.41	3.85	0.00	2.00
time (sec)	N/A	7.176	1.102	0.055	2.615	0.921	9.761	0.000	7.202

Problem 98	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	A	B	B	A	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	523	2071	466	3538	4187	1005	0	0	1497
normalized size	1	3.96	0.89	6.76	8.01	1.92	0.00	0.00	2.86
time (sec)	N/A	8.459	1.525	0.053	4.888	1.318	0.000	0.000	11.471

Problem 99	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	A	B	B	B	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	682	2222	613	4487	6160	1534	0	0	2701
normalized size	1	3.26	0.90	6.58	9.03	2.25	0.00	0.00	3.96
time (sec)	N/A	9.479	2.245	0.055	7.923	1.002	0.000	0.000	13.572

Problem 100	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	635	1890	6052	0	0	0	0	0	-1
normalized size	1	2.98	9.53	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	6.241	7.861	2.153	0.000	0.875	0.000	0.000	0.000

Problem 101	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	410	1328	2950	0	0	0	0	0	-1
normalized size	1	3.24	7.20	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	5.266	5.113	1.878	0.000	1.262	0.000	0.000	0.000

Problem 102	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	141	634	767	2449	1966	295	712	273	474
normalized size	1	4.50	5.44	17.37	13.94	2.09	5.05	1.94	3.36
time (sec)	N/A	1.961	0.910	0.051	2.520	0.892	13.796	1.503	6.404

Problem 103	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	B	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	296	577	444	1917	848	373	892	499	507
normalized size	1	1.95	1.50	6.48	2.86	1.26	3.01	1.69	1.71
time (sec)	N/A	0.914	0.433	0.052	1.457	0.672	6.178	1.428	6.478

Problem 104	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	A	B	B	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	375	1899	290	2842	2116	545	1488	628	984
normalized size	1	5.06	0.77	7.58	5.64	1.45	3.97	1.67	2.62
time (sec)	N/A	7.365	1.261	0.054	3.063	1.056	14.452	1.559	8.104

Problem 105	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	A	B	B	A	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	525	2071	453	3802	4188	1008	0	0	1505
normalized size	1	3.94	0.86	7.24	7.98	1.92	0.00	0.00	2.87
time (sec)	N/A	8.417	1.551	0.055	4.820	0.931	0.000	0.000	11.558

Problem 106	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	A	B	B	B	B	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	685	1921	611	4782	5583	1517	3720	0	2155
normalized size	1	2.80	0.89	6.98	8.15	2.21	5.43	0.00	3.15
time (sec)	N/A	9.579	2.196	0.055	5.717	0.962	127.920	0.000	14.311

Problem 107	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	A	B	B	B	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	851	2454	793	5731	9282	2257	0	0	3550
normalized size	1	2.88	0.93	6.73	10.91	2.65	0.00	0.00	4.17
time (sec)	N/A	10.921	3.054	0.056	12.472	1.068	0.000	0.000	18.950

Problem 108	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	223	243	269	0	1118	720	0	3889	1237
normalized size	1	1.09	1.21	0.00	5.01	3.23	0.00	17.44	5.55
time (sec)	N/A	0.386	0.260	0.347	1.509	1.069	0.000	6.401	5.620

Problem 109	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	190	210	225	0	740	529	0	2535	663
normalized size	1	1.11	1.18	0.00	3.89	2.78	0.00	13.34	3.49
time (sec)	N/A	0.316	0.183	0.296	1.377	1.096	0.000	3.601	5.024

Problem 110	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	A	F	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	149	311	189	0	393	309	756	1256	295
normalized size	1	2.09	1.27	0.00	2.64	2.07	5.07	8.43	1.98
time (sec)	N/A	0.370	0.280	0.128	1.205	0.971	60.838	1.953	4.839

Problem 111	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	86	86	74	0	156	162	444	572	134
normalized size	1	1.00	0.86	0.00	1.81	1.88	5.16	6.65	1.56
time (sec)	N/A	0.061	0.040	0.181	1.201	0.823	39.913	0.779	4.339

Problem 112	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	141	223	172	0	276	0	0	0	-1
normalized size	1	1.58	1.22	0.00	1.96	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.345	0.133	0.411	4.575	0.808	0.000	0.000	0.000

Problem 113	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	150	233	189	0	0	0	0	0	-1
normalized size	1	1.55	1.26	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.376	0.188	0.311	0.000	0.982	0.000	0.000	0.000

Problem 114	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	B	B	F(-2)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	89	201	216	0	582	250	0	98	204
normalized size	1	2.26	2.43	0.00	6.54	2.81	0.00	1.10	2.29
time (sec)	N/A	0.286	0.171	0.313	1.255	0.862	0.000	7.179	5.253

Problem 115	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	181	236	196	0	945	478	0	230	374
normalized size	1	1.30	1.08	0.00	5.22	2.64	0.00	1.27	2.07
time (sec)	N/A	0.341	0.452	0.310	2.116	0.628	0.000	11.765	5.276

Problem 116	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	281	269	220	0	1398	773	0	388	610
normalized size	1	0.96	0.78	0.00	4.98	2.75	0.00	1.38	2.17
time (sec)	N/A	0.409	0.500	0.308	1.888	0.653	0.000	17.566	5.869

Problem 117	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	442	345	441	0	1978	1074	0	4589	2555
normalized size	1	0.78	1.00	0.00	4.48	2.43	0.00	10.38	5.78
time (sec)	N/A	0.685	0.404	0.433	1.655	1.663	0.000	11.649	5.915

Problem 118	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	352	310	374	0	1336	774	0	2995	1328
normalized size	1	0.88	1.06	0.00	3.80	2.20	0.00	8.51	3.77
time (sec)	N/A	0.543	0.282	0.435	1.426	1.164	0.000	7.343	5.138

Problem 119	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	250	210	224	0	740	530	0	1757	661
normalized size	1	0.84	0.90	0.00	2.96	2.12	0.00	7.03	2.64
time (sec)	N/A	0.355	0.204	0.301	1.368	0.829	0.000	3.885	5.149

Problem 120	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	124	124	101	0	309	297	779	860	303
normalized size	1	1.00	0.81	0.00	2.49	2.40	6.28	6.94	2.44
time (sec)	N/A	0.074	0.046	0.289	1.183	0.894	58.606	1.599	4.625

Problem 121	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	289	369	264	0	580	0	0	0	-1
normalized size	1	1.28	0.91	0.00	2.01	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.489	0.197	0.467	5.313	0.933	0.000	0.000	0.000

Problem 122	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	259	327	233	0	1190	0	0	0	-1
normalized size	1	1.26	0.90	0.00	4.59	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.523	0.254	0.455	4.349	0.731	0.000	0.000	0.000

Problem 123	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	242	354	258	0	0	0	0	0	-1
normalized size	1	1.46	1.07	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.560	0.347	0.452	0.000	0.911	0.000	0.000	0.000

Problem 124	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	B	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	93	301	329	0	1544	409	0	94	421
normalized size	1	3.24	3.54	0.00	16.60	4.40	0.00	1.01	4.53
time (sec)	N/A	0.516	0.323	0.449	1.937	1.006	0.000	53.750	5.622

Problem 125	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	B	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	189	340	474	0	2247	710	0	222	652
normalized size	1	1.80	2.51	0.00	11.89	3.76	0.00	1.17	3.45
time (sec)	N/A	0.600	0.423	0.461	2.862	0.868	0.000	78.923	6.075

Problem 126	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	293	375	357	0	3058	1087	0	376	954
normalized size	1	1.28	1.22	0.00	10.44	3.71	0.00	1.28	3.26
time (sec)	N/A	0.721	1.052	0.450	3.176	1.000	0.000	110.702	6.708

Problem 127	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	477	435	631	0	2901	1336	0	5502	4476
normalized size	1	0.91	1.32	0.00	6.08	2.80	0.00	11.53	9.38
time (sec)	N/A	0.992	0.672	0.436	1.889	2.590	0.000	15.017	6.558

Problem 128	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	387	345	441	0	1978	1075	0	3980	2547
normalized size	1	0.89	1.14	0.00	5.11	2.78	0.00	10.28	6.58
time (sec)	N/A	0.700	0.343	0.448	1.684	1.496	0.000	10.147	6.256

Problem 129	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	283	243	269	0	1118	721	0	2374	1234
normalized size	1	0.86	0.95	0.00	3.95	2.55	0.00	8.39	4.36
time (sec)	N/A	0.382	0.228	0.319	1.402	1.158	0.000	5.671	5.401

Problem 130	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	156	156	124	0	479	429	0	1282	588
normalized size	1	1.00	0.79	0.00	3.07	2.75	0.00	8.22	3.77
time (sec)	N/A	0.086	0.075	0.291	1.185	0.646	0.000	2.455	4.976

Problem 131	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	373	455	368	0	935	0	0	0	-1
normalized size	1	1.22	0.99	0.00	2.51	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.600	0.285	0.450	4.613	0.915	0.000	0.000	0.000

Problem 132	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	390	543	394	0	1785	0	0	0	-1
normalized size	1	1.39	1.01	0.00	4.58	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.691	0.404	0.453	4.412	0.704	0.000	0.000	0.000

Problem 133	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	361	461	331	0	2746	0	0	0	-1
normalized size	1	1.28	0.92	0.00	7.61	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.709	0.487	0.455	5.097	0.700	0.000	0.000	0.000

Problem 134	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	326	444	326	0	0	0	0	0	-1
normalized size	1	1.36	1.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.794	0.465	0.453	0.000	0.818	0.000	0.000	0.000

Problem 135	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	269	426	370	0	1003	0	0	0	-1
normalized size	1	1.58	1.38	0.00	3.73	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.646	0.299	0.471	4.290	0.862	0.000	0.000	0.000

Problem 136	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	211	343	266	0	627	0	0	0	-1
normalized size	1	1.63	1.26	0.00	2.97	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.488	0.188	0.459	4.694	1.026	0.000	0.000	0.000

Problem 137	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	134	223	170	0	306	0	0	0	-1
normalized size	1	1.66	1.27	0.00	2.28	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.389	0.119	0.392	4.051	0.585	0.000	0.000	0.000

Problem 138	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	80	128	101	0	0	0	0	0	-1
normalized size	1	1.60	1.26	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.202	0.032	0.372	0.000	0.731	0.000	0.000	0.000

Problem 139	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	F	B	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	50	316	219	0	175	74	0	90	76
normalized size	1	6.32	4.38	0.00	3.50	1.48	0.00	1.80	1.52
time (sec)	N/A	0.557	0.111	0.476	1.218	0.926	0.000	1.216	5.720

Problem 140	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	F	B	A	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	181	455	304	0	427	194	0	0	239
normalized size	1	2.51	1.68	0.00	2.36	1.07	0.00	0.00	1.32
time (sec)	N/A	0.689	0.289	0.478	1.293	0.772	0.000	0.000	6.080

Problem 141	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	F	B	A	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	266	557	434	0	888	483	0	0	573
normalized size	1	2.09	1.63	0.00	3.34	1.82	0.00	0.00	2.15
time (sec)	N/A	0.834	0.413	0.469	1.727	0.927	0.000	0.000	6.337

Problem 142	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	F	B	B	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	389	646	518	0	1472	859	0	0	986
normalized size	1	1.66	1.33	0.00	3.78	2.21	0.00	0.00	2.53
time (sec)	N/A	1.077	0.717	0.474	2.357	0.990	0.000	0.000	7.235

Problem 143	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	359	541	375	0	1892	0	0	0	-1
normalized size	1	1.51	1.04	0.00	5.27	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.727	0.451	0.454	4.404	0.930	0.000	0.000	0.000

Problem 144	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	275	351	252	0	1273	0	0	0	-1
normalized size	1	1.28	0.92	0.00	4.63	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.532	0.254	0.451	4.920	0.854	0.000	0.000	0.000

Problem 145	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	168	234	183	0	0	0	0	0	-1
normalized size	1	1.39	1.09	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.387	0.183	0.314	0.000	0.883	0.000	0.000	0.000

Problem 146	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	A	F(-2)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	102	107	114	0	136	105	0	84	113
normalized size	1	1.05	1.12	0.00	1.33	1.03	0.00	0.82	1.11
time (sec)	N/A	0.079	0.059	0.314	1.303	0.614	0.000	1.712	4.836

Problem 147	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	F	B	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	166	450	304	0	424	196	0	180	241
normalized size	1	2.71	1.83	0.00	2.55	1.18	0.00	1.08	1.45
time (sec)	N/A	0.679	0.354	0.474	1.426	0.926	0.000	4.499	4.816

Problem 148	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	F	B	A	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	273	482	342	0	862	450	0	0	432
normalized size	1	1.77	1.25	0.00	3.16	1.65	0.00	0.00	1.58
time (sec)	N/A	0.830	0.453	0.470	1.475	0.658	0.000	0.000	5.461

Problem 149	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	F	B	B	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	380	656	478	0	1724	946	0	0	1016
normalized size	1	1.73	1.26	0.00	4.54	2.49	0.00	0.00	2.67
time (sec)	N/A	1.087	0.762	0.472	2.403	0.662	0.000	0.000	7.381

Problem 150	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	F	B	B	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	477	735	549	0	2563	1458	0	0	1665
normalized size	1	1.54	1.15	0.00	5.37	3.06	0.00	0.00	3.49
time (sec)	N/A	1.357	1.538	0.471	3.461	1.012	0.000	0.000	9.933

Problem 151	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	382	461	334	0	2894	0	0	0	-1
normalized size	1	1.21	0.87	0.00	7.58	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.745	0.448	0.459	5.518	0.692	0.000	0.000	0.000

Problem 152	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	263	356	259	0	0	0	0	0	-1
normalized size	1	1.35	0.98	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.597	0.344	0.436	0.000	0.752	0.000	0.000	0.000

Problem 153	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	B	B	F(-2)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	89	201	215	0	578	250	0	97	205
normalized size	1	2.26	2.42	0.00	6.49	2.81	0.00	1.09	2.30
time (sec)	N/A	0.317	0.163	0.312	1.530	0.938	0.000	9.470	5.493

Problem 154	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	A	F(-2)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	151	151	115	0	259	266	0	187	221
normalized size	1	1.00	0.76	0.00	1.72	1.76	0.00	1.24	1.46
time (sec)	N/A	0.104	0.140	0.311	1.457	0.906	0.000	1.645	4.965

Problem 155	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	F	B	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	254	557	434	0	888	487	0	370	573
normalized size	1	2.19	1.71	0.00	3.50	1.92	0.00	1.46	2.26
time (sec)	N/A	0.869	0.422	0.473	1.981	0.919	0.000	4.008	6.652

Problem 156	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	F	B	B	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	381	657	477	0	1724	949	0	0	1018
normalized size	1	1.72	1.25	0.00	4.52	2.49	0.00	0.00	2.67
time (sec)	N/A	1.083	0.787	0.471	2.764	0.981	0.000	0.000	7.534

Problem 157	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	F	B	B	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	483	701	561	0	2383	1416	0	0	1341
normalized size	1	1.45	1.16	0.00	4.93	2.93	0.00	0.00	2.78
time (sec)	N/A	1.389	1.280	0.471	2.516	1.053	0.000	0.000	7.930

Problem 158	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	F	B	B	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	587	859	671	0	3819	2181	0	0	2400
normalized size	1	1.46	1.14	0.00	6.51	3.72	0.00	0.00	4.09
time (sec)	N/A	1.691	2.033	0.470	4.954	1.006	0.000	0.000	10.216

Problem 159	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	584	670	949	0	3764	0	0	0	-1
normalized size	1	1.15	1.62	0.00	6.45	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.901	0.908	0.308	7.667	0.908	0.000	0.000	0.000

Problem 160	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	487	578	716	0	2691	0	0	0	-1
normalized size	1	1.19	1.47	0.00	5.53	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.586	0.573	0.304	6.916	0.818	0.000	0.000	0.000

Problem 161	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	372	1323	937	0	1542	0	0	0	-1
normalized size	1	3.56	2.52	0.00	4.15	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.878	0.744	0.124	6.924	0.902	0.000	0.000	0.000

Problem 162	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	220	307	216	0	825	0	0	0	-1
normalized size	1	1.40	0.98	0.00	3.75	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.481	0.187	0.113	6.645	0.740	0.000	0.000	0.000

Problem 163	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	306	692	742	0	0	0	0	0	-1
normalized size	1	2.26	2.42	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.874	1.960	0.312	0.000	0.924	0.000	0.000	0.000

Problem 164	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	261	766	1556	0	0	0	0	0	-1
normalized size	1	2.93	5.96	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.945	3.207	0.314	0.000	0.989	0.000	0.000	0.000

Problem 165	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	F	B	B	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	151	691	801	0	2017	600	0	185	561
normalized size	1	4.58	5.30	0.00	13.36	3.97	0.00	1.23	3.72
time (sec)	N/A	2.055	0.909	0.321	2.244	0.981	0.000	18.434	6.821

Problem 166	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	F	B	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	307	800	1079	0	3312	1167	0	481	993
normalized size	1	2.61	3.51	0.00	10.79	3.80	0.00	1.57	3.23
time (sec)	N/A	2.432	1.217	0.314	3.500	0.744	0.000	25.968	7.857

Problem 167	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	F	B	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	475	892	1392	0	4838	1868	0	841	1794
normalized size	1	1.88	2.93	0.00	10.19	3.93	0.00	1.77	3.78
time (sec)	N/A	2.875	1.359	0.313	4.867	1.143	0.000	38.004	9.741

Problem 168	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	766	848	1634	0	5952	0	0	0	-1
normalized size	1	1.11	2.13	0.00	7.77	0.00	0.00	0.00	-0.00
time (sec)	N/A	3.348	1.542	0.465	8.098	1.000	0.000	0.000	0.000

Problem 169	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	819	714	1254	0	4247	0	0	0	-1
normalized size	1	0.87	1.53	0.00	5.19	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.609	1.019	0.473	7.580	1.063	0.000	0.000	0.000

Problem 170	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	635	614	713	0	2662	0	0	0	-1
normalized size	1	0.97	1.12	0.00	4.19	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.657	0.642	0.311	7.607	0.950	0.000	0.000	0.000

Problem 171	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	361	454	303	0	1473	0	0	0	-1
normalized size	1	1.26	0.84	0.00	4.08	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.543	0.268	0.299	6.457	1.025	0.000	0.000	0.000

Problem 172	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	572	1790	1654	0	0	0	0	0	-1
normalized size	1	3.13	2.89	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	5.081	3.252	0.455	0.000	1.072	0.000	0.000	0.000

Problem 173	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	472	1309	2834	0	0	0	0	0	-1
normalized size	1	2.77	6.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	3.765	12.396	0.452	0.000	1.121	0.000	0.000	0.000

Problem 174	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	417	1003	4761	0	0	0	0	0	-1
normalized size	1	2.41	11.42	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	3.841	13.701	0.451	0.000	1.152	0.000	0.000	0.000
Problem 175	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	F	B	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	157	889	1415	0	5588	975	0	176	1195
normalized size	1	5.66	9.01	0.00	35.59	6.21	0.00	1.12	7.61
time (sec)	N/A	3.170	2.241	0.456	4.967	1.002	0.000	110.181	7.477
Problem 176	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	F	B	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	319	989	1860	0	8087	1729	0	461	1934
normalized size	1	3.10	5.83	0.00	25.35	5.42	0.00	1.45	6.06
time (sec)	N/A	3.789	3.280	0.458	7.605	0.942	0.000	163.533	9.424
Problem 177	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	F	B	B	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	493	1085	2320	0	10936	2633	0	0	3296
normalized size	1	2.20	4.71	0.00	22.18	5.34	0.00	0.00	6.69
time (sec)	N/A	4.316	3.924	0.454	11.751	1.187	0.000	0.000	11.154
Problem 178	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1172	961	2448	0	7845	0	0	0	-1
normalized size	1	0.82	2.09	0.00	6.69	0.00	0.00	0.00	-0.00
time (sec)	N/A	4.479	3.572	0.480	6.360	1.026	0.000	0.000	0.000

Problem 179	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	976	886	1627	0	5931	0	0	0	-1
normalized size	1	0.91	1.67	0.00	6.08	0.00	0.00	0.00	-0.00
time (sec)	N/A	3.198	1.562	0.464	5.593	1.054	0.000	0.000	0.000

Problem 180	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	786	706	945	0	3724	0	0	0	-1
normalized size	1	0.90	1.20	0.00	4.74	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.930	0.764	0.320	5.490	0.949	0.000	0.000	0.000

Problem 181	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	454	544	409	0	2129	0	0	0	-1
normalized size	1	1.20	0.90	0.00	4.69	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.664	0.321	0.302	4.976	0.689	0.000	0.000	0.000

Problem 182	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	762	1995	2941	0	0	0	0	0	-1
normalized size	1	2.62	3.86	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	5.624	5.203	0.452	0.000	0.736	0.000	0.000	0.000

Problem 183	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	739	1875	4942	0	0	0	0	0	-1
normalized size	1	2.54	6.69	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	4.738	14.828	0.452	0.000	0.834	0.000	0.000	0.000

Problem 184	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	644	1512	6221	0	0	0	0	0	-1
normalized size	1	2.35	9.66	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	4.811	25.237	0.454	0.000	0.750	0.000	0.000	0.000

Problem 185	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	561	1170	8775	0	0	0	0	0	-1
normalized size	1	2.09	15.64	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	5.093	8.166	0.454	0.000	0.918	0.000	0.000	0.000

Problem 186	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	768	1952	3265	0	0	0	0	0	-1
normalized size	1	2.54	4.25	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	5.585	4.335	0.471	0.000	0.929	0.000	0.000	0.000

Problem 187	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	573	1780	1741	0	0	0	0	0	-1
normalized size	1	3.11	3.04	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	4.746	1.653	0.456	0.000	0.883	0.000	0.000	0.000

Problem 188	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	303	1156	802	0	0	0	0	0	-1
normalized size	1	3.82	2.65	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	4.032	0.698	0.312	0.000	0.657	0.000	0.000	0.000

Problem 189	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	137	782	306	0	0	0	0	0	-1
normalized size	1	5.71	2.23	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	3.172	0.279	0.316	0.000	0.884	0.000	0.000	0.000

Problem 190	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	A	F	B	B	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	50	1237	90	0	407	149	0	162	122
normalized size	1	24.74	1.80	0.00	8.14	2.98	0.00	3.24	2.44
time (sec)	N/A	5.322	0.391	0.470	1.192	0.916	0.000	1.659	5.680

Problem 191	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	B	F	B	B	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	199	1800	793	0	1018	428	0	0	361
normalized size	1	9.05	3.98	0.00	5.12	2.15	0.00	0.00	1.81
time (sec)	N/A	6.088	0.829	0.472	1.222	0.961	0.000	0.000	5.852

Problem 192	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	B	F	B	B	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	369	2025	975	0	2126	1068	0	0	1011
normalized size	1	5.49	2.64	0.00	5.76	2.89	0.00	0.00	2.74
time (sec)	N/A	7.197	1.399	0.479	2.116	1.000	0.000	0.000	8.489

Problem 193	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	B	F	B	B	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	543	2180	1295	0	3445	1910	0	0	1921
normalized size	1	4.01	2.38	0.00	6.34	3.52	0.00	0.00	3.54
time (sec)	N/A	8.354	1.918	0.471	2.978	0.884	0.000	0.000	10.342

Problem 194	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	770	2384	4312	0	0	0	0	0	-1
normalized size	1	3.10	5.60	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	6.015	8.913	0.442	0.000	0.940	0.000	0.000	0.000

Problem 195	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	500	1807	2196	0	0	0	0	0	-1
normalized size	1	3.61	4.39	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	4.981	5.026	0.467	0.000	0.546	0.000	0.000	0.000

Problem 196	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	282	1157	1261	0	0	0	0	0	-1
normalized size	1	4.10	4.47	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	4.172	1.985	0.319	0.000	0.871	0.000	0.000	0.000

Problem 197	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	F	B	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	163	514	331	0	428	263	0	156	237
normalized size	1	3.15	2.03	0.00	2.63	1.61	0.00	0.96	1.45
time (sec)	N/A	0.756	0.448	0.319	0.922	0.746	0.000	4.781	6.268

Problem 198	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	B	F	B	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	231	1803	789	0	1014	432	0	314	365
normalized size	1	7.81	3.42	0.00	4.39	1.87	0.00	1.36	1.58
time (sec)	N/A	6.112	0.996	0.478	1.289	0.824	0.000	8.062	5.798

Problem 199	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	B	F	B	B	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	392	1621	870	0	2006	983	0	0	-1
normalized size	1	4.14	2.22	0.00	5.12	2.51	0.00	0.00	-0.00
time (sec)	N/A	6.812	1.390	0.477	1.803	1.012	0.000	0.000	0.000

Problem 200	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	B	F	B	B	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	560	2207	1340	0	4198	2052	0	0	1784
normalized size	1	3.94	2.39	0.00	7.50	3.66	0.00	0.00	3.19
time (sec)	N/A	8.150	1.987	0.474	4.814	1.071	0.000	0.000	10.278

Problem 201	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	B	F	B	B	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	729	2368	1695	0	6171	3183	0	0	3157
normalized size	1	3.25	2.33	0.00	8.47	4.37	0.00	0.00	4.33
time (sec)	N/A	9.291	3.039	0.470	7.495	1.281	0.000	0.000	11.670

Problem 202	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	676	2026	5730	0	0	0	0	0	-1
normalized size	1	3.00	8.48	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	6.201	9.800	0.452	0.000	0.886	0.000	0.000	0.000

Problem 203	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	441	1435	3172	0	0	0	0	0	-1
normalized size	1	3.25	7.19	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	5.123	6.592	0.456	0.000	0.905	0.000	0.000	0.000

Problem 204	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	F	B	B	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	151	686	803	0	1995	600	0	186	565
normalized size	1	4.54	5.32	0.00	13.21	3.97	0.00	1.23	3.74
time (sec)	N/A	1.996	0.987	0.314	2.350	0.871	0.000	19.661	7.496

Problem 205	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	F	B	B	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	317	626	464	0	861	654	0	371	505
normalized size	1	1.97	1.46	0.00	2.72	2.06	0.00	1.17	1.59
time (sec)	N/A	0.879	0.436	0.314	1.560	0.991	0.000	4.172	6.670

Problem 206	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	B	F	B	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	402	2025	971	0	2126	1076	0	664	1007
normalized size	1	5.04	2.42	0.00	5.29	2.68	0.00	1.65	2.50
time (sec)	N/A	7.043	1.374	0.474	2.747	1.086	0.000	8.669	8.731

Problem 207	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	B	F	B	B	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	562	2207	1334	0	4199	2057	0	0	1785
normalized size	1	3.93	2.37	0.00	7.47	3.66	0.00	0.00	3.18
time (sec)	N/A	8.134	2.152	0.473	4.833	0.739	0.000	0.000	10.139

Problem 208	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	B	F	B	B	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	732	2041	1653	0	5594	3062	0	0	2419
normalized size	1	2.79	2.26	0.00	7.64	4.18	0.00	0.00	3.30
time (sec)	N/A	9.227	2.674	0.474	5.556	1.323	0.000	0.000	11.667

Problem 209	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	B	F	B	B	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	908	2610	2138	0	9293	4725	0	0	4649
normalized size	1	2.87	2.35	0.00	10.23	5.20	0.00	0.00	5.12
time (sec)	N/A	10.511	4.245	0.476	11.575	1.218	0.000	0.000	13.701

Problem 210	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	F	F	F(-1)	F	F	F(-1)	F	F
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	189	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.975	0.553	180.000	0.000	0.753	0.000	0.000	0.000

Problem 211	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	F	F	F	F	F	F(-1)	F	F
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	190	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.884	0.574	3.526	0.000	0.873	0.000	0.000	0.000

Problem 212	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	F	A	F	F	B	F(-1)	F	F
verified	N/A	N/A	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	292	0	206	0	0	2680	0	0	-1
normalized size	1	0.00	0.71	0.00	0.00	9.18	0.00	0.00	-0.00
time (sec)	N/A	1.977	6.955	8.687	0.000	1.021	0.000	0.000	0.000

Problem 213	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	F	A	F	F	B	F(-1)	F	F
verified	N/A	N/A	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	210	0	134	0	0	991	0	0	-1
normalized size	1	0.00	0.64	0.00	0.00	4.72	0.00	0.00	-0.00
time (sec)	N/A	1.215	2.016	7.855	0.000	1.082	0.000	0.000	0.000

Problem 214	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	B	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	128	168	78	0	0	274	0	0	-1
normalized size	1	1.31	0.61	0.00	0.00	2.14	0.00	0.00	-0.01
time (sec)	N/A	0.616	0.519	8.817	0.000	0.907	0.000	0.000	0.000

Problem 215	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	F	F	F	F	A	F(-1)	F	F
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	125	0	0	0	0	98	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.78	0.00	0.00	-0.01
time (sec)	N/A	0.737	0.247	4.210	0.000	0.832	0.000	0.000	0.000

Problem 216	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	F	F	F(-1)	F	A	F(-1)	F	F
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	206	0	0	0	0	293	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	1.42	0.00	0.00	-0.00
time (sec)	N/A	0.826	0.276	180.000	0.000	1.002	0.000	0.000	0.000

Problem 217	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	F	F	F(-1)	F	B	F(-1)	F	F
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	295	0	0	0	0	818	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	2.77	0.00	0.00	-0.00
time (sec)	N/A	0.815	0.335	180.000	0.000	1.082	0.000	0.000	0.000

Problem 218	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	F	A	F	F	B	F(-1)	F	F
verified	N/A	N/A	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	309	0	206	0	0	2669	0	0	-1
normalized size	1	0.00	0.67	0.00	0.00	8.64	0.00	0.00	-0.00
time (sec)	N/A	2.055	7.181	8.714	0.000	0.810	0.000	0.000	0.000

Problem 219	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	F	A	F	F	B	F(-1)	F	F
verified	N/A	N/A	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	223	0	134	0	0	983	0	0	-1
normalized size	1	0.00	0.60	0.00	0.00	4.41	0.00	0.00	-0.00
time (sec)	N/A	1.159	2.091	7.781	0.000	1.026	0.000	0.000	0.000

Problem 220	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	137	170	78	0	0	269	0	0	-1
normalized size	1	1.24	0.57	0.00	0.00	1.96	0.00	0.00	-0.01
time (sec)	N/A	0.616	0.527	8.295	0.000	1.054	0.000	0.000	0.000

Problem 221	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	F	F	F	F	A	F(-1)	F	F
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	128	0	0	0	0	93	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.73	0.00	0.00	-0.01
time (sec)	N/A	0.695	0.249	3.997	0.000	0.823	0.000	0.000	0.000

Problem 222	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	F	F	F(-1)	F	A	F(-1)	F	F
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	214	0	0	0	0	284	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	1.33	0.00	0.00	-0.00
time (sec)	N/A	0.776	0.274	180.000	0.000	0.623	0.000	0.000	0.000

Problem 223	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	F	F	F(-1)	F	B	F(-1)	F	F
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	306	0	0	0	0	815	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	2.66	0.00	0.00	-0.00
time (sec)	N/A	0.757	0.335	180.000	0.000	0.933	0.000	0.000	0.000

Problem 224	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	40	0	0	65	0	0	-1
normalized size	1	1.00	0.98	0.00	0.00	1.59	0.00	0.00	-0.02
time (sec)	N/A	0.108	0.028	0.500	0.000	0.693	0.000	0.000	0.000

Problem 225	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	40	0	0	65	0	0	-1
normalized size	1	1.00	0.98	0.00	0.00	1.59	0.00	0.00	-0.02
time (sec)	N/A	0.041	0.012	0.862	0.000	1.227	0.000	0.000	0.000

Problem 226	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	F	F	F	F	F	F(-1)	F(-2)	F
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	193	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.811	0.445	3.346	0.000	0.874	0.000	0.000	0.000

Problem 227	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	F	F	F	F	F	F(-1)	F(-2)	F
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	194	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.711	0.406	3.240	0.000	0.820	0.000	0.000	0.000

Problem 228	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	B	B	F(-1)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	43	64288	766	375	0	0	141
normalized size	1	1.00	0.96	1428.62	17.02	8.33	0.00	0.00	3.13
time (sec)	N/A	0.118	0.021	35.349	1.778	0.799	0.000	0.000	5.747

Problem 229	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	B	B	F(-1)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	43	11062	387	188	0	0	100
normalized size	1	1.00	0.96	245.82	8.60	4.18	0.00	0.00	2.22
time (sec)	N/A	0.112	0.017	3.775	1.465	0.823	0.000	0.000	4.773

Problem 230	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	B	A	F(-1)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	43	1152	151	72	0	0	71
normalized size	1	1.00	0.96	25.60	3.36	1.60	0.00	0.00	1.58
time (sec)	N/A	0.082	0.013	0.607	1.203	1.133	0.000	0.000	4.669

Problem 231	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	39	368	49	45	0	38	40
normalized size	1	1.00	0.95	8.98	1.20	1.10	0.00	0.93	0.98
time (sec)	N/A	0.122	0.093	0.191	2.328	0.899	0.000	0.166	4.657

Problem 232	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	41	366	81	86	0	95	42
normalized size	1	1.00	0.95	8.51	1.88	2.00	0.00	2.21	0.98
time (sec)	N/A	0.122	0.022	0.178	2.471	0.612	0.000	0.180	4.492

Problem 233	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	B	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	43	366	220	238	0	301	72
normalized size	1	1.00	0.96	8.13	4.89	5.29	0.00	6.69	1.60
time (sec)	N/A	0.122	0.021	0.175	3.187	0.743	0.000	0.245	4.543

Problem 234	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	47	0	0	81	0	0	-1
normalized size	1	1.00	0.96	0.00	0.00	1.65	0.00	0.00	-0.02
time (sec)	N/A	0.149	0.029	12.796	0.000	0.927	0.000	0.000	0.000

Problem 235	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	51	0	0	85	0	0	-1
normalized size	1	1.00	0.93	0.00	0.00	1.55	0.00	0.00	-0.02
time (sec)	N/A	0.216	0.056	12.590	0.000	0.790	0.000	0.000	0.000

Problem 236	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	52	52	50	0	0	83	0	0	-1
normalized size	1	1.00	0.96	0.00	0.00	1.60	0.00	0.00	-0.02
time (sec)	N/A	0.106	0.013	14.174	0.000	1.034	0.000	0.000	0.000

Problem 237	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	39	368	49	45	0	38	40
normalized size	1	1.00	0.95	8.98	1.20	1.10	0.00	0.93	0.98
time (sec)	N/A	0.123	0.068	0.054	2.293	0.736	0.000	0.177	0.002

Problem 238	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	43	374	53	51	0	42	44
normalized size	1	1.00	0.91	7.96	1.13	1.09	0.00	0.89	0.94
time (sec)	N/A	0.166	0.150	0.198	1.690	0.908	0.000	0.239	4.429

Problem 239	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	44	44	42	371	51	48	0	40	42
normalized size	1	1.00	0.95	8.43	1.16	1.09	0.00	0.91	0.95
time (sec)	N/A	0.078	0.069	0.209	1.583	0.978	0.000	0.173	4.514

Problem 240	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	F	F	F	F	F(-1)	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	88	88	0	0	0	0	0	0	-1
normalized size	1	1.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.110	0.400	0.872	0.000	0.849	0.000	0.000	0.000

Problem 241	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	75	0	0	110	0	0	-1
normalized size	1	1.00	1.00	0.00	0.00	1.47	0.00	0.00	-0.01
time (sec)	N/A	0.075	0.028	0.477	0.000	0.869	0.000	0.000	0.000

Problem 242	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	75	0	0	88	0	0	-1
normalized size	1	1.00	1.00	0.00	0.00	1.17	0.00	0.00	-0.01
time (sec)	N/A	0.073	0.027	0.438	0.000	0.957	0.000	0.000	0.000

Problem 243	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	75	0	0	66	0	0	-1
normalized size	1	1.00	1.00	0.00	0.00	0.88	0.00	0.00	-0.01
time (sec)	N/A	0.050	0.021	0.302	0.000	0.817	0.000	0.000	0.000

Problem 244	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	72	0	0	40	0	0	-1
normalized size	1	1.00	1.00	0.00	0.00	0.56	0.00	0.00	-0.01
time (sec)	N/A	0.032	0.074	0.306	0.000	0.854	0.000	0.000	0.000

Problem 245	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	33	33	34	0	37	34	160	82	33
normalized size	1	1.00	1.03	0.00	1.12	1.03	4.85	2.48	1.00
time (sec)	N/A	0.075	0.075	0.470	1.687	0.931	82.020	0.519	4.477

Problem 246	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	71	71	71	0	0	40	0	0	-1
normalized size	1	1.00	1.00	0.00	0.00	0.56	0.00	0.00	-0.01
time (sec)	N/A	0.029	0.072	0.304	0.000	1.074	0.000	0.000	0.000

Problem 247	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	75	0	0	66	0	0	-1
normalized size	1	1.00	1.00	0.00	0.00	0.88	0.00	0.00	-0.01
time (sec)	N/A	0.047	0.016	0.306	0.000	1.000	0.000	0.000	0.000

Problem 248	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	75	0	0	88	0	0	-1
normalized size	1	1.00	1.00	0.00	0.00	1.17	0.00	0.00	-0.01
time (sec)	N/A	0.070	0.018	0.436	0.000	0.633	0.000	0.000	0.000

Problem 249	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	F	F	F	F	F(-1)	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	361	1021	0	0	0	0	0	0	-1
normalized size	1	2.83	0.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.926	4.406	5.970	0.000	1.088	0.000	0.000	0.000

Problem 250	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	F	F	F	F	F(-1)	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	282	656	0	0	0	0	0	0	-1
normalized size	1	2.33	0.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.211	3.235	3.188	0.000	1.025	0.000	0.000	0.000

Problem 251	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	203	371	1415	0	0	0	0	0	-1
normalized size	1	1.83	6.97	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.762	1.050	3.174	0.000	1.045	0.000	0.000	0.000

Problem 252	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	123	163	304	1447	0	0	0	0	-1
normalized size	1	1.33	2.47	11.76	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.365	0.311	0.359	0.000	0.861	0.000	0.000	0.000

Problem 253	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	82	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.427	0.164	7.587	0.000	0.722	0.000	0.000	0.000

Problem 254	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	82	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.480	0.349	8.959	0.000	0.600	0.000	0.000	0.000

Problem 255	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	B	A	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	33	33	298	42	357	32	0	0	-1
normalized size	1	1.00	9.03	1.27	10.82	0.97	0.00	0.00	-0.03
time (sec)	N/A	0.095	0.190	0.047	0.853	0.906	0.000	0.000	0.000

Problem 256	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	B	A	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	320	45	344	38	0	0	-1
normalized size	1	1.00	11.85	1.67	12.74	1.41	0.00	0.00	-0.04
time (sec)	N/A	0.066	0.256	0.047	0.763	1.028	0.000	0.000	0.000

Problem 257	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	B	A	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	320	45	336	38	0	0	-1
normalized size	1	1.00	11.85	1.67	12.44	1.41	0.00	0.00	-0.04
time (sec)	N/A	0.118	0.187	0.046	0.813	0.682	0.000	0.000	0.000

Problem 258	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	B	A	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	320	45	343	38	0	0	-1
normalized size	1	1.00	11.85	1.67	12.70	1.41	0.00	0.00	-0.04
time (sec)	N/A	0.117	0.176	0.048	0.823	0.690	0.000	0.000	0.000

Problem 259	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	F	F	F	F	F(-1)	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	282	656	0	0	0	0	0	0	-1
normalized size	1	2.33	0.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.312	2.864	3.682	0.000	0.760	0.000	0.000	0.000

Problem 260	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	203	371	1415	0	0	0	0	0	-1
normalized size	1	1.83	6.97	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.819	0.898	4.399	0.000	1.004	0.000	0.000	0.000

Problem 261	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	123	163	303	1447	0	0	0	0	-1
normalized size	1	1.33	2.46	11.76	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.394	0.268	0.338	0.000	0.972	0.000	0.000	0.000

Problem 262	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	83	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.431	0.133	12.992	0.000	0.677	0.000	0.000	0.000

Problem 263	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	83	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.460	0.271	5.410	0.000	0.876	0.000	0.000	0.000

2.3 Detailed conclusion table specific for Rubi results

The following table is specific to Rubi. It gives additional statistics for each integral. the column **steps** is the number of steps used by Rubi to obtain the antiderivative. The **rules** column is the number of unique rules used. The **integrand size** column is the leaf size of the integrand. Finally the ratio $\frac{\text{number of rules}}{\text{integrand size}}$ is given. The larger this ratio is, the harder the integral was to solve. In this test, problem number [89] had the largest ratio of [.7381]

Table 2.1: Rubi specific breakdown of results for each integral

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1	A	10	4	1.09	38	0.105
2	A	10	4	1.11	38	0.105
3	B	13	6	2.10	36	0.167
4	A	4	3	1.00	28	0.107
5	A	14	11	1.60	38	0.290
6	A	15	11	1.56	38	0.290
7	B	10	4	2.25	38	0.105
8	A	10	4	1.30	38	0.105
9	A	10	4	0.96	38	0.105
10	A	14	4	0.78	40	0.100
11	A	14	4	0.88	40	0.100
12	A	10	4	0.84	38	0.105
13	A	4	3	1.00	30	0.100
14	A	19	13	1.28	40	0.325
15	A	18	13	1.27	40	0.325

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
16	A	19	11	1.47	40	0.275
17	B	14	4	3.22	40	0.100
18	A	14	4	1.80	40	0.100
19	A	14	4	1.28	40	0.100
20	A	18	4	0.91	40	0.100
21	A	14	4	0.89	40	0.100
22	A	10	4	0.86	38	0.105
23	A	4	3	1.00	30	0.100
24	A	23	13	1.22	40	0.325
25	A	22	14	1.40	40	0.350
26	A	22	13	1.28	40	0.325
27	A	23	11	1.37	40	0.275
28	B	18	4	4.19	40	0.100
29	B	18	4	2.26	40	0.100
30	A	18	4	1.58	40	0.100
31	A	23	13	1.62	40	0.325
32	A	19	13	1.66	40	0.325
33	A	14	11	1.70	38	0.290
34	A	10	8	1.61	30	0.267
35	C	20	9	6.91	40	0.225
36	C	24	11	2.53	40	0.275
37	C	28	11	2.10	40	0.275
38	C	32	11	1.66	40	0.275
39	A	22	14	1.52	40	0.350
40	A	18	13	1.29	40	0.325
41	A	15	11	1.39	38	0.290

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
42	A	4	3	1.03	30	0.100
43	C	24	11	2.77	40	0.275
44	C	28	11	1.77	40	0.275
45	C	32	11	1.73	40	0.275
46	C	36	11	1.54	40	0.275
47	A	22	13	1.22	40	0.325
48	A	19	11	1.35	40	0.275
49	B	10	4	2.25	38	0.105
50	A	4	3	1.00	30	0.100
51	C	28	11	2.20	40	0.275
52	C	32	11	1.73	40	0.275
53	C	36	11	1.45	40	0.275
54	C	40	11	1.47	40	0.275
55	A	54	13	1.15	40	0.325
56	A	46	13	1.19	40	0.325
57	B	78	14	3.54	38	0.368
58	A	16	12	1.39	30	0.400
59	B	39	19	2.25	40	0.475
60	B	43	20	2.93	40	0.500
61	C	58	11	4.53	40	0.275
62	C	66	11	2.58	40	0.275
63	C	74	11	1.86	40	0.275
64	A	86	13	1.11	42	0.310
65	A	74	13	0.88	42	0.310
66	A	46	13	0.97	40	0.325
67	A	20	13	1.26	32	0.406

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
68	B	86	27	3.13	42	0.643
69	B	65	21	2.76	42	0.500
70	B	73	20	2.41	42	0.476
71	C	92	11	5.63	42	0.262
72	C	104	11	3.08	42	0.262
73	C	116	11	2.18	42	0.262
74	A	122	13	0.82	42	0.310
75	A	86	13	0.91	42	0.310
76	A	54	13	0.90	40	0.325
77	A	24	13	1.20	32	0.406
78	B	106	28	2.62	42	0.667
79	B	90	23	2.53	42	0.548
80	B	95	21	2.34	42	0.500
81	C	130	11	6.60	42	0.262
82	C	146	11	3.55	42	0.262
83	C	162	11	2.49	42	0.262
84	B	106	28	2.55	42	0.667
85	B	86	27	3.11	42	0.643
86	B	68	24	3.79	40	0.600
87	B	46	23	5.68	32	0.719
88	C	61	29	26.43	42	0.690
89	C	87	31	9.20	42	0.738
90	C	117	31	5.54	42	0.738
91	C	151	31	4.03	42	0.738
92	B	119	28	3.08	42	0.667
93	B	94	26	3.58	42	0.619

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
94	B	72	25	4.06	40	0.625
95	C	26	11	3.11	32	0.344
96	C	87	31	7.88	42	0.738
97	C	113	31	4.17	42	0.738
98	C	143	31	3.96	42	0.738
99	C	177	31	3.26	42	0.738
100	B	124	26	2.98	42	0.619
101	B	102	25	3.24	42	0.595
102	C	58	11	4.50	40	0.275
103	C	30	11	1.95	32	0.344
104	C	117	31	5.06	42	0.738
105	C	143	31	3.94	42	0.738
106	C	173	31	2.80	42	0.738
107	C	207	31	2.88	42	0.738
108	A	10	4	1.09	41	0.098
109	A	10	4	1.11	41	0.098
110	B	13	6	2.09	39	0.154
111	A	4	3	1.00	31	0.097
112	A	13	10	1.58	41	0.244
113	A	14	11	1.55	41	0.268
114	B	10	4	2.26	41	0.098
115	A	10	4	1.30	41	0.098
116	A	10	4	0.96	41	0.098
117	A	14	4	0.78	43	0.093
118	A	14	4	0.88	43	0.093
119	A	10	4	0.84	41	0.098

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
120	A	4	3	1.00	33	0.091
121	A	18	13	1.28	43	0.302
122	A	17	13	1.26	43	0.302
123	A	18	11	1.46	43	0.256
124	B	14	4	3.24	43	0.093
125	A	14	4	1.80	43	0.093
126	A	14	4	1.28	43	0.093
127	A	18	4	0.91	43	0.093
128	A	14	4	0.89	43	0.093
129	A	10	4	0.86	41	0.098
130	A	4	3	1.00	33	0.091
131	A	22	13	1.22	43	0.302
132	A	21	14	1.39	43	0.326
133	A	21	13	1.28	43	0.302
134	A	22	11	1.36	43	0.256
135	A	22	13	1.58	43	0.302
136	A	18	13	1.63	43	0.302
137	A	13	10	1.66	41	0.244
138	A	9	8	1.60	33	0.242
139	C	18	8	6.32	43	0.186
140	C	22	11	2.51	43	0.256
141	C	26	11	2.09	43	0.256
142	C	30	11	1.66	43	0.256
143	A	21	14	1.51	43	0.326
144	A	17	13	1.28	43	0.302
145	A	14	11	1.39	41	0.268

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
146	A	4	3	1.05	33	0.091
147	C	22	11	2.71	43	0.256
148	C	26	11	1.77	43	0.256
149	C	30	11	1.73	43	0.256
150	C	34	11	1.54	43	0.256
151	A	21	13	1.21	43	0.302
152	A	18	11	1.35	43	0.256
153	B	10	4	2.26	41	0.098
154	A	4	3	1.00	33	0.091
155	C	26	11	2.19	43	0.256
156	C	30	11	1.72	43	0.256
157	C	34	11	1.45	43	0.256
158	C	38	11	1.46	43	0.256
159	A	52	13	1.15	43	0.302
160	A	44	13	1.19	43	0.302
161	B	72	14	3.56	41	0.342
162	A	15	12	1.40	33	0.364
163	B	36	19	2.26	43	0.442
164	B	40	20	2.93	43	0.465
165	C	54	11	4.58	43	0.256
166	C	62	11	2.61	43	0.256
167	C	70	11	1.88	43	0.256
168	A	83	13	1.11	45	0.289
169	A	71	13	0.87	45	0.289
170	A	44	13	0.97	43	0.302
171	A	19	13	1.26	35	0.371

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
172	B	82	27	3.13	45	0.600
173	B	60	21	2.77	45	0.467
174	B	68	20	2.41	45	0.444
175	C	86	11	5.66	45	0.244
176	C	98	11	3.10	45	0.244
177	C	110	11	2.20	45	0.244
178	A	118	13	0.82	45	0.289
179	A	83	13	0.91	45	0.289
180	A	52	13	0.90	43	0.302
181	A	23	13	1.20	35	0.371
182	B	101	28	2.62	45	0.622
183	B	83	23	2.54	45	0.511
184	B	88	21	2.35	45	0.467
185	B	100	20	2.09	45	0.444
186	B	101	28	2.54	45	0.622
187	B	82	27	3.11	45	0.600
188	B	65	24	3.82	43	0.558
189	B	45	23	5.71	35	0.657
190	C	59	29	24.74	45	0.644
191	C	83	31	9.05	45	0.689
192	C	111	31	5.49	45	0.689
193	C	143	31	4.01	45	0.689
194	B	112	28	3.10	45	0.622
195	B	89	26	3.61	45	0.578
196	B	69	25	4.10	43	0.581
197	C	24	11	3.15	35	0.314

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
198	C	83	31	7.81	45	0.689
199	C	107	31	4.14	45	0.689
200	C	135	31	3.94	45	0.689
201	C	167	31	3.25	45	0.689
202	B	117	26	3.00	45	0.578
203	B	97	25	3.25	45	0.556
204	C	54	11	4.54	43	0.256
205	C	28	11	1.97	35	0.314
206	C	111	31	5.04	45	0.689
207	C	135	31	3.93	45	0.689
208	C	163	31	2.79	45	0.689
209	C	195	31	2.87	45	0.689
210	F	0	0	N/A	0	N/A
211	F	0	0	N/A	0	N/A
212	F	0	0	N/A	0	N/A
213	F	0	0	N/A	0	N/A
214	A	6	4	1.31	47	0.085
215	F	0	0	N/A	0	N/A
216	F	0	0	N/A	0	N/A
217	F	0	0	N/A	0	N/A
218	F	0	0	N/A	0	N/A
219	F	0	0	N/A	0	N/A
220	A	6	4	1.24	47	0.085
221	F	0	0	N/A	0	N/A
222	F	0	0	N/A	0	N/A
Continued on next page						

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
223	F	0	0	N/A	0	N/A
224	A	1	1	1.00	35	0.029
225	A	1	1	1.00	42	0.024
226	F	0	0	N/A	0	N/A
227	F	0	0	N/A	0	N/A
228	A	1	1	1.00	40	0.025
229	A	1	1	1.00	40	0.025
230	A	1	1	1.00	38	0.026
231	A	1	1	1.00	40	0.025
232	A	1	1	1.00	40	0.025
233	A	1	1	1.00	40	0.025
234	A	1	1	1.00	40	0.025
235	A	1	1	1.00	46	0.022
236	A	1	1	1.00	50	0.020
237	A	1	1	1.00	40	0.025
238	A	1	1	1.00	46	0.022
239	A	1	1	1.00	50	0.020
240	A	1	1	1.00	40	0.025
241	A	1	1	1.00	35	0.029
242	A	1	1	1.00	35	0.029
243	A	1	1	1.00	33	0.030
244	A	1	1	1.00	28	0.036
245	A	1	1	1.00	35	0.029
246	A	1	1	1.00	28	0.036
247	A	1	1	1.00	33	0.030

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
248	A	1	1	1.00	35	0.029
249	B	20	9	2.83	43	0.209
250	B	15	9	2.33	43	0.209
251	A	11	8	1.83	43	0.186
252	A	8	6	1.33	41	0.146
253	A	0	0	0.00	0	0.000
254	A	0	0	0.00	0	0.000
255	A	2	2	1.00	40	0.050
256	A	2	2	1.00	38	0.053
257	A	3	3	1.00	33	0.091
258	A	3	3	1.00	38	0.079
259	B	17	11	2.33	51	0.216
260	A	13	10	1.83	51	0.196
261	A	10	8	1.33	49	0.163
262	A	0	0	0.00	0	0.000
263	A	0	0	0.00	0	0.000

Chapter 3

Listing of integrals

$$3.1 \quad \int (ag + bgx)^3 (ci + dix) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) dx$$

Optimal. Leaf size=212

$$\frac{g^3 i(a+bx)^4 (bc-ad) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A - B \right)}{20b^2} + \frac{g^3 i(a+bx)^4 (c+dx) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{5b} + \frac{Bg^3 i(bc-ad)^5 \log \left(\frac{e(a+bx)}{c+dx} \right)}{20b^2 d^4}$$

[Out] $-1/20*B*(-a*d+b*c)^4*g^3*i*x/b/d^3+1/40*B*(-a*d+b*c)^3*g^3*i*(b*x+a)^2/b^2/d^2-1/60*B*(-a*d+b*c)^2*g^3*i*(b*x+a)^3/b^2/d+1/5*g^3*i*(b*x+a)^4*(d*x+c)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b+1/20*(-a*d+b*c)*g^3*i*(b*x+a)^4*(A-B+B*\ln(e*(b*x+a)/(d*x+c)))/b^2+1/20*B*(-a*d+b*c)^5*g^3*i*\ln(d*x+c)/b^2/d^4$

Rubi [A] time = 0.35, antiderivative size = 232, normalized size of antiderivative = 1.09, number of steps used = 10, number of rules used = 4, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$, Rules used = {2528, 2525, 12, 43}

$$\frac{g^3 i(a+bx)^4 (bc-ad) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{4b^2} + \frac{dg^3 i(a+bx)^5 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{5b^2} + \frac{Bg^3 i(a+bx)^2 (bc-ad)^3}{40b^2 d^2} + \frac{Bg^3 i(a+bx)^4 (bc-ad)^2}{20b^2 d^2}$$

Antiderivative was successfully verified.

[In] $\text{Int}[(a*g + b*g*x)^3*(c*i + d*i*x)*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]),x]$

[Out] $-(B*(b*c - a*d)^4*g^3*i*x)/(20*b*d^3) + (B*(b*c - a*d)^3*g^3*i*(a + b*x)^2)/(40*b^2*d^2) - (B*(b*c - a*d)^2*g^3*i*(a + b*x)^3)/(60*b^2*d) - (B*(b*c - a*d)*g^3*i*(a + b*x)^4)/(20*b^2) + ((b*c - a*d)*g^3*i*(a + b*x)^4*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(4*b^2) + (d*g^3*i*(a + b*x)^5*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(5*b^2)$

$(a + b*x)/(c + d*x)))/(5*b^2) + (B*(b*c - a*d)^5*g^3*i*Log[c + d*x])/(20*b^2*d^4)$

Rule 12

`Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_) /; FreeQ[b, x]]`

Rule 43

`Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && (!IntegerQ[n] || (EqQ[c, 0] && LeQ[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])`

Rule 2525

`Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]`

Rule 2528

`Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]`

Rubi steps

$$\begin{aligned}
\int (c + dx)(ag + bgx)^3 \left(A + B \log \left(\frac{e(a + bx)}{c + dx} \right) \right) dx &= \int \left(\frac{(bc - ad)(ag + bgx)^3 \left(A + B \log \left(\frac{e(a + bx)}{c + dx} \right) \right)}{b} + \frac{d(ag + bgx)^3}{b} \right) dx \\
&= \frac{(bc - ad) \int (ag + bgx)^3 \left(A + B \log \left(\frac{e(a + bx)}{c + dx} \right) \right) dx}{b} + \frac{d \int (ag + bgx)^3 dx}{b} \\
&= \frac{(bc - ad)g^3(a + bx)^4 \left(A + B \log \left(\frac{e(a + bx)}{c + dx} \right) \right)}{4b^2} + \frac{dg^3(a + bx)^5}{5b} \\
&= \frac{(bc - ad)g^3(a + bx)^4 \left(A + B \log \left(\frac{e(a + bx)}{c + dx} \right) \right)}{4b^2} + \frac{dg^3(a + bx)^5}{5b} \\
&= \frac{(bc - ad)g^3(a + bx)^4 \left(A + B \log \left(\frac{e(a + bx)}{c + dx} \right) \right)}{4b^2} + \frac{dg^3(a + bx)^5}{5b} \\
&= -\frac{B(bc - ad)^4 g^3 x}{20bd^3} + \frac{B(bc - ad)^3 g^3 (a + bx)^2}{40b^2 d^2} - \frac{B(bc - ad)^2 g^3 (a + bx)}{60bd}
\end{aligned}$$

Mathematica [A] time = 0.22, size = 261, normalized size = 1.23

$$g^3 i \left(24d(a + bx)^5 \left(B \log \left(\frac{e(a + bx)}{c + dx} \right) + A \right) + 30(a + bx)^4 (bc - ad) \left(B \log \left(\frac{e(a + bx)}{c + dx} \right) + A \right) - \frac{5B(bc - ad)^2 (3d^2(a + bx)^2(ad - bc) + 6d^2(a + bx)(ad - bc) + 3d^2(ad - bc)^2)}{60bd^3} \right)$$

Antiderivative was successfully verified.

[In] Integrate[(a*g + b*g*x)^3*(c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x])], x]

[Out] (g^3*i*(30*(b*c - a*d)*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x])) + 24*d*(a + b*x)^5*(A + B*Log[(e*(a + b*x))/(c + d*x])) - (5*B*(b*c - a*d)^2*(6*b*d*(b*c - a*d)^2*x + 3*d^2*(-(b*c) + a*d)*(a + b*x)^2 + 2*d^3*(a + b*x)^3 - 6*(b*c - a*d)^3*Log[c + d*x]))/d^4 + (2*B*(b*c - a*d)*(12*b*d*(b*c - a*d)^3*x - 6*d^2*(b*c - a*d)^2*(a + b*x)^2 + 4*d^3*(b*c - a*d)*(a + b*x)^3 - 3*d^4*(a + b*x)^4 - 12*(b*c - a*d)^4*Log[c + d*x])/d^4)/(120*b^2)

fricas [B] time = 2.37, size = 504, normalized size = 2.38

$$24 Ab^5 d^5 g^3 i x^5 + 6 \left((5A - B)b^5 c d^4 + (15A + B)ab^4 d^5 \right) g^3 i x^4 - 2 \left(Bb^5 c^2 d^3 - 10(6A - B)ab^4 c d^4 - (60A + 11B)ab^4 c^2 d^3 \right) g^3 i x^3 + \dots$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorithm="fricas")
```

```
[Out] 1/120*(24*A*b^5*d^5*g^3*i*x^5 + 6*((5*A - B)*b^5*c*d^4 + (15*A + B)*a*b^4*d^5)*g^3*i*x^4 - 2*(B*b^5*c^2*d^3 - 10*(6*A - B)*a*b^4*c*d^4 - (60*A + 11*B)*a^2*b^3*d^5)*g^3*i*x^3 + 3*(B*b^5*c^3*d^2 - 5*B*a*b^4*c^2*d^3 + 5*(12*A - B)*a^2*b^3*c*d^4 + (20*A + 9*B)*a^3*b^2*d^5)*g^3*i*x^2 - 6*(B*b^5*c^4*d - 5*B*a*b^4*c^3*d^2 + 10*B*a^2*b^3*c^2*d^3 - 5*(4*A + B)*a^3*b^2*c*d^4 - B*a^4*b*d^5)*g^3*i*x + 6*(5*B*a^4*b*c*d^4 - B*a^5*d^5)*g^3*i*log(b*x + a) + 6*(B*b^5*c^5 - 5*B*a*b^4*c^4*d + 10*B*a^2*b^3*c^3*d^2 - 10*B*a^3*b^2*c^2*d^3)*g^3*i*log(d*x + c) + 6*(4*B*b^5*d^5*g^3*i*x^5 + 20*B*a^3*b^2*c*d^4*g^3*i*x + 5*(B*b^5*c*d^4 + 3*B*a*b^4*d^5)*g^3*i*x^4 + 20*(B*a*b^4*c*d^4 + B*a^2*b^3*d^5)*g^3*i*x^3 + 10*(3*B*a^2*b^3*c*d^4 + B*a^3*b^2*d^5)*g^3*i*x^2)*log((b*e*x + a*e)/(d*x + c))/(b^2*d^4)
```

giac [B] time = 1.59, size = 5682, normalized size = 26.80

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorithm="giac")
```

```
[Out] -1/120*(6*B*b^11*c^6*g^3*i*e^6*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 36*B*a*b^10*c^5*d*g^3*i*e^6*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 90*B*a^2*b^9*c^4*d^2*g^3*i*e^6*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 120*B*a^3*b^8*c^3*d^3*g^3*i*e^6*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 90*B*a^4*b^7*c^2*d^4*g^3*i*e^6*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 36*B*a^5*b^6*c*d^5*g^3*i*e^6*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 6*B*a^6*b^5*d^6*g^3*i*e^6*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 30*(b*x*e + a*e)*B*b^10*c^6*d*g^3*i*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 180*(b*x*e + a*e)*B*a*b^9*c^5*d^2*g^3*i*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) - 450*(b*x*e + a*e)*B*a^2*b^8*c^4*d^3*g^3*i*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 600*(b*x*e + a*e)*B*a^3*b^7*c^3*d^4*g^3*i*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) - 450*(b*x*e + a*e)*B*a^4*b^6*c^2*d^5*g^3*i*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 180*(b*x*e + a*e)*B*a^5*b^5*c*d^6*g^3*i*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) - 30*(b*x*e + a*e)*B*a^6*b^4*d^7*g^3*i*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 60*(b*x*e + a*e)^2*B*b^9*c^6*d^2*g^3*i*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 360*(b*x*e + a*e)^2*B*a*b^8*c^5*d^3*g^3*i*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 + 900*(b*x*e + a*e)^2*B*a^2*b^7*c^4*d^4*g^3*i*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 1200*(b*x*e + a*e)^2*B*a^3*b^6*c^3*d^5*g^3*i*e^4*log(-b*e + (b
```

$$\begin{aligned}
& *x*e + a*e)*d/(d*x + c))/(d*x + c)^2 + 900*(b*x*e + a*e)^2*B*a^4*b^5*c^2*d^6*g^3*i*e^4*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 360*(b*x*e + a*e)^2*B*a^5*b^4*c*d^7*g^3*i*e^4*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 + 60*(b*x*e + a*e)^2*B*a^6*b^3*d^8*g^3*i*e^4*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 60*(b*x*e + a*e)^3*B*b^8*c^6*d^3*g^3*i*e^3*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 + 360*(b*x*e + a*e)^3*B*a*b^7*c^5*d^4*g^3*i*e^3*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 - 900*(b*x*e + a*e)^3*B*a^2*b^6*c^4*d^5*g^3*i*e^3*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 + 1200*(b*x*e + a*e)^3*B*a^3*b^5*c^3*d^6*g^3*i*e^3*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 - 900*(b*x*e + a*e)^3*B*a^4*b^4*c^2*d^7*g^3*i*e^3*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 + 360*(b*x*e + a*e)^3*B*a^5*b^3*c*d^8*g^3*i*e^3*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 - 60*(b*x*e + a*e)^3*B*a^6*b^2*d^9*g^3*i*e^3*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 + 30*(b*x*e + a*e)^4*B*b^7*c^6*d^4*g^3*i*e^2*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 - 180*(b*x*e + a*e)^4*B*a*b^6*c^5*d^5*g^3*i*e^2*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 + 450*(b*x*e + a*e)^4*B*a^2*b^5*c^4*d^6*g^3*i*e^2*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 - 600*(b*x*e + a*e)^4*B*a^3*b^4*c^3*d^7*g^3*i*e^2*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 + 450*(b*x*e + a*e)^4*B*a^4*b^3*c^2*d^8*g^3*i*e^2*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 - 180*(b*x*e + a*e)^4*B*a^5*b^2*c*d^9*g^3*i*e^2*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 + 30*(b*x*e + a*e)^4*B*a^6*b*d^10*g^3*i*e^2*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 - 6*(b*x*e + a*e)^5*B*b^6*c^6*d^5*g^3*i*e*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^5 + 36*(b*x*e + a*e)^5*B*a*b^5*c^5*d^6*g^3*i*e*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^5 - 90*(b*x*e + a*e)^5*B*a^2*b^4*c^4*d^7*g^3*i*e*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^5 + 120*(b*x*e + a*e)^5*B*a^3*b^3*c^3*d^8*g^3*i*e*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^5 - 90*(b*x*e + a*e)^5*B*a^4*b^2*c^2*d^9*g^3*i*e*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^5 + 36*(b*x*e + a*e)^5*B*a^5*b*c*d^10*g^3*i*e*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^5 - 6*(b*x*e + a*e)^5*B*a^6*d^11*g^3*i*e*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^5 - 30*(b*x*e + a*e)^4*B*b^7*c^6*d^4*g^3*i*e^2*\log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 + 180*(b*x*e + a*e)^4*B*a*b^6*c^5*d^5*g^3*i*e^2*\log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 - 450*(b*x*e + a*e)^4*B*a^2*b^5*c^4*d^6*g^3*i*e^2*\log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 + 600*(b*x*e + a*e)^4*B*a^3*b^4*c^3*d^7*g^3*i*e^2*\log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 - 450*(b*x*e + a*e)^4*B*a^4*b^3*c^2*d^8*g^3*i*e^2*\log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 + 180*(b*x*e + a*e)^4*B*a^5*b^2*c*d^9*g^3*i*e^2*\log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 - 30*(b*x*e + a*e)^4*B*a^6*b*d^10*g^3*i*e^2*\log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 + 6*(b*x*e + a*e)^5*B*b^6*c^6*d^5*g^3*i*e*\log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 - 36*(b*x*e + a*e)^5*B*a*b^5*c^5*d^6*g^3*i*e*\log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 + 90*(b*x*e + a*e)^5*B*a^2*b^4*c^4*d^7*g^3*i*e*\log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 - 120*(b*x*e + a*e)^5*B*a^3*b^3*c^3*d^8*g^3*i*e*\log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 + 90*(b*x*e + a*e)^5*B*a^4*b^2*c^2*d^9*g^3*i*
\end{aligned}$$

$$\begin{aligned}
& i * e * \log((b * x * e + a * e) / (d * x + c)) / (d * x + c)^5 - 36 * (b * x * e + a * e)^5 * B * a^5 * b * c \\
& * d^{10} * g^3 * i * e * \log((b * x * e + a * e) / (d * x + c)) / (d * x + c)^5 + 6 * (b * x * e + a * e)^5 * \\
& B * a^6 * d^{11} * g^3 * i * e * \log((b * x * e + a * e) / (d * x + c)) / (d * x + c)^5 + 6 * A * b^{11} * c^6 * \\
& g^3 * i * e^6 + 5 * B * b^{11} * c^6 * g^3 * i * e^6 - 36 * A * a * b^{10} * c^5 * d * g^3 * i * e^6 - 30 * B * a * b \\
& ^{10} * c^5 * d * g^3 * i * e^6 + 90 * A * a^2 * b^9 * c^4 * d^2 * g^3 * i * e^6 + 75 * B * a^2 * b^9 * c^4 * d^2 \\
& * g^3 * i * e^6 - 120 * A * a^3 * b^8 * c^3 * d^3 * g^3 * i * e^6 - 100 * B * a^3 * b^8 * c^3 * d^3 * g^3 * i * \\
& e^6 + 90 * A * a^4 * b^7 * c^2 * d^4 * g^3 * i * e^6 + 75 * B * a^4 * b^7 * c^2 * d^4 * g^3 * i * e^6 - 36 * \\
& A * a^5 * b^6 * c * d^5 * g^3 * i * e^6 - 30 * B * a^5 * b^6 * c * d^5 * g^3 * i * e^6 + 6 * A * a^6 * b^5 * d^6 * \\
& g^3 * i * e^6 + 5 * B * a^6 * b^5 * d^6 * g^3 * i * e^6 - 30 * (b * x * e + a * e) * A * b^{10} * c^6 * d * g^3 * i \\
& * e^5 / (d * x + c) - 19 * (b * x * e + a * e) * B * b^{10} * c^6 * d * g^3 * i * e^5 / (d * x + c) + 180 * (b \\
& * x * e + a * e) * A * a * b^9 * c^5 * d^2 * g^3 * i * e^5 / (d * x + c) + 114 * (b * x * e + a * e) * B * a * b^9 \\
& * c^5 * d^2 * g^3 * i * e^5 / (d * x + c) - 450 * (b * x * e + a * e) * A * a^2 * b^8 * c^4 * d^3 * g^3 * i * e^5 \\
& / (d * x + c) - 285 * (b * x * e + a * e) * B * a^2 * b^8 * c^4 * d^3 * g^3 * i * e^5 / (d * x + c) + 600 \\
& * (b * x * e + a * e) * A * a^3 * b^7 * c^3 * d^4 * g^3 * i * e^5 / (d * x + c) + 380 * (b * x * e + a * e) * B * \\
& a^3 * b^7 * c^3 * d^4 * g^3 * i * e^5 / (d * x + c) - 450 * (b * x * e + a * e) * A * a^4 * b^6 * c^2 * d^5 * g^3 \\
& * i * e^5 / (d * x + c) - 285 * (b * x * e + a * e) * B * a^4 * b^6 * c^2 * d^5 * g^3 * i * e^5 / (d * x + c \\
&) + 180 * (b * x * e + a * e) * A * a^5 * b^5 * c * d^6 * g^3 * i * e^5 / (d * x + c) + 114 * (b * x * e + a * \\
& e) * B * a^5 * b^5 * c * d^6 * g^3 * i * e^5 / (d * x + c) - 30 * (b * x * e + a * e) * A * a^6 * b^4 * d^7 * g^3 \\
& * i * e^5 / (d * x + c) - 19 * (b * x * e + a * e) * B * a^6 * b^4 * d^7 * g^3 * i * e^5 / (d * x + c) + 60 * \\
& (b * x * e + a * e)^2 * A * b^9 * c^6 * d^2 * g^3 * i * e^4 / (d * x + c)^2 + 23 * (b * x * e + a * e)^2 * B * \\
& b^9 * c^6 * d^2 * g^3 * i * e^4 / (d * x + c)^2 - 360 * (b * x * e + a * e)^2 * A * a * b^8 * c^5 * d^3 * g^3 * i * e^4 / (d * x + c \\
&)^2 + 900 * (b * x * e + a * e)^2 * A * a^2 * b^7 * c^4 * d^4 * g^3 * i * e^4 / (d * x + c)^2 + 345 * (b * \\
& x * e + a * e)^2 * B * a^2 * b^7 * c^4 * d^4 * g^3 * i * e^4 / (d * x + c)^2 - 1200 * (b * x * e + a * e)^2 \\
& * A * a^3 * b^6 * c^3 * d^5 * g^3 * i * e^4 / (d * x + c)^2 - 460 * (b * x * e + a * e)^2 * B * a^3 * b^6 * c^3 \\
& * d^5 * g^3 * i * e^4 / (d * x + c)^2 + 900 * (b * x * e + a * e)^2 * A * a^4 * b^5 * c^2 * d^6 * g^3 * i * e^4 / (d * x + c)^2 \\
& + 345 * (b * x * e + a * e)^2 * B * a^4 * b^5 * c^2 * d^6 * g^3 * i * e^4 / (d * x + c)^2 - 360 * (b * x * e + a * e)^2 * A * a^5 * b^4 * c * d^7 * g^3 * i * e^4 / (d * x + c)^2 - 138 * (b * x * e + a * e)^2 * B * a^5 * b^4 * c * d^7 * g^3 * i * e^4 / (d * x + c)^2 + 60 * (b * x * e + a * e)^2 * A * a^6 * b^3 * d^8 * g^3 * i * e^4 / (d * x + c)^2 + 23 * (b * x * e + a * e)^2 * B * a^6 * b^3 * d^8 * g^3 * i * e^4 / (d * x + c)^2 - 60 * (b * x * e + a * e)^3 * A * b^8 * c^6 * d^3 * g^3 * i * e^3 / (d * x + c)^3 - 3 * (b * x * e + a * e)^3 * B * b^8 * c^6 * d^3 * g^3 * i * e^3 / (d * x + c)^3 + 360 * (b * x * e + a * e)^3 * A * a * b^7 * c^5 * d^4 * g^3 * i * e^3 / (d * x + c)^3 + 18 * (b * x * e + a * e)^3 * B * a * b^7 * c^5 * d^4 * g^3 * i * e^3 / (d * x + c)^3 - 900 * (b * x * e + a * e)^3 * A * a^2 * b^6 * c^4 * d^5 * g^3 * i * e^3 / (d * x + c)^3 - 45 * (b * x * e + a * e)^3 * B * a^2 * b^6 * c^4 * d^5 * g^3 * i * e^3 / (d * x + c)^3 + 1200 * (b * x * e + a * e)^3 * A * a^3 * b^5 * c^3 * d^6 * g^3 * i * e^3 / (d * x + c)^3 - 900 * (b * x * e + a * e)^3 * A * a^4 * b^4 * c^2 * d^7 * g^3 * i * e^3 / (d * x + c)^3 - 45 * (b * x * e + a * e)^3 * B * a^4 * b^4 * c^2 * d^7 * g^3 * i * e^3 / (d * x + c)^3 + 360 * (b * x * e + a * e)^3 * A * a^5 * b^3 * c * d^8 * g^3 * i * e^3 / (d * x + c)^3 + 18 * (b * x * e + a * e)^3 * B * a^5 * b^3 * c * d^8 * g^3 * i * e^3 / (d * x + c)^3 - 60 * (b * x * e + a * e)^3 * A * a^6 * b^2 * d^9 * g^3 * i * e^3 / (d * x + c)^3 - 3 * (b * x * e + a * e)^3 * B * a^6 * b^2 * d^9 * g^3 * i * e^3 / (d * x + c)^3 - 6 * (b * x * e + a * e)^4 * B * b^7 * c^6 * d^4 * g^3 * i * e^2 / (d * x + c)^4 + 36 * (b * x * e + a * e)^4 * B * a * b^6 * c^5 * d^5 * g^3 * i * e^2 / (d * x + c)^4 - 90 * (b * x * e + a * e)^4 * B * a^2 * b^5 * c^4 * d^6 * g^3 * i * e^2 / (d * x + c)^4 + 120 * (b * x * e + a * e)^4 * B * a^3 * b^4 * c^3 * d^7 * g^3 * i * e^2 / (d * x + c)^4 - 90 * (b * x * e + a * e)^4 * B * a^4 * b^3 * c^2 * d^8 * g^3
\end{aligned}$$

$$\begin{aligned} & *i^2/(d*x + c)^4 + 36*(b*x*e + a*e)^4*B*a^5*b^2*c*d^9*g^3*i^2/(d*x + c) \\ & ^4 - 6*(b*x*e + a*e)^4*B*a^6*b*d^10*g^3*i^2/(d*x + c)^4*(b*c/((b*c*e - a \\ & *d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))/(b^7*d^4*e^5 - 5*(b \\ & *x*e + a*e)*b^6*d^5*e^4/(d*x + c) + 10*(b*x*e + a*e)^2*b^5*d^6*e^3/(d*x + c \\ &)^2 - 10*(b*x*e + a*e)^3*b^4*d^7*e^2/(d*x + c)^3 + 5*(b*x*e + a*e)^4*b^3*d^ \\ & 8*e/(d*x + c)^4 - (b*x*e + a*e)^5*b^2*d^9/(d*x + c)^5 \end{aligned}$$

maple [B] time = 0.18, size = 7284, normalized size = 34.36

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)^3*(d*i*x+c*i)*(B*ln((b*x+a)/(d*x+c)*e)+A),x)

[Out] result too large to display

maxima [B] time = 1.39, size = 1022, normalized size = 4.82

$$\frac{1}{5} Ab^3 dg^3 ix^5 + \frac{1}{4} Ab^3 cg^3 ix^4 + \frac{3}{4} Aab^2 dg^3 ix^4 + Aab^2 cg^3 ix^3 + Aa^2 bdg^3 ix^3 + \frac{3}{2} Aa^2 bcg^3 ix^2 + \frac{1}{2} Aa^3 dg^3 ix^2 + \left(x \log \left(\frac{be}{dx} \right) \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorithm="maxima")

[Out]
$$\begin{aligned} & 1/5*A*b^3*d*g^3*i*x^5 + 1/4*A*b^3*c*g^3*i*x^4 + 3/4*A*a*b^2*d*g^3*i*x^4 + A \\ & *a*b^2*c*g^3*i*x^3 + A*a^2*b*d*g^3*i*x^3 + 3/2*A*a^2*b*c*g^3*i*x^2 + 1/2*A* \\ & a^3*d*g^3*i*x^2 + (x*\log(b*e*x/(d*x + c) + a*e/(d*x + c)) + a*\log(b*x + a)/ \\ & b - c*\log(d*x + c)/d)*B*a^3*c*g^3*i + 3/2*(x^2*\log(b*e*x/(d*x + c) + a*e/(d \\ & *x + c)) - a^2*\log(b*x + a)/b^2 + c^2*\log(d*x + c)/d^2 - (b*c - a*d)*x/(b*d \\ &))*B*a^2*b*c*g^3*i + 1/2*(2*x^3*\log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 2*a^ \\ & 3*\log(b*x + a)/b^3 - 2*c^3*\log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2* \\ & (b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*B*a*b^2*c*g^3*i + 1/24*(6*x^4*\log(b*e*x/(\\ & d*x + c) + a*e/(d*x + c)) - 6*a^4*\log(b*x + a)/b^4 + 6*c^4*\log(d*x + c)/d^4 \\ & - (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3* \\ & c^3 - a^3*d^3)*x)/(b^3*d^3))*B*b^3*c*g^3*i + 1/2*(x^2*\log(b*e*x/(d*x + c) + \\ & a*e/(d*x + c)) - a^2*\log(b*x + a)/b^2 + c^2*\log(d*x + c)/d^2 - (b*c - a*d) \\ & *x/(b*d))*B*a^3*d*g^3*i + 1/2*(2*x^3*\log(b*e*x/(d*x + c) + a*e/(d*x + c)) + \\ & 2*a^3*\log(b*x + a)/b^3 - 2*c^3*\log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 \\ & - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*B*a^2*b*d*g^3*i + 1/8*(6*x^4*\log(b*e \\ & *x/(d*x + c) + a*e/(d*x + c)) - 6*a^4*\log(b*x + a)/b^4 + 6*c^4*\log(d*x + c) \\ & /d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(\\ & b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*B*a*b^2*d*g^3*i + 1/60*(12*x^5*\log(b*e*x/(\\ & d*x + c) + a*e/(d*x + c)) + 12*a^5*\log(b*x + a)/b^5 - 12*c^5*\log(d*x + c)/d \end{aligned}$$

$$\begin{aligned} &^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4*c^2*d^2 - a^2*b^2*d^4)*x^3 + 6 \\ &*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 - a^4*d^4)*x)/(b^4*d^4)*B*b^3*d \\ &*g^3*i + A*a^3*c*g^3*i*x \end{aligned}$$

mupad [B] time = 5.38, size = 1195, normalized size = 5.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((a*g + b*g*x)^3*(c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x))),x)`

[Out]
$$\begin{aligned} &x*((a*c*((20*a*d + 20*b*c)*((b^2*g^3*i*(20*A*a*d + 10*A*b*c + B*a*d - B*b*c))/5 - (A*b^2*g^3*i*(20*a*d + 20*b*c))/20))/(20*b*d) - (b*g^3*i*(24*A*a^2*d^2 + 4*A*b^2*c^2 + 3*B*a^2*d^2 - B*b^2*c^2 + 32*A*a*b*c*d - 2*B*a*b*c*d))/(4*d) + A*a*b^2*c*g^3*i)/(b*d) - ((20*a*d + 20*b*c)*((20*a*d + 20*b*c)*((20*a*d + 20*b*c)*((b^2*g^3*i*(20*A*a*d + 10*A*b*c + B*a*d - B*b*c))/5 - (A*b^2*g^3*i*(20*a*d + 20*b*c))/20))/(20*b*d) - (b*g^3*i*(24*A*a^2*d^2 + 4*A*b^2*c^2 + 3*B*a^2*d^2 - B*b^2*c^2 + 32*A*a*b*c*d - 2*B*a*b*c*d))/(4*d) + A*a*b^2*c*g^3*i))/(20*b*d) - (a*c*((b^2*g^3*i*(20*A*a*d + 10*A*b*c + B*a*d - B*b*c))/5 - (A*b^2*g^3*i*(20*a*d + 20*b*c))/20))/(b*d) + (a*g^3*i*(4*A*a^2*d^2 + 4*A*b^2*c^2 + B*a^2*d^2 - B*b^2*c^2 + 12*A*a*b*c*d))/d))/(20*b*d) + (a^2*g^3*i*(2*A*a^2*d^2 + 12*A*b^2*c^2 + B*a^2*d^2 - 3*B*b^2*c^2 + 16*A*a*b*c*d + 2*B*a*b*c*d))/(2*b*d) + x^4*((b^2*g^3*i*(20*A*a*d + 10*A*b*c + B*a*d - B*b*c))/20 - (A*b^2*g^3*i*(20*a*d + 20*b*c))/80) - x^3*((20*a*d + 20*b*c)*((b^2*g^3*i*(20*A*a*d + 10*A*b*c + B*a*d - B*b*c))/5 - (A*b^2*g^3*i*(20*a*d + 20*b*c))/20))/(60*b*d) - (b*g^3*i*(24*A*a^2*d^2 + 4*A*b^2*c^2 + 3*B*a^2*d^2 - B*b^2*c^2 + 32*A*a*b*c*d - 2*B*a*b*c*d))/(12*d) + (A*a*b^2*c*g^3*i)/3 + x^2*((20*a*d + 20*b*c)*((20*a*d + 20*b*c)*((b^2*g^3*i*(20*A*a*d + 10*A*b*c + B*a*d - B*b*c))/5 - (A*b^2*g^3*i*(20*a*d + 20*b*c))/20))/(20*b*d) - (b*g^3*i*(24*A*a^2*d^2 + 4*A*b^2*c^2 + 3*B*a^2*d^2 - B*b^2*c^2 + 32*A*a*b*c*d - 2*B*a*b*c*d))/(4*d) + A*a*b^2*c*g^3*i)/(40*b*d) - (a*c*((b^2*g^3*i*(20*A*a*d + 10*A*b*c + B*a*d - B*b*c))/5 - (A*b^2*g^3*i*(20*a*d + 20*b*c))/20))/(2*b*d) + (a*g^3*i*(4*A*a^2*d^2 + 4*A*b^2*c^2 + B*a^2*d^2 - B*b^2*c^2 + 12*A*a*b*c*d))/(2*d) + log((e*(a + b*x))/(c + d*x))*((B*a^2*g^3*i*x^2*(a*d + 3*b*c))/2 + (B*b^2*g^3*i*x^4*(3*a*d + b*c))/4 + B*a^3*c*g^3*i*x + (B*b^3*d*g^3*i*x^5)/5 + B*a*b*g^3*i*x^3*(a*d + b*c)) - (log(a + b*x)*(B*a^5*d*g^3*i - 5*B*a^4*b*c*g^3*i))/(20*b^2) + (log(c + d*x)*(B*b^3*c^5*g^3*i - 10*B*a^3*c^2*d^3*g^3*i - 5*B*a*b^2*c^4*d*g^3*i + 10*B*a^2*b*c^3*d^2*g^3*i))/(20*d^4) + (A*b^3*d*g^3*i*x^5)/5 \end{aligned}$$

sympy [B] time = 7.95, size = 1158, normalized size = 5.46

$$\frac{Ab^3dg^3ix^5}{5} - \frac{Ba^4g^3i(ad - 5bc) \log \left(x + \frac{Ba^5cd^4g^3i + \frac{Ba^5d^4g^3i(ad-5bc)}{b} - 15Ba^4bc^2d^3g^3i - Ba^4cd^3g^3i(ad-5bc) + 10Ba^3b^2c^3d^2g^3i - 5Ba^2b^3c^4dg^3i + Ba^5d^5g^3i - 5Ba^4bcd^4g^3i - 10Ba^3b^2c^2d^3g^3i + 10Ba^2b^3c^3d^2g^3i - 5Bab^4c^4dg^3i + Bb^5c^5g^3i}{20b^2} \right)}{20b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)**3*(d*i*x+c*i)*(A+B*ln(e*(b*x+a)/(d*x+c))),x)

[Out] $A*b**3*d*g**3*i*x**5/5 - B*a**4*g**3*i*(a*d - 5*b*c)*\log(x + (B*a**5*c*d**4*g**3*i + B*a**5*d**4*g**3*i*(a*d - 5*b*c)/b - 15*B*a**4*b*c**2*d**3*g**3*i - B*a**4*c*d**3*g**3*i*(a*d - 5*b*c) + 10*B*a**3*b**2*c**3*d**2*g**3*i - 5*B*a**2*b**3*c**4*d*g**3*i + B*a*b**4*c**5*g**3*i)/(B*a**5*d**5*g**3*i - 5*B*a**4*b*c*d**4*g**3*i - 10*B*a**3*b**2*c**2*d**3*g**3*i + 10*B*a**2*b**3*c**3*d**2*g**3*i - 5*B*a*b**4*c**4*d*g**3*i + B*b**5*c**5*g**3*i))/(20*b**2) - B*c**2*g**3*i*(10*a**3*d**3 - 10*a**2*b*c*d**2 + 5*a*b**2*c**2*d - b**3*c**3)*\log(x + (B*a**5*c*d**4*g**3*i - 15*B*a**4*b*c**2*d**3*g**3*i + 10*B*a**3*b**2*c**3*d**2*g**3*i - 5*B*a**2*b**3*c**4*d*g**3*i + B*a*b**4*c**5*g**3*i + B*a*b*c**2*g**3*i*(10*a**3*d**3 - 10*a**2*b*c*d**2 + 5*a*b**2*c**2*d - b**3*c**3) - B*b**2*c**3*g**3*i*(10*a**3*d**3 - 10*a**2*b*c*d**2 + 5*a*b**2*c**2*d - b**3*c**3)/d)/(B*a**5*d**5*g**3*i - 5*B*a**4*b*c*d**4*g**3*i - 10*B*a**3*b**2*c**2*d**3*g**3*i + 10*B*a**2*b**3*c**3*d**2*g**3*i - 5*B*a*b**4*c**4*d*g**3*i + B*b**5*c**5*g**3*i))/(20*d**4) + x**4*(3*A*a*b**2*d*g**3*i/4 + A*b**3*c*g**3*i/4 + B*a*b**2*d*g**3*i/20 - B*b**3*c*g**3*i/20) + x**3*(A*a**2*b*d*g**3*i + A*a*b**2*c*g**3*i + 11*B*a**2*b*d*g**3*i/60 - B*a*b**2*c*g**3*i/6 - B*b**3*c**2*g**3*i/(60*d)) + x**2*(A*a**3*d*g**3*i/2 + 3*A*a**2*b*c*g**3*i/2 + 9*B*a**3*d*g**3*i/40 - B*a**2*b*c*g**3*i/8 - B*a*b**2*c**2*g**3*i/(8*d) + B*b**3*c**3*g**3*i/(40*d**2)) + x*(A*a**3*c*g**3*i + B*a**4*d*g**3*i/(20*b) + B*a**3*c*g**3*i/4 - B*a**2*b*c**2*g**3*i/(2*d) + B*a*b**2*c**3*g**3*i/(4*d**2) - B*b**3*c**4*g**3*i/(20*d**3)) + (B*a**3*c*g**3*i*x + B*a**3*d*g**3*i*x**2/2 + 3*B*a**2*b*c*g**3*i*x**2/2 + B*a**2*b*d*g**3*i*x**3 + B*a*b**2*c*g**3*i*x**3 + 3*B*a*b**2*d*g**3*i*x**4/4 + B*b**3*c*g**3*i*x**4/4 + B*b**3*d*g**3*i*x**5/5)*\log(e*(a + b*x)/(c + d*x))$

$$3.2 \quad \int (ag + bgx)^2 (ci + dix) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) dx$$

Optimal. Leaf size=180

$$\frac{g^2 i(a+bx)^3 (bc-ad) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A - B \right)}{12b^2} + \frac{g^2 i(a+bx)^3 (c+dx) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{4b} - \frac{Bg^2 i(bc-ad)^4 \log(c)}{12b^2 d^3}$$

[Out] 1/12*B*(-a*d+b*c)^3*g^2*i*x/b/d^2-1/24*B*(-a*d+b*c)^2*g^2*i*(b*x+a)^2/b^2/d+1/4*g^2*i*(b*x+a)^3*(d*x+c)*(A+B*ln(e*(b*x+a)/(d*x+c)))/b+1/12*(-a*d+b*c)*g^2*i*(b*x+a)^3*(A-B+B*ln(e*(b*x+a)/(d*x+c)))/b^2-1/12*B*(-a*d+b*c)^4*g^2*i*ln(d*x+c)/b^2/d^3

Rubi [A] time = 0.29, antiderivative size = 200, normalized size of antiderivative = 1.11, number of steps used = 10, number of rules used = 4, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$, Rules used = {2528, 2525, 12, 43}

$$\frac{g^2 i(a+bx)^3 (bc-ad) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{3b^2} + \frac{dg^2 i(a+bx)^4 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{4b^2} - \frac{Bg^2 i(bc-ad)^4 \log(c+dx)}{12b^2 d^3} - \frac{Bg^2 i(bc-ad)^4 \log(c)}{12b^2 d^3}$$

Antiderivative was successfully verified.

[In] Int[(a*g + b*g*x)^2*(c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]),x]

[Out] (B*(b*c - a*d)^3*g^2*i*x)/(12*b*d^2) - (B*(b*c - a*d)^2*g^2*i*(a + b*x)^2)/(24*b^2*d) - (B*(b*c - a*d)*g^2*i*(a + b*x)^3)/(12*b^2) + ((b*c - a*d)*g^2*i*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(3*b^2) + (d*g^2*i*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(4*b^2) - (B*(b*c - a*d)^4*g^2*i*Log[c + d*x])/(12*b^2*d^3)

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 43

Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && (!IntegerQ[n] || (EqQ[c, 0] && LeQ[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_.))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
 \int (2c + 2dx)(ag + bgx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) dx &= \int \left(\frac{2(bc - ad)(ag + bgx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b} + \frac{2d(ag + bgx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b} \right) dx \\
 &= \frac{(2(bc - ad)) \int (ag + bgx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) dx}{b} + \frac{2d \int (ag + bgx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) dx}{b} \\
 &= \frac{2(bc - ad)g^2(a + bx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{3b^2} + \frac{dg^2(a + bx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{3b^2} \\
 &= \frac{2(bc - ad)g^2(a + bx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{3b^2} + \frac{dg^2(a + bx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{3b^2} \\
 &= \frac{2(bc - ad)g^2(a + bx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{3b^2} + \frac{dg^2(a + bx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{3b^2} \\
 &= \frac{B(bc - ad)^3 g^2 x}{6bd^2} - \frac{B(bc - ad)^2 g^2 (a + bx)^2}{12b^2 d} - \frac{B(bc - ad)g^2 (a + bx)^3}{6b^2}
 \end{aligned}$$

Mathematica [A] time = 0.16, size = 217, normalized size = 1.21

$$\frac{g^2 i \left(6d(a + bx)^4 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right) + 8(a + bx)^3 (bc - ad) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right) + \frac{4B(bc - ad)^2 (2bdx(bc - ad) - 2(bc - ad)^2)}{d^3} \right)}{24b^2}$$

Antiderivative was successfully verified.

[In] Integrate[(a*g + b*g*x)^2*(c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]),x]

[Out] (g^2*i*(8*(b*c - a*d)*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x])) + 6*d*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x])) + (4*B*(b*c - a*d)^2*(2*b*d*(b*c - a*d)*x - d^2*(a + b*x)^2 - 2*(b*c - a*d)^2*Log[c + d*x]))/d^3 - (B*(b*c - a*d)*(6*b*d*(b*c - a*d)^2*x + 3*d^2*(-(b*c) + a*d)*(a + b*x)^2 + 2*d^3*(a + b*x)^3 - 6*(b*c - a*d)^3*Log[c + d*x]))/d^3)/(24*b^2)

fricas [B] time = 1.05, size = 370, normalized size = 2.06

$$6Ab^4d^4g^2ix^4 + 2\left((4A - B)b^4cd^3 + (8A + B)ab^3d^4\right)g^2ix^3 - \left(Bb^4c^2d^2 - 4(6A - B)ab^3cd^3 - (12A + 5B)a^2b^2d^4\right)g^2ix^2 + \dots$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorithm="fricas")

[Out] 1/24*(6*A*b^4*d^4*g^2*i*x^4 + 2*((4*A - B)*b^4*c*d^3 + (8*A + B)*a*b^3*d^4)*g^2*i*x^3 - (B*b^4*c^2*d^2 - 4*(6*A - B)*a*b^3*c*d^3 - (12*A + 5*B)*a^2*b^2*d^4)*g^2*i*x^2 + 2*(B*b^4*c^3*d - 4*B*a*b^3*c^2*d^2 + 2*(6*A + B)*a^2*b^2*c*d^3 + B*a^3*b*d^4)*g^2*i*x + 2*(4*B*a^3*b*c*d^3 - B*a^4*d^4)*g^2*i*log(b*x + a) - 2*(B*b^4*c^4 - 4*B*a*b^3*c^3*d + 6*B*a^2*b^2*c^2*d^2)*g^2*i*log(d*x + c) + 2*(3*B*b^4*d^4*g^2*i*x^4 + 12*B*a^2*b^2*c*d^3*g^2*i*x + 4*(B*b^4*c*d^3 + 2*B*a*b^3*d^4)*g^2*i*x^3 + 6*(2*B*a*b^3*c*d^3 + B*a^2*b^2*d^4)*g^2*i*x^2)*log((b*e*x + a*e)/(d*x + c))/(b^2*d^3)

giac [B] time = 1.19, size = 3993, normalized size = 22.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorithm="giac")

[Out] 1/24*(2*B*b^9*c^5*g^2*i*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 10*B*a*b^8*c^4*d*g^2*i*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 20*B*a^2*b^7*c^3*d^2*g^2*i*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 20*B*a^3*b^6*c^2*d^3*g^2*i*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 10*B*a^4*b^5*c*d^4*g^2*i*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 2*B*a^5*b^4*d^5*g^2*i*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 8*(b*x*e + a*e)*B*b^8*c^5*d*g^2*i*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 40*(b*x*e + a*e)*B*a*b^7*c^4*d^2*g^2*i*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) - 80*(b*x*e + a*e)*B*a^2*b^6*c^3*d^3*g^2*i*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c))

$$\begin{aligned}
& /((d*x + c) + 80*(b*x*e + a*e)*B*a^3*b^5*c^2*d^4*g^2*i*e^4*\log(-b*e + (b*x*e \\
& + a*e)*d/(d*x + c)))/(d*x + c) - 40*(b*x*e + a*e)*B*a^4*b^4*c*d^5*g^2*i*e^4 \\
& * \log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 8*(b*x*e + a*e)*B*a^5*b^ \\
& 3*d^6*g^2*i*e^4*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 12*(b*x*e \\
& + a*e)^2*B*b^7*c^5*d^2*g^2*i*e^3*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d* \\
& x + c)^2 - 60*(b*x*e + a*e)^2*B*a*b^6*c^4*d^3*g^2*i*e^3*\log(-b*e + (b*x*e + \\
& a*e)*d/(d*x + c))/(d*x + c)^2 + 120*(b*x*e + a*e)^2*B*a^2*b^5*c^3*d^4*g^2* \\
& i*e^3*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 120*(b*x*e + a*e) \\
& ^2*B*a^3*b^4*c^2*d^5*g^2*i*e^3*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + \\
& c)^2 + 60*(b*x*e + a*e)^2*B*a^4*b^3*c*d^6*g^2*i*e^3*\log(-b*e + (b*x*e + a* \\
& e)*d/(d*x + c))/(d*x + c)^2 - 12*(b*x*e + a*e)^2*B*a^5*b^2*d^7*g^2*i*e^3*lo \\
& g(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 8*(b*x*e + a*e)^3*B*b^6*c \\
& ^5*d^3*g^2*i*e^2*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 + 40*(b* \\
& x*e + a*e)^3*B*a*b^5*c^4*d^4*g^2*i*e^2*\log(-b*e + (b*x*e + a*e)*d/(d*x + c) \\
&)/(d*x + c)^3 - 80*(b*x*e + a*e)^3*B*a^2*b^4*c^3*d^5*g^2*i*e^2*\log(-b*e + (\\
& b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 + 80*(b*x*e + a*e)^3*B*a^3*b^3*c^2*d^ \\
& 6*g^2*i*e^2*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 - 40*(b*x*e + \\
& a*e)^3*B*a^4*b^2*c*d^7*g^2*i*e^2*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d* \\
& x + c)^3 + 8*(b*x*e + a*e)^3*B*a^5*b*d^8*g^2*i*e^2*\log(-b*e + (b*x*e + a*e) \\
& *d/(d*x + c))/(d*x + c)^3 + 2*(b*x*e + a*e)^4*B*b^5*c^5*d^4*g^2*i*e*\log(-b* \\
& e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 - 10*(b*x*e + a*e)^4*B*a*b^4*c^4 \\
& *d^5*g^2*i*e*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 + 20*(b*x*e \\
& + a*e)^4*B*a^2*b^3*c^3*d^6*g^2*i*e*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d \\
& *x + c)^4 - 20*(b*x*e + a*e)^4*B*a^3*b^2*c^2*d^7*g^2*i*e*\log(-b*e + (b*x*e \\
& + a*e)*d/(d*x + c))/(d*x + c)^4 + 10*(b*x*e + a*e)^4*B*a^4*b*c*d^8*g^2*i*e* \\
& \log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 - 2*(b*x*e + a*e)^4*B*a^5 \\
& *d^9*g^2*i*e*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 + 8*(b*x*e + \\
& a*e)^3*B*b^6*c^5*d^3*g^2*i*e^2*\log((b*x*e + a*e)/(d*x + c))/(d*x + c)^3 - \\
& 40*(b*x*e + a*e)^3*B*a*b^5*c^4*d^4*g^2*i*e^2*\log((b*x*e + a*e)/(d*x + c))/(\\
& d*x + c)^3 + 80*(b*x*e + a*e)^3*B*a^2*b^4*c^3*d^5*g^2*i*e^2*\log((b*x*e + a* \\
& e)/(d*x + c))/(d*x + c)^3 - 80*(b*x*e + a*e)^3*B*a^3*b^3*c^2*d^6*g^2*i*e^2* \\
& \log((b*x*e + a*e)/(d*x + c))/(d*x + c)^3 + 40*(b*x*e + a*e)^3*B*a^4*b^2*c*d \\
& ^7*g^2*i*e^2*\log((b*x*e + a*e)/(d*x + c))/(d*x + c)^3 - 8*(b*x*e + a*e)^3*B \\
& *a^5*b*d^8*g^2*i*e^2*\log((b*x*e + a*e)/(d*x + c))/(d*x + c)^3 - 2*(b*x*e + \\
& a*e)^4*B*b^5*c^5*d^4*g^2*i*e*\log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 + 10* \\
& (b*x*e + a*e)^4*B*a*b^4*c^4*d^5*g^2*i*e*\log((b*x*e + a*e)/(d*x + c))/(d*x + \\
& c)^4 - 20*(b*x*e + a*e)^4*B*a^2*b^3*c^3*d^6*g^2*i*e*\log((b*x*e + a*e)/(d*x \\
& + c))/(d*x + c)^4 + 20*(b*x*e + a*e)^4*B*a^3*b^2*c^2*d^7*g^2*i*e*\log((b*x* \\
& e + a*e)/(d*x + c))/(d*x + c)^4 - 10*(b*x*e + a*e)^4*B*a^4*b*c*d^8*g^2*i*e* \\
& \log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 + 2*(b*x*e + a*e)^4*B*a^5*d^9*g^2* \\
& i*e*\log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 + 2*A*b^9*c^5*g^2*i*e^5 + B*b^ \\
& 9*c^5*g^2*i*e^5 - 10*A*a*b^8*c^4*d*g^2*i*e^5 - 5*B*a*b^8*c^4*d*g^2*i*e^5 + \\
& 20*A*a^2*b^7*c^3*d^2*g^2*i*e^5 + 10*B*a^2*b^7*c^3*d^2*g^2*i*e^5 - 20*A*a^3* \\
& b^6*c^2*d^3*g^2*i*e^5 - 10*B*a^3*b^6*c^2*d^3*g^2*i*e^5 + 10*A*a^4*b^5*c*d^4 \\
& *g^2*i*e^5 + 5*B*a^4*b^5*c*d^4*g^2*i*e^5 - 2*A*a^5*b^4*d^5*g^2*i*e^5 - B*a^
\end{aligned}$$

$$\begin{aligned}
& 5*b^4*d^5*g^2*i^e^5 - 8*(b*x*e + a*e)*A*b^8*c^5*d*g^2*i^e^4/(d*x + c) - 2*(\\
& b*x*e + a*e)*B*b^8*c^5*d*g^2*i^e^4/(d*x + c) + 40*(b*x*e + a*e)*A*a*b^7*c^4 \\
& *d^2*g^2*i^e^4/(d*x + c) + 10*(b*x*e + a*e)*B*a*b^7*c^4*d^2*g^2*i^e^4/(d*x \\
& + c) - 80*(b*x*e + a*e)*A*a^2*b^6*c^3*d^3*g^2*i^e^4/(d*x + c) - 20*(b*x*e + \\
& a*e)*B*a^2*b^6*c^3*d^3*g^2*i^e^4/(d*x + c) + 80*(b*x*e + a*e)*A*a^3*b^5*c^ \\
& 2*d^4*g^2*i^e^4/(d*x + c) + 20*(b*x*e + a*e)*B*a^3*b^5*c^2*d^4*g^2*i^e^4/(d \\
& *x + c) - 40*(b*x*e + a*e)*A*a^4*b^4*c*d^5*g^2*i^e^4/(d*x + c) - 10*(b*x*e \\
& + a*e)*B*a^4*b^4*c*d^5*g^2*i^e^4/(d*x + c) + 8*(b*x*e + a*e)*A*a^5*b^3*d^6* \\
& g^2*i^e^4/(d*x + c) + 2*(b*x*e + a*e)*B*a^5*b^3*d^6*g^2*i^e^4/(d*x + c) + 1 \\
& 2*(b*x*e + a*e)^2*A*b^7*c^5*d^2*g^2*i^e^3/(d*x + c)^2 - (b*x*e + a*e)^2*B*b \\
& ^7*c^5*d^2*g^2*i^e^3/(d*x + c)^2 - 60*(b*x*e + a*e)^2*A*a*b^6*c^4*d^3*g^2*i^e \\
& ^3/(d*x + c)^2 + 5*(b*x*e + a*e)^2*B*a*b^6*c^4*d^3*g^2*i^e^3/(d*x + c)^2 \\
& + 120*(b*x*e + a*e)^2*A*a^2*b^5*c^3*d^4*g^2*i^e^3/(d*x + c)^2 - 10*(b*x*e + \\
& a*e)^2*B*a^2*b^5*c^3*d^4*g^2*i^e^3/(d*x + c)^2 - 120*(b*x*e + a*e)^2*A*a^3 \\
& *b^4*c^2*d^5*g^2*i^e^3/(d*x + c)^2 + 10*(b*x*e + a*e)^2*B*a^3*b^4*c^2*d^5*g \\
& ^2*i^e^3/(d*x + c)^2 + 60*(b*x*e + a*e)^2*A*a^4*b^3*c*d^6*g^2*i^e^3/(d*x + \\
& c)^2 - 5*(b*x*e + a*e)^2*B*a^4*b^3*c*d^6*g^2*i^e^3/(d*x + c)^2 - 12*(b*x*e \\
& + a*e)^2*A*a^5*b^2*d^7*g^2*i^e^3/(d*x + c)^2 + (b*x*e + a*e)^2*B*a^5*b^2*d^ \\
& 7*g^2*i^e^3/(d*x + c)^2 + 2*(b*x*e + a*e)^3*B*b^6*c^5*d^3*g^2*i^e^2/(d*x + \\
& c)^3 - 10*(b*x*e + a*e)^3*B*a*b^5*c^4*d^4*g^2*i^e^2/(d*x + c)^3 + 20*(b*x*e \\
& + a*e)^3*B*a^2*b^4*c^3*d^5*g^2*i^e^2/(d*x + c)^3 - 20*(b*x*e + a*e)^3*B*a^ \\
& 3*b^3*c^2*d^6*g^2*i^e^2/(d*x + c)^3 + 10*(b*x*e + a*e)^3*B*a^4*b^2*c*d^7*g^ \\
& 2*i^e^2/(d*x + c)^3 - 2*(b*x*e + a*e)^3*B*a^5*b*d^8*g^2*i^e^2/(d*x + c)^3)* \\
& (b*c/((b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))/(b^ \\
& 6*d^3*e^4 - 4*(b*x*e + a*e)*b^5*d^4*e^3/(d*x + c) + 6*(b*x*e + a*e)^2*b^4*d \\
& ^5*e^2/(d*x + c)^2 - 4*(b*x*e + a*e)^3*b^3*d^6*e/(d*x + c)^3 + (b*x*e + a*e \\
&)^4*b^2*d^7/(d*x + c)^4)
\end{aligned}$$

maple [B] time = 0.16, size = 4593, normalized size = 25.52

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{int}((b*g*x+a*g)^2*(d*i*x+c*i)*(B*\ln((b*x+a)/(d*x+c)*e)+A), x)$

[Out] $1/12/d^3*B*g^2*i*b^2*\ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c^4+1/12*d*B* \\ g^2*i/b^2*\ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a^4+1/2/d*B*g^2*i*\ln(-b* \\ e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a^2*c^2-1/3*B*g^2*i/b*\ln(-b*e+(b/d*e+(a* \\ d-b*c)/(d*x+c)/d*e)*d)*a^3*c-1/3*e*B*g^2*i/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e \\)*a^3*c+5/24*d*e^2*B*g^2*i/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^4+1/2*d*e^ \\ 2*A*g^2*i/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^4+1/12*d*e*B*g^2*i/b/(1/(d* \\ x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^4+1/12*d*e^3*B*g^2*i*b/(1/(d*x+c)*a*d*e-1/(d* \\ x+c)*b*c*e)^3*a^4+1/12/d^3*e*B*g^2*i*b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)* \\ c^4+2/3*d*e^3*A*g^2*i*b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^4+2/3/d^3*e^3 \\ *A*g^2*i*b^5/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*c^4+1/4/d^3*e^4*A*g^2*i*b^$

$$\begin{aligned}
& 6/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*c^4+5/24/d^3*e^2*B*g^2*i/(1/(d*x+c)*a \\
& *d*e-1/(d*x+c)*b*c*e)^2*b^4*c^4+1/2/d^3*e^2*A*g^2*i/(1/(d*x+c)*a*d*e-1/(d*x \\
& +c)*b*c*e)^2*b^4*c^4+1/12/d^3*e^3*B*g^2*i*b^5/(1/(d*x+c)*a*d*e-1/(d*x+c)*b* \\
& c*e)^3*c^4+1/4*d*e^4*A*g^2*i*b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^4-1/ \\
& 3*e^3*B*g^2*i*b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^3*c-5/6*e^2*B*g^2*i \\
& /(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^3*b*c-2*e^2*A*g^2*i/(1/(d*x+c)*a*d*e \\
& -1/(d*x+c)*b*c*e)^2*a^3*b*c-8/3*e^3*A*g^2*i*b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)* \\
& b*c*e)^3*a^3*c-e^4*A*g^2*i*b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^3*c+1/ \\
& 2*d*e^2*B*g^2*i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)* \\
& b*c*e)^2*a^4-1/3/d^2*B*g^2*i*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a*c^3 \\
& *b-1/2/d^3*e^2*B*g^2*i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^4/(1/(d*x+c)*a*d*e \\
& -1/(d*x+c)*b*c*e)^2*c^6/(d*x+c)^2+14*e^4*B*g^2*i*b^3*ln(b/d*e+(a*d-b*c)/(d* \\
& x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^3*c^5/(d*x+c)^4+10*e^2*B*g^ \\
& 2*i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^3 \\
& *c^3/(d*x+c)^2*b+70/3*e^3*B*g^2*i*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d \\
& *x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^3*c^4/(d*x+c)^3-2/3/d^3*e^3*B*g^2*i*b^5*ln \\
& (b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*c^7/(d*x+ \\
& c)^3+4/d*e^3*B*g^2*i*b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1 \\
& /d*x+c)*b*c*e)^3*a^2*c^2-8/3/d^2*e^3*B*g^2*i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d* \\
& e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a*b^4*c^3-1/d^2*e^4*B*g^2*i*ln(b/d*e \\
& +(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a*b^5*c^3+3/d*e \\
& ^2*B*g^2*i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b \\
& *c*e)^2*a^2*c^2+2/3*d^4*e^3*B*g^2*i/b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/ \\
& (d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^7/(d*x+c)^3-1/4*d^5*e^4*B*g^2*i/b^2*ln(b \\
& /d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^8/(d*x+c) \\
& ^4+3/2/d*e^4*B*g^2*i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d* \\
& x+c)*b*c*e)^4*a^2*c^2*b^4-14/d*e^3*B*g^2*i*b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d \\
& *e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^2*c^5/(d*x+c)^3-7/d*e^4*B*g^2*i*b \\
& ^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*c^6/ \\
& (d*x+c)^4*a^2-15/2/d*e^2*B*g^2*i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2/(1/(d* \\
& x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*c^4/(d*x+c)^2*a^2+14*d^2*e^4*B*g^2*i*ln(b/d*e \\
& +(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^5*c^3/(d*x+c) \\
& ^4*b-35/2*d*e^4*B*g^2*i*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d* \\
& e-1/(d*x+c)*b*c*e)^4*a^4*c^4/(d*x+c)^4+3*d^2*e^2*B*g^2*i*ln(b/d*e+(a*d-b*c) \\
& /d*x+c)/d*e)/b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^5*c/(d*x+c)^2+2/d^2*e \\
& ^4*B*g^2*i*b^5*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b \\
& *c*e)^4*c^7/(d*x+c)^4*a+3/d^2*e^2*B*g^2*i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b \\
& ^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*c^5/(d*x+c)^2*a+14/3/d^2*e^3*B*g^2*i \\
& *b^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*c^ \\
& 6/(d*x+c)^3*a-70/3*d*e^3*B*g^2*i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c) \\
& *a*d*e-1/(d*x+c)*b*c*e)^3*a^4*c^3/(d*x+c)^3*b-14/3*d^3*e^3*B*g^2*i/b*ln(b/d \\
& *e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^6/(d*x+c)^3 \\
& *c+2*d^4*e^4*B*g^2*i/b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(\\
& d*x+c)*b*c*e)^4*a^7/(d*x+c)^4*c+14*d^2*e^3*B*g^2*i*ln(b/d*e+(a*d-b*c)/(d*x+ \\
& c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^5*c^2/(d*x+c)^3-7*d^3*e^4*B*g
\end{aligned}$$

$\log(bex/(dx + c) + a/(dx + c)) - a^2 \log(bx + a)/b^2 + c^2 \log(dx + c)/d^2 - (bc - ad)x/(bd) * B * a^2 * d * g^2 * i + 1/3 * (2 * x^3 * \log(bex/(dx + c) + a/(dx + c)) + 2 * a^3 * \log(bx + a)/b^3 - 2 * c^3 * \log(dx + c)/d^3 - ((b^2 * cd - a * b * d^2) * x^2 - 2 * (b^2 * c^2 - a^2 * d^2) * x) / (b^2 * d^2)) * B * a * b * d * g^2 * i + 1/24 * (6 * x^4 * \log(bex/(dx + c) + a/(dx + c)) - 6 * a^4 * \log(bx + a)/b^4 + 6 * c^4 * \log(dx + c)/d^4 - (2 * (b^3 * cd^2 - a * b^2 * d^3) * x^3 - 3 * (b^3 * c^2 * d - a^2 * b * d^3) * x^2 + 6 * (b^3 * c^3 - a^3 * d^3) * x) / (b^3 * d^3)) * B * b^2 * d * g^2 * i + A * a^2 * c * g^2 * i * x$

mupad [B] time = 5.11, size = 638, normalized size = 3.54

$$x^3 \left(\frac{bg^2i(12Aad+8Abc+Bad-Bbc)}{12} - \frac{Abg^2i(12ad+12bc)}{36} \right) - x^2 \left(\frac{\left(\frac{bg^2i(12Aad+8Abc+Bad-Bbc)}{4} - \frac{Abg^2i(12ad+12bc)}{24b} \right)}{24b} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a*g + b*g*x)^2*(c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x))),x)

[Out] $x^3 * ((b * g^2 * i * (12 * A * a * d + 8 * A * b * c + B * a * d - B * b * c)) / 12 - (A * b * g^2 * i * (12 * a * d + 12 * b * c)) / 36) - x^2 * (((b * g^2 * i * (12 * A * a * d + 8 * A * b * c + B * a * d - B * b * c)) / 4 - (A * b * g^2 * i * (12 * a * d + 12 * b * c)) / 12) * (12 * a * d + 12 * b * c)) / (24 * b * d) - (g^2 * i * (9 * A * a^2 * d^2 + 3 * A * b^2 * c^2 + 2 * B * a^2 * d^2 - B * b^2 * c^2 + 18 * A * a * b * c * d - B * a * b * c * d)) / (6 * d) + (A * a * b * c * g^2 * i) / 2 + \log((e * (a + b * x)) / (c + d * x)) * (B * a^2 * c * g^2 * i * x + (B * a * g^2 * i * x^2 * (a * d + 2 * b * c)) / 2 + (B * b * g^2 * i * x^3 * (2 * a * d + b * c)) / 3 + (B * b^2 * d * g^2 * i * x^4) / 4) + x * (((12 * a * d + 12 * b * c) * (((b * g^2 * i * (12 * A * a * d + 8 * A * b * c + B * a * d - B * b * c)) / 4 - (A * b * g^2 * i * (12 * a * d + 12 * b * c)) / 12) * (12 * a * d + 12 * b * c)) / (12 * b * d) - (g^2 * i * (9 * A * a^2 * d^2 + 3 * A * b^2 * c^2 + 2 * B * a^2 * d^2 - B * b^2 * c^2 + 18 * A * a * b * c * d - B * a * b * c * d)) / (3 * d) + A * a * b * c * g^2 * i) / (12 * b * d) - (a * c * ((b * g^2 * i * (12 * A * a * d + 8 * A * b * c + B * a * d - B * b * c)) / 4 - (A * b * g^2 * i * (12 * a * d + 12 * b * c)) / 12)) / (b * d) + (a * g^2 * i * (2 * A * a^2 * d^2 + 6 * A * b^2 * c^2 + B * a^2 * d^2 - 2 * B * b^2 * c^2 + 12 * A * a * b * c * d + B * a * b * c * d)) / (2 * b * d) - (\log(c + d * x) * (B * b^2 * c^4 * g^2 * i + 6 * B * a^2 * c^2 * d^2 * g^2 * i - 4 * B * a * b * c^3 * d * g^2 * i)) / (12 * d^3) - (\log(a + b * x) * (B * a^4 * d * g^2 * i - 4 * B * a^3 * b * c * g^2 * i)) / (12 * b^2) + (A * b^2 * d * g^2 * i * x^4) / 4$

sympy [B] time = 5.11, size = 850, normalized size = 4.72

$$\frac{Ab^2dg^2ix^4}{4} - \frac{Ba^3g^2i(ad-4bc) \log \left(x + \frac{Ba^4cd^3g^2i + \frac{Ba^4d^3g^2i(ad-4bc)}{b} - 10Ba^3bc^2d^2g^2i - Ba^3cd^2g^2i(ad-4bc) + 4Ba^2b^2c^3dg^2i - Bab^3c^4g^2i}{Ba^4d^4g^2i - 4Ba^3bcd^3g^2i - 6Ba^2b^2c^2d^2g^2i + 4Bab^3c^3dg^2i - Bb^4c^4g^2i} \right)}{12b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)**2*(d*i*x+c*i)*(A+B*ln(e*(b*x+a)/(d*x+c))),x)

[Out] $A*b**2*d*g**2*i*x**4/4 - B*a**3*g**2*i*(a*d - 4*b*c)*\log(x + (B*a**4*c*d**3*g**2*i + B*a**4*d**3*g**2*i*(a*d - 4*b*c)/b - 10*B*a**3*b*c**2*d**2*g**2*i - B*a**3*c*d**2*g**2*i*(a*d - 4*b*c) + 4*B*a**2*b**2*c**3*d*g**2*i - B*a*b**3*c**4*g**2*i)/(B*a**4*d**4*g**2*i - 4*B*a**3*b*c*d**3*g**2*i - 6*B*a**2*b**2*c**2*d**2*g**2*i + 4*B*a*b**3*c**3*d*g**2*i - B*b**4*c**4*g**2*i))/(12*b**2) - B*c**2*g**2*i*(6*a**2*d**2 - 4*a*b*c*d + b**2*c**2)*\log(x + (B*a**4*c*d**3*g**2*i - 10*B*a**3*b*c**2*d**2*g**2*i + 4*B*a**2*b**2*c**3*d*g**2*i - B*a*b**3*c**4*g**2*i + B*a*b*c**2*g**2*i*(6*a**2*d**2 - 4*a*b*c*d + b**2*c**2) - B*b**2*c**3*g**2*i*(6*a**2*d**2 - 4*a*b*c*d + b**2*c**2)/d)/(B*a**4*d**4*g**2*i - 4*B*a**3*b*c*d**3*g**2*i - 6*B*a**2*b**2*c**2*d**2*g**2*i + 4*B*a*b**3*c**3*d*g**2*i - B*b**4*c**4*g**2*i))/(12*d**3) + x**3*(2*A*a*b*d*g**2*i/3 + A*b**2*c*g**2*i/3 + B*a*b*d*g**2*i/12 - B*b**2*c*g**2*i/12) + x**2*(A*a**2*d*g**2*i/2 + A*a*b*c*g**2*i + 5*B*a**2*d*g**2*i/24 - B*a*b*c*g**2*i/6 - B*b**2*c**2*g**2*i/(24*d)) + x*(A*a**2*c*g**2*i + B*a**3*d*g**2*i/(12*b) + B*a**2*c*g**2*i/6 - B*a*b*c**2*g**2*i/(3*d) + B*b**2*c**3*g**2*i/(12*d**2)) + (B*a**2*c*g**2*i*x + B*a**2*d*g**2*i*x**2/2 + B*a*b*c*g**2*i*x**2 + 2*B*a*b*d*g**2*i*x**3/3 + B*b**2*c*g**2*i*x**3/3 + B*b**2*d*g**2*i*x**4/4)*\log(e*(a + b*x)/(c + d*x))$

3.3 $\int (ag + bgx)(ci + dix) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) dx$

Optimal. Leaf size=140

$$\frac{gi(a+bx)^2(bc-ad) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A - B \right)}{6b^2} + \frac{gi(a+bx)^2(c+dx) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{3b} + \frac{Bgi(bc-ad)^3 \log(c+dx)}{6b^2d^2}$$

[Out] $-1/6*B*(-a*d+b*c)^2*g*i*x/b/d+1/3*g*i*(b*x+a)^2*(d*x+c)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b+1/6*(-a*d+b*c)*g*i*(b*x+a)^2*(A-B+B*\ln(e*(b*x+a)/(d*x+c)))/b^2+1/6*B*(-a*d+b*c)^3*g*i*\ln(d*x+c)/b^2/d^2$

Rubi [B] time = 0.34, antiderivative size = 294, normalized size of antiderivative = 2.10, number of steps used = 13, number of rules used = 6, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = {2528, 2486, 31, 2525, 12, 72}

$$-\frac{1}{3}bBdgix \left(\frac{a^2}{b^2} - \frac{c^2}{d^2} \right) - \frac{a^2Bgi(ad+bc) \log(a+bx)}{2b^2} + \frac{a^3Bdgi \log(a+bx)}{3b^2} + \frac{1}{3}bdgix^3 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right) + \frac{1}{2}gi$$

Antiderivative was successfully verified.

[In] `Int[(a*g + b*g*x)*(c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]),x]`

[Out] $a*A*c*g*i*x - (b*B*(a^2/b^2 - c^2/d^2)*d*g*i*x)/3 - (B*(b*c - a*d)*(b*c + a*d)*g*i*x)/(2*b*d) - (B*(b*c - a*d)*g*i*x^2)/6 + (a^3*B*d*g*i*Log[a + b*x])/(3*b^2) - (a^2*B*(b*c + a*d)*g*i*Log[a + b*x])/(2*b^2) + (a*B*c*g*i*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)]/b + ((b*c + a*d)*g*i*x^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/2 + (b*d*g*i*x^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/3 - (b*B*c^3*g*i*Log[c + d*x])/(3*d^2) - (a*B*c*(b*c - a*d)*g*i*Log[c + d*x])/(b*d) + (B*c^2*(b*c + a*d)*g*i*Log[c + d*x])/(2*d^2)$

Rule 12

`Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]`

Rule 31

`Int[((a_) + (b_.)*(x_))^(p_-1), x_Symbol] := Simp[Log[RemoveContent[a + b*x, x]]/b, x] /; FreeQ[{a, b}, x]`

Rule 72

`Int[((e_.) + (f_.)*(x_))^(p_.)/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] := Int[ExpandIntegrand[(e + f*x)^p/((a + b*x)*(c + d*x)), x], x]`

```
;/ FreeQ[{a, b, c, d, e, f}, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] := Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q]^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunci
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int (3c + 3dx)(ag + bgx) \left(A + B \log \left(\frac{e(a + bx)}{c + dx} \right) \right) dx &= \int \left(3acg \left(A + B \log \left(\frac{e(a + bx)}{c + dx} \right) \right) + 3(bc + ad)gx \left(A + B \log \left(\frac{e(a + bx)}{c + dx} \right) \right) \right) dx \\
&= (3acg) \int \left(A + B \log \left(\frac{e(a + bx)}{c + dx} \right) \right) dx + (3bdg) \int x^2 \left(A + B \log \left(\frac{e(a + bx)}{c + dx} \right) \right) dx \\
&= 3aAcgx + \frac{3}{2}(bc + ad)gx^2 \left(A + B \log \left(\frac{e(a + bx)}{c + dx} \right) \right) + bdg \int x^2 \left(A + B \log \left(\frac{e(a + bx)}{c + dx} \right) \right) dx \\
&= 3aAcgx + \frac{3aBcg(a + bx) \log \left(\frac{e(a + bx)}{c + dx} \right)}{b} + \frac{3}{2}(bc + ad)gx^2 \left(A + B \log \left(\frac{e(a + bx)}{c + dx} \right) \right) \\
&= 3aAcgx + \frac{3aBcg(a + bx) \log \left(\frac{e(a + bx)}{c + dx} \right)}{b} + \frac{3}{2}(bc + ad)gx^2 \left(A + B \log \left(\frac{e(a + bx)}{c + dx} \right) \right) \\
&= 3aAcgx - \frac{B(bc - ad)(bc + ad)gx}{2bd} - \frac{1}{2}B(bc - ad)gx^2 + \frac{a^3}{2}
\end{aligned}$$

Mathematica [A] time = 0.24, size = 181, normalized size = 1.29

$$\frac{gi \left(b \left(dx \left(a^2 B d^2 + abd(6Ac + 3Adx + Bdx) + Ab^2 dx(3c + 2dx) + b^2(-B)c(c + dx) \right) + Bc \left(6a^2 d^2 - 3abcd + b^2 c^2 \right) \right)}{6b^2 d^2}$$

Antiderivative was successfully verified.

[In] Integrate[(a*g + b*g*x)*(c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]), x]

[Out] (g*i*(-(a^2*B*d^2*(3*b*c + a*d)*Log[a + b*x]) + b*(d*x*(a^2*B*d^2 - b^2*B*c*(c + d*x) + A*b^2*d*x*(3*c + 2*d*x) + a*b*d*(6*A*c + 3*A*d*x + B*d*x)) + B*d^2*(6*a^2*c + 3*a*b*x*(2*c + d*x) + b^2*x^2*(3*c + 2*d*x))*Log[(e*(a + b*x))/(c + d*x)] + B*c*(b^2*c^2 - 3*a*b*c*d + 6*a^2*d^2)*Log[c + d*x]))/(6*b^2*d^2)

fricas [A] time = 0.83, size = 226, normalized size = 1.61

$$\frac{2Ab^3d^3gix^3 + ((3A - B)b^3cd^2 + (3A + B)ab^2d^3)gix^2 - (Bb^3c^2d - 6Aab^2cd^2 - Ba^2bd^3)gix + (3Ba^2bcd^2 - Ba^3)}{6b^2d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorithm="fricas")

```
[Out] 1/6*(2*A*b^3*d^3*g*i*x^3 + ((3*A - B)*b^3*c*d^2 + (3*A + B)*a*b^2*d^3)*g*i*x^2 - (B*b^3*c^2*d - 6*A*a*b^2*c*d^2 - B*a^2*b*d^3)*g*i*x + (3*B*a^2*b*c*d^2 - B*a^3*d^3)*g*i*log(b*x + a) + (B*b^3*c^3 - 3*B*a*b^2*c^2*d)*g*i*log(d*x + c) + (2*B*b^3*d^3*g*i*x^3 + 6*B*a*b^2*c*d^2*g*i*x + 3*(B*b^3*c*d^2 + B*a*b^2*d^3)*g*i*x^2)*log((b*e*x + a*e)/(d*x + c)))/(b^2*d^2)
```

giac [B] time = 0.85, size = 2404, normalized size = 17.17

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorithm="giac")
```

```
[Out] -1/6*(B*b^7*c^4*g*i*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 4*B*a*b^6*c^3*d*g*i*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 6*B*a^2*b^5*c^2*d^2*g*i*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 4*B*a^3*b^4*c*d^3*g*i*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + B*a^4*b^3*d^4*g*i*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 3*(b*x*e + a*e)*B*b^6*c^4*d*g*i*e^3*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 12*(b*x*e + a*e)*B*a*b^5*c^3*d^2*g*i*e^3*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) - 18*(b*x*e + a*e)*B*a^2*b^4*c^2*d^3*g*i*e^3*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 12*(b*x*e + a*e)*B*a^3*b^3*c*d^4*g*i*e^3*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) - 3*(b*x*e + a*e)*B*a^4*b^2*d^5*g*i*e^3*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 3*(b*x*e + a*e)^2*B*b^5*c^4*d^2*g*i*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 12*(b*x*e + a*e)^2*B*a*b^4*c^3*d^3*g*i*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 + 18*(b*x*e + a*e)^2*B*a^2*b^3*c^2*d^4*g*i*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 12*(b*x*e + a*e)^2*B*a^3*b^2*c*d^5*g*i*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 + 3*(b*x*e + a*e)^2*B*a^4*b*d^6*g*i*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - (b*x*e + a*e)^3*B*b^4*c^4*d^3*g*i*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 + 4*(b*x*e + a*e)^3*B*a*b^3*c^3*d^4*g*i*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 - 6*(b*x*e + a*e)^3*B*a^2*b^2*c^2*d^5*g*i*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 + 4*(b*x*e + a*e)^3*B*a^3*b*c*d^6*g*i*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 - (b*x*e + a*e)^3*B*a^4*d^7*g*i*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 - 3*(b*x*e + a*e)^2*B*b^5*c^4*d^2*g*i*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 + 12*(b*x*e + a*e)^2*B*a*b^4*c^3*d^3*g*i*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 - 18*(b*x*e + a*e)^2*B*a^2*b^3*c^2*d^4*g*i*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 + 12*(b*x*e + a*e)^2*B*a^3*b^2*c*d^5*g*i*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 - 3*(b*x*e + a*e)^2*B*a^4*b*d^6*g*i*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 + (b*x*e + a*e)^3*B*b^4*c^4*d^3*g*i*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^3 - 4*(b*x*e + a*e)^3*B*a*b^3*c^3*d^4*g*i*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^3 + 6*(b*x*e + a*e)^3*B*a^2*b^2*c^2*d^5*g*i*e*log((b
```

$$\begin{aligned} & x^*e + a^*e)/(d*x + c))/(d*x + c)^3 - 4*(b*x^*e + a^*e)^3*B^*a^3*b^*c*d^6*g^*i^*e^1 \\ & \log((b*x^*e + a^*e)/(d*x + c))/(d*x + c)^3 + (b*x^*e + a^*e)^3*B^*a^4*d^7*g^*i^*e^1 \\ & \log((b*x^*e + a^*e)/(d*x + c))/(d*x + c)^3 + A*b^7*c^4*g^*i^*e^4 - 4*A^*a*b^6*c^3 \\ & *d*g^*i^*e^4 + 6*A^*a^2*b^5*c^2*d^2*g^*i^*e^4 - 4*A^*a^3*b^4*c*d^3*g^*i^*e^4 + A^*a^ \\ & 4*b^3*d^4*g^*i^*e^4 - 3*(b*x^*e + a^*e)*A*b^6*c^4*d*g^*i^*e^3/(d*x + c) + (b*x^*e \\ & + a^*e)*B*b^6*c^4*d*g^*i^*e^3/(d*x + c) + 12*(b*x^*e + a^*e)*A^*a*b^5*c^3*d^2*g^*i \\ & *e^3/(d*x + c) - 4*(b*x^*e + a^*e)*B^*a*b^5*c^3*d^2*g^*i^*e^3/(d*x + c) - 18*(b^* \\ & x^*e + a^*e)*A^*a^2*b^4*c^2*d^3*g^*i^*e^3/(d*x + c) + 6*(b*x^*e + a^*e)*B^*a^2*b^4 \\ & c^2*d^3*g^*i^*e^3/(d*x + c) + 12*(b*x^*e + a^*e)*A^*a^3*b^3*c*d^4*g^*i^*e^3/(d*x + \\ & c) - 4*(b*x^*e + a^*e)*B^*a^3*b^3*c*d^4*g^*i^*e^3/(d*x + c) - 3*(b*x^*e + a^*e)*A \\ & *a^4*b^2*d^5*g^*i^*e^3/(d*x + c) + (b*x^*e + a^*e)*B^*a^4*b^2*d^5*g^*i^*e^3/(d*x + \\ & c) - (b*x^*e + a^*e)^2*B*b^5*c^4*d^2*g^*i^*e^2/(d*x + c)^2 + 4*(b*x^*e + a^*e)^2 \\ & *B^*a*b^4*c^3*d^3*g^*i^*e^2/(d*x + c)^2 - 6*(b*x^*e + a^*e)^2*B^*a^2*b^3*c^2*d^4 \\ & g^*i^*e^2/(d*x + c)^2 + 4*(b*x^*e + a^*e)^2*B^*a^3*b^2*c*d^5*g^*i^*e^2/(d*x + c)^2 \\ & - (b*x^*e + a^*e)^2*B^*a^4*b*d^6*g^*i^*e^2/(d*x + c)^2*(b*c/((b*c^*e - a*d^*e)*(\\ & b*c - a*d)) - a*d/((b*c^*e - a*d^*e)*(b*c - a*d)))/(b^5*d^2*e^3 - 3*(b*x^*e + \\ & a^*e)*b^4*d^3*e^2/(d*x + c) + 3*(b*x^*e + a^*e)^2*b^3*d^4*e/(d*x + c)^2 - (b^* \\ & x^*e + a^*e)^3*b^2*d^5/(d*x + c)^3 \end{aligned}$$

maple [B] time = 0.14, size = 2407, normalized size = 17.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{int}((b^*g^*x+a^*g)*(d^*i^*x+c^*i)*(B^*\ln((b^*x+a)/(d^*x+c)^*e)+A),x)$

[Out]
$$\begin{aligned} & -1/6/d^2*B^*g^*i^*\ln(-b^*e+(b/d^*e+(a*d-b^*c)/(d^*x+c)/d^*e)*d)*c^3*b^{-1/2}*B^*g^*i/b^*1 \\ & n(-b^*e+(b/d^*e+(a*d-b^*c)/(d^*x+c)/d^*e)*d)*a^2*c+1/6*d^*e*B^*g^*i/b/(1/(d^*x+c)*a^* \\ & d^*e-1/(d^*x+c)*b^*c^*e)*a^3+1/3*d^*e^3*A^*g^*i^*b/(1/(d^*x+c)*a^*d^*e-1/(d^*x+c)*b^*c^*e \\ &)^3*a^3+1/2*d^*e^2*B^*g^*i^*\ln(b/d^*e+(a*d-b^*c)/(d^*x+c)/d^*e)/(1/(d^*x+c)*a^*d^*e-1/ \\ & (d^*x+c)*b^*c^*e)^2*a^3-1/3/d^2*e^3*A^*g^*i^*b^4/(1/(d^*x+c)*a^*d^*e-1/(d^*x+c)*b^*c^*e \\ &)^3*c^3-1/2/d^2*e^2*A^*g^*i/(1/(d^*x+c)*a^*d^*e-1/(d^*x+c)*b^*c^*e)^2*b^3*c^3-1/6/d \\ & ^2*e^*B^*g^*i^*b^2/(1/(d^*x+c)*a^*d^*e-1/(d^*x+c)*b^*c^*e)*c^3-1/6/d^2*e^2*B^*g^*i/(1/(\\ & d^*x+c)*a^*d^*e-1/(d^*x+c)*b^*c^*e)^2*b^3*c^3-3/2*e^2*A^*g^*i/(1/(d^*x+c)*a^*d^*e-1/(d \\ & *x+c)*b^*c^*e)^2*a^2*b^*c-1/2*e^2*B^*g^*i/(1/(d^*x+c)*a^*d^*e-1/(d^*x+c)*b^*c^*e)^2*a^ \\ & 2*b^*c-e^3*A^*g^*i^*b^2/(1/(d^*x+c)*a^*d^*e-1/(d^*x+c)*b^*c^*e)^3*a^2*c+1/2*d^*e^2*A^*g^* \\ & *i/(1/(d^*x+c)*a^*d^*e-1/(d^*x+c)*b^*c^*e)^2*a^3+1/6*d^*e^2*B^*g^*i/(1/(d^*x+c)*a^*d^*e \\ & -1/(d^*x+c)*b^*c^*e)^2*a^3+1/6*d^*B^*g^*i/b^2*\ln(-b^*e+(b/d^*e+(a*d-b^*c)/(d^*x+c)/d^* \\ & e)*d)*a^3+1/2/d^*B^*g^*i^*\ln(-b^*e+(b/d^*e+(a*d-b^*c)/(d^*x+c)/d^*e)*d)*c^2*a^{-1/2}*e^* \\ & B^*g^*i/(1/(d^*x+c)*a^*d^*e-1/(d^*x+c)*b^*c^*e)*a^2*c-2/d^*e^3*B^*g^*i^*\ln(b/d^*e+(a*d-b^* \\ & c)/(d^*x+c)/d^*e)/(1/(d^*x+c)*a^*d^*e-1/(d^*x+c)*b^*c^*e)^3*c^5/(d^*x+c)^3*b^3*a+5/ \\ & 2*d^2*e^2*B^*g^*i^*\ln(b/d^*e+(a*d-b^*c)/(d^*x+c)/d^*e)/b/(1/(d^*x+c)*a^*d^*e-1/(d^*x+c \\ &)*b^*c^*e)^2*a^4*c/(d^*x+c)^2-5/2/d^*e^2*B^*g^*i^*\ln(b/d^*e+(a*d-b^*c)/(d^*x+c)/d^*e)* \\ & b^2/(1/(d^*x+c)*a^*d^*e-1/(d^*x+c)*b^*c^*e)^2*a^*c^4/(d^*x+c)^2-2*d^3*e^3*B^*g^*i/b^*1 \\ & n(b/d^*e+(a*d-b^*c)/(d^*x+c)/d^*e)/(1/(d^*x+c)*a^*d^*e-1/(d^*x+c)*b^*c^*e)^3*a^5*c/(d \end{aligned}$$

```

*x+c)^3-20/3*d*e^3*B*g*i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1
/(d*x+c)*b*c*e)^3*a^3*c^3/(d*x+c)^3*b-1/2*d^3*e^2*B*g*i*ln(b/d*e+(a*d-b*c)/
(d*x+c)/d*e)/b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^5/(d*x+c)^2+1/3*d^4*
e^3*B*g*i/b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*
c*e)^3*a^6/(d*x+c)^3+1/d*e^3*B*g*i*b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(
d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a*c^2+3/2/d*e^2*B*g*i*ln(b/d*e+(a*d-b*c)/(d
*x+c)/d*e)*b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a*c^2-5*d*e^2*B*g*i*ln(b
/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^3*c^2/(d*
x+c)^2+5*d^2*e^3*B*g*i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(
d*x+c)*b*c*e)^3*a^4*c^2/(d*x+c)^3+1/3/d^2*e^3*B*g*i*ln(b/d*e+(a*d-b*c)/(d*x
+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*c^6/(d*x+c)^3*b^4+1/2/d^2*e^2*
B*g*i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*c
^5/(d*x+c)^2*b^3+5*e^3*B*g*i*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)
*a*d*e-1/(d*x+c)*b*c*e)^3*a^2*c^4/(d*x+c)^3+5*e^2*B*g*i*ln(b/d*e+(a*d-b*c)/
(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^2*c^3/(d*x+c)^2*b-3/2*e^
2*B*g*i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)
^2*a^2*c-1/2/d^2*e^2*B*g*i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e
-1/(d*x+c)*b*c*e)^2*c^3*b^3-1/3/d^2*e^3*B*g*i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*
e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*b^4*c^3+1/3*d*e^3*B*g*i*b*ln(b/d*e+(
a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^3+1/d*e^3*A*g*i
*b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*c^2*a+3/2/d*e^2*A*g*i/(1/(d*x+c)*a
*d*e-1/(d*x+c)*b*c*e)^2*b^2*c^2*a+1/2/d*e^2*B*g*i/(1/(d*x+c)*a*d*e-1/(d*x+c
)*b*c*e)^2*b^2*c^2*a-e^3*B*g*i*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+
c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^2*c+1/2/d*e*B*g*i*b/(1/(d*x+c)*a*d*e-1/(d*x+c
)*b*c*e)*c^2*a

```

maxima [B] time = 1.20, size = 361, normalized size = 2.58

$$\frac{1}{3} Abdgix^3 + \frac{1}{2} Abcgix^2 + \frac{1}{2} Aadgix^2 + \left(x \log \left(\frac{bex}{dx+c} + \frac{ae}{dx+c} \right) + \frac{a \log(bx+a)}{b} - \frac{c \log(dx+c)}{d} \right) Bacgi + \frac{1}{2} \left(x^2 \log \right.$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorithm="maxima")

[Out] 1/3*A*b*d*g*i*x^3 + 1/2*A*b*c*g*i*x^2 + 1/2*A*a*d*g*i*x^2 + (x*log(b*e*x/(d*x+c) + a*e/(d*x+c)) + a*log(b*x+a)/b - c*log(d*x+c)/d)*B*a*c*g*i + 1/2*(x^2*log(b*e*x/(d*x+c) + a*e/(d*x+c)) - a^2*log(b*x+a)/b^2 + c^2*log(d*x+c)/d^2 - (b*c-a*d)*x/(b*d))*B*b*c*g*i + 1/2*(x^2*log(b*e*x/(d*x+c) + a*e/(d*x+c)) - a^2*log(b*x+a)/b^2 + c^2*log(d*x+c)/d^2 - (b*c-a*d)*x/(b*d))*B*a*d*g*i + 1/6*(2*x^3*log(b*e*x/(d*x+c) + a*e/(d*x+c)) + 2*a^3*log(b*x+a)/b^3 - 2*c^3*log(d*x+c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*B*b*d*g*i + A*a*c*g*i*x

mupad [B] time = 4.71, size = 282, normalized size = 2.01

$$x^2 \left(\frac{gi(6Aad+6Abc+Bad-Bbc)}{6} - \frac{Agi(6ad+6bc)}{12} \right) - x \left(\frac{\left(\frac{gi(6Aad+6Abc+Bad-Bbc)}{3} - \frac{Agi(6ad+6bc)}{6} \right)}{6bd} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a*g + b*g*x)*(c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x))),x)

[Out] x^2*((g*i*(6*A*a*d + 6*A*b*c + B*a*d - B*b*c))/6 - (A*g*i*(6*a*d + 6*b*c))/12) - x*(((g*i*(6*A*a*d + 6*A*b*c + B*a*d - B*b*c))/3 - (A*g*i*(6*a*d + 6*b*c))/6)*(6*a*d + 6*b*c))/(6*b*d) + A*a*c*g*i - (g*i*(2*A*a^2*d^2 + 2*A*b^2*c^2 + B*a^2*d^2 - B*b^2*c^2 + 8*A*a*b*c*d))/(2*b*d) + log((e*(a + b*x))/(c + d*x))*((B*g*i*x^2*(a*d + b*c))/2 + (B*b*d*g*i*x^3)/3 + B*a*c*g*i*x) - (log(a + b*x)*(B*a^3*d*g*i - 3*B*a^2*b*c*g*i))/(6*b^2) + (log(c + d*x)*(B*b^3*c*g*i - 3*B*a*c^2*d*g*i))/(6*d^2) + (A*b*d*g*i*x^3)/3

sympy [B] time = 3.15, size = 498, normalized size = 3.56

$$\frac{Abdgi x^3}{3} - \frac{Ba^2 gi(ad - 3bc) \log \left(x + \frac{Ba^3 cd^2 gi + \frac{Ba^3 d^2 gi(ad - 3bc)}{b} - 6Ba^2 bc^2 d gi - Ba^2 cd gi(ad - 3bc) + Bab^2 c^3 gi}{Ba^3 d^3 gi - 3Ba^2 bcd^2 gi - 3Bab^2 c^2 d gi + Bb^3 c^3 gi} \right)}{6b^2} - \frac{Bc^2 gi(3ad - bc) \log \left(\dots \right)}{6b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(d*i*x+c*i)*(A+B*ln(e*(b*x+a)/(d*x+c))),x)

[Out] A*b*d*g*i*x**3/3 - B*a**2*g*i*(a*d - 3*b*c)*log(x + (B*a**3*c*d**2*g*i + B*a**3*d**2*g*i*(a*d - 3*b*c)/b - 6*B*a**2*b*c**2*d*g*i - B*a**2*c*d*g*i*(a*d - 3*b*c) + B*a*b**2*c**3*g*i)/(B*a**3*d**3*g*i - 3*B*a**2*b*c*d**2*g*i - 3*B*a*b**2*c**2*d*g*i + B*b**3*c**3*g*i))/(6*b**2) - B*c**2*g*i*(3*a*d - b*c)*log(x + (B*a**3*c*d**2*g*i - 6*B*a**2*b*c**2*d*g*i + B*a*b**2*c**3*g*i + B*a*b*c**2*g*i*(3*a*d - b*c) - B*b**2*c**3*g*i*(3*a*d - b*c)/d)/(B*a**3*d**3*g*i - 3*B*a**2*b*c*d**2*g*i - 3*B*a*b**2*c**2*d*g*i + B*b**3*c**3*g*i))/(6*d**2) + x**2*(A*a*d*g*i/2 + A*b*c*g*i/2 + B*a*d*g*i/6 - B*b*c*g*i/6) + x*(A*a*c*g*i + B*a**2*d*g*i/(6*b) - B*b*c**2*g*i/(6*d)) + (B*a*c*g*i*x + B*a*d*g*i*x**2/2 + B*b*c*g*i*x**2/2 + B*b*d*g*i*x**3/3)*log(e*(a + b*x)/(c + d*x))

3.4 $\int (ci + dix) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) dx$

Optimal. Leaf size=81

$$\frac{i(c+dx)^2 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{2d} - \frac{Bi(bc-ad)^2 \log(a+bx)}{2b^2d} - \frac{Bix(bc-ad)}{2b}$$

[Out] $-1/2*B*(-a*d+b*c)*i*x/b-1/2*B*(-a*d+b*c)^2*i*\ln(b*x+a)/b^2/d+1/2*i*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/d$

Rubi [A] time = 0.06, antiderivative size = 81, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.107$, Rules used = {2525, 12, 43}

$$\frac{i(c+dx)^2 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{2d} - \frac{Bi(bc-ad)^2 \log(a+bx)}{2b^2d} - \frac{Bix(bc-ad)}{2b}$$

Antiderivative was successfully verified.

[In] Int[(c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]), x]

[Out] $-(B*(b*c - a*d)*i*x)/(2*b) - (B*(b*c - a*d)^2*i*\text{Log}[a + b*x])/(2*b^2*d) + (i*(c + d*x)^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(2*d)$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 43

Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && (!IntegerQ[n] || (EqQ[c, 0] && LeQ[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])

Rule 2525

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||

giac [B] time = 0.67, size = 1395, normalized size = 17.22

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorithm="giac")

[Out] $\frac{1}{2}(B*b^5*c^3*i*e^3*\log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 3*B*a*b^4*c^2*d*i*e^3*\log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 3*B*a^2*b^3*c*d^2*i*e^3*\log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - B*a^3*b^2*d^3*i*e^3*\log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 2*(b*x*e + a*e)*B*b^4*c^3*d*i*e^2*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 6*(b*x*e + a*e)*B*a*b^3*c^2*d^2*i*e^2*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) - 6*(b*x*e + a*e)*B*a^2*b^2*c*d^3*i*e^2*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 2*(b*x*e + a*e)*B*a^3*b*d^4*i*e^2*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + (b*x*e + a*e)^2*B*b^3*c^3*d^2*i*e*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 3*(b*x*e + a*e)^2*B*a*b^2*c^2*d^3*i*e*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 + 3*(b*x*e + a*e)^2*B*a^2*b*c*d^4*i*e*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - (b*x*e + a*e)^2*B*a^3*d^5*i*e*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 + 2*(b*x*e + a*e)*B*b^4*c^3*d*i*e^2*\log((b*x*e + a*e)/(d*x + c))/(d*x + c) - 6*(b*x*e + a*e)*B*a*b^3*c^2*d^2*i*e^2*\log((b*x*e + a*e)/(d*x + c))/(d*x + c) + 6*(b*x*e + a*e)*B*a^2*b^2*c*d^3*i*e^2*\log((b*x*e + a*e)/(d*x + c))/(d*x + c) - 2*(b*x*e + a*e)*B*a^3*b*d^4*i*e^2*\log((b*x*e + a*e)/(d*x + c))/(d*x + c) - (b*x*e + a*e)^2*B*b^3*c^3*d^2*i*e*\log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 + 3*(b*x*e + a*e)^2*B*a*b^2*c^2*d^3*i*e*\log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 - 3*(b*x*e + a*e)^2*B*a^2*b*c*d^4*i*e*\log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 + (b*x*e + a*e)^2*B*a^3*d^5*i*e*\log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 + A*b^5*c^3*i*e^3 - B*b^5*c^3*i*e^3 - 3*A*a*b^4*c^2*d*i*e^3 + 3*B*a*b^4*c^2*d*i*e^3 + 3*A*a^2*b^3*c*d^2*i*e^3 - 3*B*a^2*b^3*c*d^2*i*e^3 - A*a^3*b^2*d^3*i*e^3 + B*a^3*b^2*d^3*i*e^3 + (b*x*e + a*e)*B*b^4*c^3*d*i*e^2/(d*x + c) - 3*(b*x*e + a*e)*B*a*b^3*c^2*d^2*i*e^2/(d*x + c) + 3*(b*x*e + a*e)*B*a^2*b^2*c*d^3*i*e^2/(d*x + c) - (b*x*e + a*e)*B*a^3*b*d^4*i*e^2/(d*x + c))*(b*c/((b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))/(b^4*d*e^2 - 2*(b*x*e + a*e)*b^3*d^2*e/(d*x + c) + (b*x*e + a*e)^2*b^2*d^3/(d*x + c)^2)$

maple [B] time = 0.13, size = 940, normalized size = 11.60

$$-\frac{B a^4 d^3 e^2 i \ln\left(\frac{b e}{d} + \frac{(a d - b c) e}{(d x + c) d}\right)}{2\left(\frac{a d e}{d x + c} - \frac{b c e}{d x + c}\right)^2 (d x + c)^2 b^2} + \frac{2 B a^3 c d^2 e^2 i \ln\left(\frac{b e}{d} + \frac{(a d - b c) e}{(d x + c) d}\right)}{\left(\frac{a d e}{d x + c} - \frac{b c e}{d x + c}\right)^2 (d x + c)^2 b} - \frac{3 B a^2 c^2 d e^2 i \ln\left(\frac{b e}{d} + \frac{(a d - b c) e}{(d x + c) d}\right)}{\left(\frac{a d e}{d x + c} - \frac{b c e}{d x + c}\right)^2 (d x + c)^2} + \frac{2 B a b c^3 e^2 i \ln\left(\frac{b e}{d} + \frac{(a d - b c) e}{(d x + c) d}\right)}{\left(\frac{a d e}{d x + c} - \frac{b c e}{d x + c}\right)^2 (d x + c)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*i*x+c*i)*(B*ln((b*x+a)/(d*x+c)*e)+A),x)

[Out] $\frac{1}{2}d^2e^{2Ai}/(1/(d*x+c)*a*d*e^{-1/(d*x+c)}*b*c*e)^2*a^2-e^{2Ai}/(1/(d*x+c)*a*d*e^{-1/(d*x+c)}*b*c*e)^2*a*b*c+1/2/d^2e^{2Ai}/(1/(d*x+c)*a*d*e^{-1/(d*x+c)}*b*c*e)^2*b^2*c^2+1/2*d*e*B*i/b/(1/(d*x+c)*a*d*e^{-1/(d*x+c)}*b*c*e)*a^2-e*B*i/(1/(d*x+c)*a*d*e^{-1/(d*x+c)}*b*c*e)*a*c+1/2/d*e*B*i/(1/(d*x+c)*a*d*e^{-1/(d*x+c)}*b*c*e)*c^2*b+1/2*d*B*i/b^2*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a^2-B*i/b*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a*c+1/2/d*B*i*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c^2+1/2*d*e^2*B*i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e^{-1/(d*x+c)}*b*c*e)^2*a^2-e^2*B*i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e^{-1/(d*x+c)}*b*c*e)^2*a*b*c-1/2*d^3*e^2*B*i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/b^2/(1/(d*x+c)*a*d*e^{-1/(d*x+c)}*b*c*e)^2*a^4/(d*x+c)^2+2*d^2*e^2*B*i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/b/(1/(d*x+c)*a*d*e^{-1/(d*x+c)}*b*c*e)^2*a^3/(d*x+c)^2*c-3*d*e^2*B*i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e^{-1/(d*x+c)}*b*c*e)^2*a^2/(d*x+c)^2*c^2+2*e^2*B*i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e^{-1/(d*x+c)}*b*c*e)^2*a/(d*x+c)^2*c^3*b+1/2/d*e^2*B*i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2/(1/(d*x+c)*a*d*e^{-1/(d*x+c)}*b*c*e)^2*c^2-1/2/d*e^2*B*i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2/(1/(d*x+c)*a*d*e^{-1/(d*x+c)}*b*c*e)^2*c^4/(d*x+c)^2$

maxima [A] time = 1.10, size = 144, normalized size = 1.78

$$\frac{1}{2}Adix^2 + \left(x \log\left(\frac{bex}{dx+c} + \frac{ae}{dx+c}\right) + \frac{a \log(bx+a)}{b} - \frac{c \log(dx+c)}{d} \right) Bci + \frac{1}{2} \left(x^2 \log\left(\frac{bex}{dx+c} + \frac{ae}{dx+c}\right) - \frac{a^2 \log}{dx+c} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorithm="maxima")

[Out] $\frac{1}{2}A*d*i*x^2 + (x*\log(b*e*x/(d*x+c) + a*e/(d*x+c)) + a*\log(b*x+a)/b - c*\log(d*x+c)/d)*B*c*i + 1/2*(x^2*\log(b*e*x/(d*x+c) + a*e/(d*x+c)) - a^2*\log(b*x+a)/b^2 + c^2*\log(d*x+c)/d^2 - (b*c-a*d)*x/(b*d))*B*d*i + A*c*i*x$

mupad [B] time = 4.64, size = 126, normalized size = 1.56

$$x \left(\frac{i(2Aad + 4Abc + Bad - Bbc)}{2b} - \frac{Ai(2ad + 2bc)}{2b} \right) + \ln\left(\frac{e(a+bx)}{c+dx}\right) \left(\frac{Bdix^2}{2} + Bcix \right) - \frac{\ln(a+bx)(Bdix^2 + Bcix)}{2b}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x))),x)

[Out] $x*((i*(2A*a*d + 4A*b*c + B*a*d - B*b*c))/(2*b) - (A*i*(2*a*d + 2*b*c))/(2*b)) + \log((e*(a + b*x))/(c + d*x))*((B*d*i*x^2)/2 + B*c*i*x) - (\log(a + b*x)*(B*a^2*d*i - 2*B*a*b*c*i))/(2*b^2) + (A*d*i*x^2)/2 - (B*c^2*i*\log(c + d*x))/(2*d)$

sympy [B] time = 1.99, size = 253, normalized size = 3.12

$$\frac{Adix^2}{2} - \frac{Bai(ad - 2bc) \log\left(x + \frac{Ba^2cdi + \frac{Ba^2di(ad-2bc)}{b} - 3Babc^2i - Baci(ad-2bc)}{Ba^2d^2i - 2Babcdi - Bb^2c^2i}\right)}{2b^2} - \frac{Bc^2i \log\left(x + \frac{Ba^2cdi - 2Babc^2i - \frac{Bb^2c^3i}{d}}{Ba^2d^2i - 2Babcdi - Bb^2c^2i}\right)}{2d} + x \left(Aci + \right.$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*ln(e*(b*x+a)/(d*x+c))),x)

[Out] A*d*i*x**2/2 - B*a*i*(a*d - 2*b*c)*log(x + (B*a**2*c*d*i + B*a**2*d*i*(a*d - 2*b*c)/b - 3*B*a*b*c**2*i - B*a*c*i*(a*d - 2*b*c))/(B*a**2*d**2*i - 2*B*a*b*c*d*i - B*b**2*c**2*i))/(2*b**2) - B*c**2*i*log(x + (B*a**2*c*d*i - 2*B*a*b*c**2*i - B*b**2*c**3*i/d)/(B*a**2*d**2*i - 2*B*a*b*c*d*i - B*b**2*c**2*i))/(2*d) + x*(A*c*i + B*a*d*i/(2*b) - B*c*i/2) + (B*c*i*x + B*d*i*x**2/2)*log(e*(a + b*x)/(c + d*x))

$$3.5 \quad \int \frac{(ci+dx) \left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{ag+bgx} dx$$

Optimal. Leaf size=133

$$\frac{i(bc-ad) \log\left(-\frac{bc-ad}{d(a+bx)}\right) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A - B \right)}{b^2g} + \frac{i(c+dx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{bg} + \frac{Bi(bc-ad) \text{Li}_2\left(\frac{bc-ad}{d(a+bx)}\right) + 1}{b^2g}$$

[Out] $i*(d*x+c)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b/g-(-a*d+b*c)*i*\ln((a*d-b*c)/d/(b*x+a))*(A-B+B*\ln(e*(b*x+a)/(d*x+c)))/b^2/g+B*(-a*d+b*c)*i*\text{polylog}(2,1+(-a*d+b*c)/d/(b*x+a))/b^2/g$

Rubi [A] time = 0.35, antiderivative size = 213, normalized size of antiderivative = 1.60, number of steps used = 14, number of rules used = 11, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}} = 0.290$, Rules used = {2528, 2486, 31, 2524, 12, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{Bi(bc-ad) \text{PolyLog}\left(2, -\frac{d(a+bx)}{bc-ad}\right)}{b^2g} + \frac{i(bc-ad) \log(a+bx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{b^2g} + \frac{Bdi(a+bx) \log\left(\frac{e(a+bx)}{c+dx}\right)}{b^2g} - \frac{Bi(bc-ad)}{b^2g}$$

Antiderivative was successfully verified.

[In] $\text{Int}[\frac{(c*i + d*i*x)*(A + B*\text{Log}[\frac{e*(a + b*x)}{(c + d*x)])}{(a*g + b*g*x)}, x]$

[Out] $(A*d*i*x)/(b*g) - (B*(b*c - a*d)*i*\text{Log}[a + b*x]^2)/(2*b^2*g) + (B*d*i*(a + b*x)*\text{Log}[\frac{e*(a + b*x)}{(c + d*x)])/(b^2*g) + ((b*c - a*d)*i*\text{Log}[a + b*x]*(A + B*\text{Log}[\frac{e*(a + b*x)}{(c + d*x)]))/(b^2*g) - (B*(b*c - a*d)*i*\text{Log}[c + d*x])/(b^2*g) + (B*(b*c - a*d)*i*\text{Log}[a + b*x]*\text{Log}[\frac{b*(c + d*x)}{(b*c - a*d)}])/(b^2*g) + (B*(b*c - a*d)*i*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))])/(b^2*g)$

Rule 12

$\text{Int}[(a_*)(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \ \&\& \ !\text{MatchQ}[u, (b_*)(v_)] /; \text{FreeQ}[b, x]$

Rule 31

$\text{Int}[(a_*) + (b_*)(x_)^{-1}, x_Symbol] \rightarrow \text{Simp}[\text{Log}[\text{RemoveContent}[a + b*x, x]]/b, x] /; \text{FreeQ}[\{a, b\}, x]$

Rule 2301

$\text{Int}[(a_*) + \text{Log}[(c_*)(x_)^{(n_*)}*(b_*)]/(x_), x_Symbol] \rightarrow \text{Simp}[(a + b*\text{Log}[c*x^n])^2/(2*b*n), x] /; \text{FreeQ}[\{a, b, c, n\}, x]$

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]/(x_), x_Symbol] := -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] := Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q]^r]^s - 1/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
```



```
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(5c + 5dx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{ag + bgx} dx &= \int \left(\frac{5d \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{bg} + \frac{5(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{bg(a + bx)} \right) dx \\
&= \frac{(5d) \int \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) dx}{bg} + \frac{(5(bc - ad)) \int \frac{A + B \log \left(\frac{e(a+bx)}{c+dx} \right)}{a+bx} dx}{bg} \\
&= \frac{5Adx}{bg} + \frac{5(bc - ad) \log(a + bx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g} + \frac{(5Bd) \int \log \left(\frac{e(a+bx)}{c+dx} \right) dx}{bg} \\
&= \frac{5Adx}{bg} + \frac{5Bd(a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{b^2g} + \frac{5(bc - ad) \log(a + bx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g} \\
&= \frac{5Adx}{bg} + \frac{5Bd(a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{b^2g} + \frac{5(bc - ad) \log(a + bx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g} \\
&= \frac{5Adx}{bg} + \frac{5Bd(a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{b^2g} + \frac{5(bc - ad) \log(a + bx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g} \\
&= \frac{5Adx}{bg} + \frac{5Bd(a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{b^2g} + \frac{5(bc - ad) \log(a + bx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g} \\
&= \frac{5Adx}{bg} - \frac{5B(bc - ad) \log^2(a + bx)}{2b^2g} + \frac{5Bd(a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{b^2g} + \frac{5(bc - ad) \log(a + bx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g} \\
&= \frac{5Adx}{bg} - \frac{5B(bc - ad) \log^2(a + bx)}{2b^2g} + \frac{5Bd(a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{b^2g} + \frac{5(bc - ad) \log(a + bx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g}
\end{aligned}$$

Mathematica [A] time = 0.12, size = 164, normalized size = 1.23

$$\frac{i \left(2(bc - ad) \log(a + bx) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + B \log \left(\frac{b(c+dx)}{bc-ad} \right) + A \right) + 2 \left(Bd(a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right) + \log(c + dx)(aBd - \right)}{2b^2g}$$

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a*g + b*g*x), x]

[Out] $(i*((-(b*B*c) + a*B*d)*\text{Log}[a + b*x]^2 + 2*(A*b*d*x + B*d*(a + b*x))*\text{Log}[(e*(a + b*x))/(c + d*x)] + (-(b*B*c) + a*B*d)*\text{Log}[c + d*x]) + 2*(b*c - a*d)*\text{Log}[a + b*x]*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)] + B*\text{Log}[(b*(c + d*x))/(b*c - a*d)]) + 2*B*(b*c - a*d)*\text{PolyLog}[2, (d*(a + b*x))/(-(b*c) + a*d)])/(2*b^2*g)$

fricas [F] time = 0.92, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{Adix + Aci + (Bdix + Bci) \log\left(\frac{bex+ae}{dx+c}\right)}{bgx + ag}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g),x, algorithm="fricas")`

[Out] `integral((A*d*i*x + A*c*i + (B*d*i*x + B*c*i)*log((b*e*x + a*e)/(d*x + c)))/(b*g*x + a*g), x)`

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci) \left(B \log\left(\frac{bx+a}{dx+c}\right) + A \right)}{bgx + ag} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g),x, algorithm="giac")`

[Out] `integrate((d*i*x + c*i)*(B*log((b*x + a)*e/(d*x + c)) + A)/(b*g*x + a*g), x)`

maple [B] time = 0.12, size = 1044, normalized size = 7.85

$$\frac{B a^2 d^2 e i \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{\left(\frac{ade}{dx+c} - \frac{bce}{dx+c}\right)(dx+c) b^2 g} - \frac{2Bacdei \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{\left(\frac{ade}{dx+c} - \frac{bce}{dx+c}\right)(dx+c) bg} + \frac{B c^2 e i \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{\left(\frac{ade}{dx+c} - \frac{bce}{dx+c}\right)(dx+c) g} + \frac{Badei \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{\left(\frac{ade}{dx+c} - \frac{bce}{dx+c}\right) bg} - \frac{Bcei \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{\left(\frac{ade}{dx+c} - \frac{bce}{dx+c}\right) bg}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((d*i*x+c*i)*(B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g),x)`

[Out] `d*e*i/g*A/b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a-e*i/g*A/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*c+d*i/g*A/b^2*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a-i/g`

*A/b*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c-d*i/g*A/b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+i/g*A/b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-d*i/g*B/b^2*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a+i/g*B/b*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c+d*e*i/g*B/b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a-e*i/g*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*c+d^2*e*i/g*B/b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)/(d*x+c)*a^2-2*d*e*i/g*B/b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)/(d*x+c)*a*c+e*i/g*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)/(d*x+c)*c^2+d*i/g*B/b^2*dilog(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a-i/g*B/b*dilog(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*c+d*i/g*B/b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a-i/g*B/b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*c-1/2*d*i/g*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/b^2*a+1/2*i/g*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/b*c

maxima [A] time = 1.84, size = 241, normalized size = 1.81

$$Adi\left(\frac{x}{bg} - \frac{a \log(bx + a)}{b^2g}\right) + \frac{Aci \log(bgx + ag)}{bg} - \frac{Bci \log(dx + c)}{bg} + \frac{(bci - adi)\left(\log(bx + a) \log\left(\frac{bdx+ad}{bc-ad} + 1\right) + \text{Li}_2\left(\frac{bdx+ad}{bc-ad} + 1\right)\right)}{b^2g}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g),x, algorithm="maxima")

[Out] A*d*i*(x/(b*g) - a*log(b*x + a)/(b^2*g)) + A*c*i*log(b*g*x + a*g)/(b*g) - B*c*i*log(d*x + c)/(b*g) + (b*c*i - a*d*i)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d)))*B/(b^2*g) + 1/2*(2*B*b*d*i*x*log(e) + (b*c*i - a*d*i)*B*log(b*x + a)^2 + 2*(B*b*d*i*x + (b*c*i*log(e) - (i*log(e) - i)*a*d)*B)*log(b*x + a) - 2*(B*b*d*i*x + (b*c*i - a*d*i)*B*log(b*x + a))*log(d*x + c))/(b^2*g)

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(ci + dix) \left(A + B \ln\left(\frac{e(a+bx)}{c+dx}\right) \right)}{ag + bgx} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x),x)

[Out] int(((c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x), x)

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$i \frac{\left(\int \frac{Ac}{a+bx} dx + \int \frac{Adx}{a+bx} dx + \int \frac{Bc \log\left(\frac{ae}{c+dx} + \frac{bex}{c+dx}\right)}{a+bx} dx + \int \frac{Bdx \log\left(\frac{ae}{c+dx} + \frac{bex}{c+dx}\right)}{a+bx} dx \right)}{g}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g),x)

[Out] i*(Integral(A*c/(a + b*x), x) + Integral(A*d*x/(a + b*x), x) + Integral(B*c*log(a*e/(c + d*x) + b*e*x/(c + d*x))/(a + b*x), x) + Integral(B*d*x*log(a*e/(c + d*x) + b*e*x/(c + d*x))/(a + b*x), x))/g

$$3.6 \quad \int \frac{(ci+dx)\left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(ag+bgx)^2} dx$$

Optimal. Leaf size=142

$$\frac{di \log\left(1 - \frac{b(c+dx)}{d(a+bx)}\right)\left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{b^2 g^2} - \frac{i(c+dx)\left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{bg^2(a+bx)} + \frac{Bdi \operatorname{Li}_2\left(\frac{b(c+dx)}{d(a+bx)}\right)}{b^2 g^2} - \frac{Bi(c+dx)}{bg^2(a+bx)}$$

[Out] $-B*i*(d*x+c)/b/g^2/(b*x+a)-i*(d*x+c)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b/g^2/(b*x+a)-d*i*(A+B*\ln(e*(b*x+a)/(d*x+c)))*\ln(1-b*(d*x+c)/d/(b*x+a))/b^2/g^2+B*d*i*polylog(2,b*(d*x+c)/d/(b*x+a))/b^2/g^2$

Rubi [A] time = 0.38, antiderivative size = 221, normalized size of antiderivative = 1.56, number of steps used = 15, number of rules used = 11, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}} = 0.290$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{Bdi \operatorname{PolyLog}\left(2, -\frac{d(a+bx)}{bc-ad}\right)}{b^2 g^2} + \frac{di \log(a+bx)\left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{b^2 g^2} - \frac{i(bc-ad)\left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{b^2 g^2(a+bx)} - \frac{Bi(bc-ad)}{b^2 g^2(a+bx)} + \dots$$

Antiderivative was successfully verified.

[In] $\operatorname{Int}\left[\frac{(c*i + d*i*x)*(A + B*\operatorname{Log}[(e*(a + b*x))/(c + d*x)])}{(a*g + b*g*x)^2}, x\right]$

[Out] $-\left(\frac{B*(b*c - a*d)*i}{b^2*g^2*(a + b*x)}\right) - \frac{B*d*i*\operatorname{Log}[a + b*x]}{b^2*g^2} - \frac{B*d*i*\operatorname{Log}[a + b*x]^2}{2*b^2*g^2} - \frac{((b*c - a*d)*i*(A + B*\operatorname{Log}[(e*(a + b*x))/(c + d*x)]))/(b^2*g^2*(a + b*x)) + (d*i*\operatorname{Log}[a + b*x]*(A + B*\operatorname{Log}[(e*(a + b*x))/(c + d*x)]))/(b^2*g^2) + (B*d*i*\operatorname{Log}[c + d*x])/(b^2*g^2) + (B*d*i*\operatorname{Log}[a + b*x]*\operatorname{Log}[(b*(c + d*x))/(b*c - a*d)])/(b^2*g^2) + (B*d*i*\operatorname{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))])/(b^2*g^2)}$

Rule 12

$\operatorname{Int}[(a_*)(u_), x_Symbol] \rightarrow \operatorname{Dist}[a, \operatorname{Int}[u, x], x] /; \operatorname{FreeQ}[a, x] \ \&\& \ !\operatorname{Match}Q[u, (b_*)(v_)] /; \operatorname{FreeQ}[b, x]$

Rule 44

$\operatorname{Int}[(a_*) + (b_*)(x_)]^{(m_*)}*((c_*) + (d_*)(x_)]^{(n_*)}, x_Symbol] \rightarrow \operatorname{Int}[\operatorname{ExpandIntegrand}[(a + b*x)^m*(c + d*x)^n, x], x] /; \operatorname{FreeQ}\{a, b, c, d\}, x] \ \&\& \ \operatorname{NeQ}[b*c - a*d, 0] \ \&\& \ \operatorname{ILtQ}[m, 0] \ \&\& \ \operatorname{IntegerQ}[n] \ \&\& \ !(\operatorname{IGtQ}[n, 0] \ \&\& \ \operatorname{LtQ}[m + n + 2, 0])$

Rule 2301

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.)]*(b_.))^(p_.)*((f_) + (g_.)*(x_)^(q_.)), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.)]*(b_.))/((f_.) + (g_.)*(x_))), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2418

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]

Rule 2524

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]

Rule 2525

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_.))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(6c + 6dx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{(ag + bgx)^2} dx &= \int \left(\frac{6(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{bg^2(a + bx)^2} + \frac{6d \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{bg^2(a + bx)} \right) dx \\
&= \frac{(6d) \int \frac{A+B \log \left(\frac{e(a+bx)}{c+dx} \right)}{a+bx} dx}{bg^2} + \frac{(6(bc - ad)) \int \frac{A+B \log \left(\frac{e(a+bx)}{c+dx} \right)}{(a+bx)^2} dx}{bg^2} \\
&= -\frac{6(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g^2(a + bx)} + \frac{6d \log(a + bx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g^2} \\
&= -\frac{6(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g^2(a + bx)} + \frac{6d \log(a + bx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g^2} \\
&= -\frac{6(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g^2(a + bx)} + \frac{6d \log(a + bx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g^2} \\
&= -\frac{6B(bc - ad)}{b^2g^2(a + bx)} - \frac{6Bd \log(a + bx)}{b^2g^2} - \frac{6(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g^2(a + bx)} + \\
&= -\frac{6B(bc - ad)}{b^2g^2(a + bx)} - \frac{6Bd \log(a + bx)}{b^2g^2} - \frac{6(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g^2(a + bx)} + \\
&= -\frac{6B(bc - ad)}{b^2g^2(a + bx)} - \frac{6Bd \log(a + bx)}{b^2g^2} - \frac{3Bd \log^2(a + bx)}{b^2g^2} - \frac{6(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g^2} \\
&= -\frac{6B(bc - ad)}{b^2g^2(a + bx)} - \frac{6Bd \log(a + bx)}{b^2g^2} - \frac{3Bd \log^2(a + bx)}{b^2g^2} - \frac{6(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g^2}
\end{aligned}$$

Mathematica [A] time = 0.15, size = 175, normalized size = 1.23

$$\frac{i \left(2d(a + bx) \log(a + bx) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + B \log \left(\frac{b(c+dx)}{bc-ad} \right) + A - B \right) - 2(A + B)(bc - ad) + 2(aBd - bBc) \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{2b^2g^2(a + bx)}$$

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x])))/(a*g + b*g*x)^2,x]

[Out] $(i*(-2*(A + B)*(b*c - a*d) - B*d*(a + b*x)*\text{Log}[a + b*x]^2 + 2*(-(b*B*c) + a*B*d)*\text{Log}[(e*(a + b*x))/(c + d*x)] + 2*B*d*(a + b*x)*\text{Log}[c + d*x] + 2*d*(a + b*x)*\text{Log}[a + b*x]*(A - B + B*\text{Log}[(e*(a + b*x))/(c + d*x)] + B*\text{Log}[(b*(c + d*x))/(b*c - a*d)]) + 2*B*d*(a + b*x)*\text{PolyLog}[2, (d*(a + b*x))/(-(b*c) + a*d)])) / (2*b^2*g^2*(a + b*x))$

fricas [F] time = 0.87, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{Adix + Aci + (Bdix + Bci) \log\left(\frac{bex+ae}{dx+c}\right)}{b^2g^2x^2 + 2abg^2x + a^2g^2}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^2,x, algorithm="fricas")`

[Out] $\text{integral}((A*d*i*x + A*c*i + (B*d*i*x + B*c*i)*\log((b*e*x + a*e)/(d*x + c)))/(b^2*g^2*x^2 + 2*a*b*g^2*x + a^2*g^2), x)$

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^2,x, algorithm="giac")`

[Out] Timed out

maple [B] time = 0.06, size = 1025, normalized size = 7.22

$$\frac{Badei \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{(ad-bc)\left(\frac{ae}{dx+c} - \frac{bce}{(dx+c)d} + \frac{be}{d}\right)bg^2} - \frac{Ba d^2 i \ln\left(-\frac{-be + \left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)d}{be}\right) \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{(ad-bc)b^2g^2} + \frac{Ba d^2 i \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)^2}{2(ad-bc)b^2g^2} + \dots$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((d*i*x+c*i)*(B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^2,x)`

[Out] $-d^2*i/(a*d-b*c)/g^2*A/b^2*\ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a+d*i/(a*d-b*c)/g^2*A/b*\ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c-d*e*i/(a*d-b*c)/g^2*A/b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a*e*i/(a*d-b*c)/g^2*A/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c+d^2*i/(a*d-b*c)/g^2*A/b^2*\ln(b/d*e+(a$

*d-b*c)/(d*x+c)/d*e)*a-d*i/(a*d-b*c)/g^2*A/b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)
)*c-d*e*i/(a*d-b*c)/g^2*B/b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*
 e+(a*d-b*c)/(d*x+c)/d*e)*a+e*i/(a*d-b*c)/g^2*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c
 /d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-d*e*i/(a*d-b*c)/g^2*B/b/(1/(d
 *x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a+e*i/(a*d-b*c)/g^2*B/(1/(d*x+c)*a*e-1/(
 d*x+c)*b*c/d*e+b/d*e)*c-d^2*i/(a*d-b*c)/g^2*B/b^2*dilog(-(-b*e+(b/d*e+(a*d-
 b*c)/(d*x+c)/d*e)*d)/b/e)*a+d*i/(a*d-b*c)/g^2*B/b*dilog(-(-b*e+(b/d*e+(a*d-
 b*c)/(d*x+c)/d*e)*d)/b/e)*c-d^2*i/(a*d-b*c)/g^2*B/b^2*ln(b/d*e+(a*d-b*c)/(d
 *x+c)/d*e)*ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a+d*i/(a*d-b*c)/
 g^2*B/b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/
 d*e)*d)/b/e)*c+1/2*d^2*i/(a*d-b*c)/g^2*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/
 b^2*a-1/2*d*i/(a*d-b*c)/g^2*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/b*c

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-Bdi \left(\frac{((bx+a) \log(bx+a) + a) \log(dx+c)}{b^3 g^2 x + ab^2 g^2} - \int \frac{b^2 dx^2 \log(e) + a^2 d + (b^2 c \log(e) + abd)x + (2b^2 dx^2 + a^2 d + b^2 c x^2 + a^2 d + (b^2 c + 2a*b*d)*x) \log(bx+a)}{b^4 dg^2 x^3 + a^2 b^2 cg^2 + (b^4 cg^2 + 2ab^3 dg^2)x^2 + (2ab^3 dg^2 + (b^4 c * g^2 + 2a*b^3*d*g^2)*x^2 + (2*a*b^3*c*g^2 + a^2*b^2*d*g^2)*x), x} \right) + A*d*i*(a/(b^3*g^2*x + a*b^2*g^2) + \log(b*x + a)/(b^2*g^2)) - B*c*i*(\log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^2*g^2*x + a*b*g^2) + 1/(b^2*g^2*x + a*b*g^2) + d*\log(b*x + a)/((b^2*c - a*b*d)*g^2) - d*\log(d*x + c)/((b^2*c - a*b*d)*g^2)) - A*c*i/(b^2*g^2*x + a*b*g^2)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^2,x, algorithm="maxima")

[Out] -B*d*i*((b*x + a)*log(b*x + a) + a)*log(d*x + c)/(b^3*g^2*x + a*b^2*g^2) -
 integrate((b^2*d*x^2*log(e) + a^2*d + (b^2*c*log(e) + a*b*d)*x + (2*b^2*d*x^2 + a^2*d + (b^2*c + 2*a*b*d)*x)*log(b*x + a))/(b^4*d*g^2*x^3 + a^2*b^2*c*g^2 + (b^4*c*g^2 + 2*a*b^3*d*g^2)*x^2 + (2*a*b^3*c*g^2 + a^2*b^2*d*g^2)*x), x) + A*d*i*(a/(b^3*g^2*x + a*b^2*g^2) + log(b*x + a)/(b^2*g^2)) - B*c*i*(log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^2*g^2*x + a*b*g^2) + 1/(b^2*g^2*x + a*b*g^2) + d*log(b*x + a)/((b^2*c - a*b*d)*g^2) - d*log(d*x + c)/((b^2*c - a*b*d)*g^2)) - A*c*i/(b^2*g^2*x + a*b*g^2)

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(ci + dix) \left(A + B \ln \left(\frac{e(a+bx)}{c+dx} \right) \right)}{(ag + bgx)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x)^2,x)

[Out] int(((c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x)^2, x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)**2,x)

[Out] Timed out

$$3.7 \quad \int \frac{(ci+dx) \left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{(ag+bgx)^3} dx$$

Optimal. Leaf size=85

$$-\frac{i(c+dx)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{2g^3(a+bx)^2(bc-ad)} - \frac{Bi(c+dx)^2}{4g^3(a+bx)^2(bc-ad)}$$

[Out] $-1/4*B*i*(d*x+c)^2/(-a*d+b*c)/g^3/(b*x+a)^2-1/2*i*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)/g^3/(b*x+a)^2$

Rubi [B] time = 0.28, antiderivative size = 191, normalized size of antiderivative = 2.25, number of steps used = 10, number of rules used = 4, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$, Rules used = {2528, 2525, 12, 44}

$$\frac{di \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{b^2g^3(a+bx)} - \frac{i(bc-ad) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{2b^2g^3(a+bx)^2} - \frac{Bd^2i \log(a+bx)}{2b^2g^3(bc-ad)} + \frac{Bd^2i \log(c+dx)}{2b^2g^3(bc-ad)} - \frac{Bi(bc-ad)}{4b^2g^3(a+bx)^2}$$

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x])))/(a*g + b*g*x)^3,x]

[Out] $-(B*(b*c - a*d)*i)/(4*b^2*g^3*(a + b*x)^2) - (B*d*i)/(2*b^2*g^3*(a + b*x)) - (B*d^2*i*Log[a + b*x])/(2*b^2*(b*c - a*d)*g^3) - ((b*c - a*d)*i*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(2*b^2*g^3*(a + b*x)^2) - (d*i*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(b^2*g^3*(a + b*x)) + (B*d^2*i*Log[c + d*x])/(2*b^2*(b*c - a*d)*g^3)$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 44

Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])

Rule 2525

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))

```
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[ {u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x] }, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunci
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(7c + 7dx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{(ag + bgx)^3} dx &= \int \left(\frac{7(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{bg^3(a + bx)^3} + \frac{7d \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{bg^3(a + bx)^2} \right) dx \\
&= \frac{(7d) \int \frac{A+B \log \left(\frac{e(a+bx)}{c+dx} \right)}{(a+bx)^2} dx}{bg^3} + \frac{(7(bc - ad)) \int \frac{A+B \log \left(\frac{e(a+bx)}{c+dx} \right)}{(a+bx)^3} dx}{bg^3} \\
&= -\frac{7(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{2b^2g^3(a + bx)^2} - \frac{7d \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g^3(a + bx)} + \frac{(7Bd) \int}{(a+bx)^2} \\
&= -\frac{7(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{2b^2g^3(a + bx)^2} - \frac{7d \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g^3(a + bx)} + \frac{(7Bd(bc - ad)) \int}{(a+bx)^2} \\
&= -\frac{7(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{2b^2g^3(a + bx)^2} - \frac{7d \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g^3(a + bx)} + \frac{(7Bd(bc - ad)) \int}{(a+bx)^2} \\
&= -\frac{7B(bc - ad)}{4b^2g^3(a + bx)^2} - \frac{7Bd}{2b^2g^3(a + bx)} - \frac{7Bd^2 \log(a + bx)}{2b^2(bc - ad)g^3} - \frac{7(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{2b^2g^3(a + bx)}
\end{aligned}$$

Mathematica [B] time = 0.15, size = 208, normalized size = 2.45

$$i \left(\frac{d \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{b^2(a+bx)} - \frac{(bc-ad) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{2b^2(a+bx)^2} - \frac{B \left(-\frac{2a^2 \log(a+bx)}{bc-ad} + \frac{2a^2 \log(c+dx)}{bc-ad} + \frac{bc-ad}{(a+bx)^2} - \frac{2d}{a+bx} \right)}{4b^2} - \frac{Bd \left(\frac{d \log(a+bx)}{bc-ad} - \frac{d \log(c+dx)}{bc-ad} + \frac{1}{a+bx} \right)}{b^2} \right)$$

$$g^3$$

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a*g + b*g*x)^3,x]

[Out] (i*(-1/2*((b*c - a*d)*(A + B*Log[(e*(a + b*x))/(c + d*x)])))/(b^2*(a + b*x)^2) - (d*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(b^2*(a + b*x)) - (B*d*((a + b*x)^(-1) + (d*Log[a + b*x])/(b*c - a*d) - (d*Log[c + d*x])/(b*c - a*d)))/b^2 - (B*((b*c - a*d)/(a + b*x)^2 - (2*d)/(a + b*x) - (2*d^2*Log[a + b*x])/(b*c - a*d) + (2*d^2*Log[c + d*x])/(b*c - a*d)))/(4*b^2))/g^3

fricas [B] time = 0.76, size = 177, normalized size = 2.08

$$\frac{2\left((2A+B)b^2cd - (2A+B)abd^2\right)ix + \left((2A+B)b^2c^2 - (2A+B)a^2d^2\right)i + 2\left(Bb^2d^2ix^2 + 2Bb^2cdix + Bb^2c^2i\right)}{4\left(\left(b^5c - ab^4d\right)g^3x^2 + 2\left(ab^4c - a^2b^3d\right)g^3x + \left(a^2b^3c - a^3b^2d\right)g^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^3,x, algorithm="fricas")

[Out] -1/4*(2*((2*A + B)*b^2*c*d - (2*A + B)*a*b*d^2)*i*x + ((2*A + B)*b^2*c^2 - (2*A + B)*a^2*d^2)*i + 2*(B*b^2*d^2*i*x^2 + 2*B*b^2*c*d*i*x + B*b^2*c^2*i)*log((b*e*x + a*e)/(d*x + c)))/((b^5*c - a*b^4*d)*g^3*x^2 + 2*(a*b^4*c - a^2*b^3*d)*g^3*x + (a^2*b^3*c - a^3*b^2*d)*g^3)

giac [A] time = 1.11, size = 117, normalized size = 1.38

$$\frac{\left(2Bie^3 \log\left(\frac{bx+ae}{dx+c}\right) + 2Aie^3 + Bie^3\right)(dx+c)^2\left(\frac{bc}{(bce-ade)(bc-ad)} - \frac{ad}{(bce-ade)(bc-ad)}\right)}{4(bxe+ae)^2g^3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^3,x, algorithm="giac")

[Out] -1/4*(2*B*i*e^3*log((b*x*e + a*e)/(d*x + c)) + 2*A*i*e^3 + B*i*e^3)*(d*x + c)^2*(b*c/((b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))/((b*x*e + a*e)^2*g^3)

maple [B] time = 0.05, size = 394, normalized size = 4.64

$$\frac{Bad e^2 i \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{2(ad-bc)^2\left(\frac{ae}{dx+c} - \frac{bce}{(dx+c)d} + \frac{be}{d}\right)^2 g^3} - \frac{Bbc e^2 i \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{2(ad-bc)^2\left(\frac{ae}{dx+c} - \frac{bce}{(dx+c)d} + \frac{be}{d}\right)^2 g^3} + \frac{Aad e^2 i}{2(ad-bc)^2\left(\frac{ae}{dx+c} - \frac{bce}{(dx+c)d} + \frac{be}{d}\right)^2 g^3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((d*i*x+c*i)*(B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^3,x)`

[Out] $\frac{1}{2}d^2e^{2i}/(a^2d-b^2c)^2/g^3A/(1/(d*x+c)*a^2e-1/(d*x+c)*b^2c/d^2e+b/d^2e)^{2a-1}/2e^{2i}/(a^2d-b^2c)^2/g^3A/(1/(d*x+c)*a^2e-1/(d*x+c)*b^2c/d^2e+b/d^2e)^{2b^2c+1}/2d^2e^{2i}/(a^2d-b^2c)^2/g^3B/(1/(d*x+c)*a^2e-1/(d*x+c)*b^2c/d^2e+b/d^2e)^{2i}\ln(b/d^2e+(a^2d-b^2c)/(d*x+c)/d^2e)*a-1/2e^{2i}/(a^2d-b^2c)^2/g^3B/(1/(d*x+c)*a^2e-1/(d*x+c)*b^2c/d^2e+b/d^2e)^{2i}\ln(b/d^2e+(a^2d-b^2c)/(d*x+c)/d^2e)*b^2c+1/4d^2e^{2i}/(a^2d-b^2c)^2/g^3B/(1/(d*x+c)*a^2e-1/(d*x+c)*b^2c/d^2e+b/d^2e)^{2a-1}/4e^{2i}/(a^2d-b^2c)^2/g^3B/(1/(d*x+c)*a^2e-1/(d*x+c)*b^2c/d^2e+b/d^2e)^{2b^2c}$

maxima [B] time = 1.32, size = 570, normalized size = 6.71

$$-\frac{1}{4}Bdi \left(\frac{2(2bx+a)\log\left(\frac{bex}{dx+c} + \frac{ae}{dx+c}\right)}{b^4g^3x^2 + 2ab^3g^3x + a^2b^2g^3} + \frac{3abc - a^2d + 2(2b^2c - abd)x}{(b^5c - ab^4d)g^3x^2 + 2(ab^4c - a^2b^3d)g^3x + (a^2b^3c - a^3b^2d)g^3} + \frac{2(2bcd}{b^4c^2 - 2$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^3,x, algorithm="maxima")`

[Out] $-1/4*B*d*i*(2*(2*b*x + a)*\log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^4*g^3*x^2 + 2*a*b^3*g^3*x + a^2*b^2*g^3) + (3*a*b*c - a^2*d + 2*(2*b^2*c - a*b*d)*x)/((b^5*c - a*b^4*d)*g^3*x^2 + 2*(a*b^4*c - a^2*b^3*d)*g^3*x + (a^2*b^3*c - a^3*b^2*d)*g^3) + 2*(2*b*c*d - a*d^2)*\log(b*x + a)/((b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)*g^3) - 2*(2*b*c*d - a*d^2)*\log(d*x + c)/((b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)*g^3) + 1/4*B*c*i*((2*b*d*x - b*c + 3*a*d)/((b^4*c - a*b^3*d)*g^3*x^2 + 2*(a*b^3*c - a^2*b^2*d)*g^3*x + (a^2*b^2*c - a^3*b*d)*g^3) - 2*\log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^3*g^3*x^2 + 2*a*b^2*g^3*x + a^2*b*g^3) + 2*d^2*\log(b*x + a)/((b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*g^3) - 2*d^2*\log(d*x + c)/((b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*g^3) - 1/2*(2*b*x + a)*A*d*i/(b^4*g^3*x^2 + 2*a*b^3*g^3*x + a^2*b^2*g^3) - 1/2*A*c*i/(b^3*g^3*x^2 + 2*a*b^2*g^3*x + a^2*b*g^3)$

mupad [B] time = 5.58, size = 197, normalized size = 2.32

$$\frac{x(2Abdi + Bbdi) + Aadi + Abci + \frac{Badi}{2} + \frac{Bbci}{2} \ln\left(\frac{e(a+bx)}{c+dx}\right) \left(\frac{Bci}{2b^2g^3} + \frac{Badi}{2b^3g^3} + \frac{Bdix}{b^2g^3}\right) Bd^2i \operatorname{atan}\left(\frac{bc2i+b}{ad-l}\right)}{2a^2b^2g^3 + 4ab^3g^3x + 2b^4g^3x^2} \frac{2ax + bx^2 + \frac{a^2}{b}}{b^2g^3(ad-l)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int(((c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x)^3,x)`


```
[Out] - (x*(2*A*b*d*i + B*b*d*i) + A*a*d*i + A*b*c*i + (B*a*d*i)/2 + (B*b*c*i)/2)
/(2*a^2*b^2*g^3 + 2*b^4*g^3*x^2 + 4*a*b^3*g^3*x) - (log((e*(a + b*x))/(c +
d*x))*((B*c*i)/(2*b^2*g^3) + (B*a*d*i)/(2*b^3*g^3) + (B*d*i*x)/(b^2*g^3)))/
(2*a*x + b*x^2 + a^2/b) - (B*d^2*i*atan((b*c*2i + b*d*x*2i)/(a*d - b*c) + 1
i)*1i)/(b^2*g^3*(a*d - b*c))
```

sympy [B] time = 6.25, size = 384, normalized size = 4.52

$$\frac{Bd^2i \log\left(x + \frac{\frac{Ba^2d^4i}{ad-bc} + \frac{2Babcd^3i}{ad-bc} + Bad^3i - \frac{Bb^2c^2d^2i}{ad-bc} + Bbcd^2i}{2Bbd^3i}\right)}{2b^2g^3(ad-bc)} + \frac{Bd^2i \log\left(x + \frac{\frac{Ba^2d^4i}{ad-bc} - \frac{2Babcd^3i}{ad-bc} + Bad^3i + \frac{Bb^2c^2d^2i}{ad-bc} + Bbcd^2i}{2Bbd^3i}\right)}{2b^2g^3(ad-bc)} + \frac{-2Aadi - 2Aadi}{2b^2g^3(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)**3,x)
```

```
[Out] -B*d**2*i*log(x + (-B*a**2*d**4*i/(a*d - b*c) + 2*B*a*b*c*d**3*i/(a*d - b*c)
) + B*a*d**3*i - B*b**2*c**2*d**2*i/(a*d - b*c) + B*b*c*d**2*i)/(2*B*b*d**3
*i))/(2*b**2*g**3*(a*d - b*c)) + B*d**2*i*log(x + (B*a**2*d**4*i/(a*d - b*c)
) - 2*B*a*b*c*d**3*i/(a*d - b*c) + B*a*d**3*i + B*b**2*c**2*d**2*i/(a*d - b
*c) + B*b*c*d**2*i)/(2*B*b*d**3*i))/(2*b**2*g**3*(a*d - b*c)) + (-2*A*a*d*i
- 2*A*b*c*i - B*a*d*i - B*b*c*i + x*(-4*A*b*d*i - 2*B*b*d*i))/(4*a**2*b**2
*g**3 + 8*a*b**3*g**3*x + 4*b**4*g**3*x**2) + (-B*a*d*i - B*b*c*i - 2*B*b*d
*i*x)*log(e*(a + b*x)/(c + d*x))/(2*a**2*b**2*g**3 + 4*a*b**3*g**3*x + 2*b
**4*g**3*x**2)
```

$$3.8 \quad \int \frac{(ci+dx)\left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(ag+bgx)^4} dx$$

Optimal. Leaf size=173

$$-\frac{bi(c+dx)^3\left(B \log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{3g^4(a+bx)^3(bc-ad)^2} + \frac{di(c+dx)^2\left(B \log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2g^4(a+bx)^2(bc-ad)^2} - \frac{bBi(c+dx)^3}{9g^4(a+bx)^3(bc-ad)^2} + \frac{Bdi(c+dx)^2}{4g^4(a+bx)^2(bc-ad)^2}$$

[Out] $1/4*B*d*i*(d*x+c)^2/(-a*d+b*c)^2/g^4/(b*x+a)^2-1/9*b*B*i*(d*x+c)^3/(-a*d+b*c)^2/g^4/(b*x+a)^3+1/2*d*i*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^2/g^4/(b*x+a)^2-1/3*b*i*(d*x+c)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^2/g^4/(b*x+a)^3$

Rubi [A] time = 0.34, antiderivative size = 225, normalized size of antiderivative = 1.30, number of steps used = 10, number of rules used = 4, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$, Rules used = {2528, 2525, 12, 44}

$$-\frac{di\left(B \log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2b^2g^4(a+bx)^2} - \frac{i(bc-ad)\left(B \log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{3b^2g^4(a+bx)^3} + \frac{Bd^2i}{6b^2g^4(a+bx)(bc-ad)} + \frac{Bd^3i \log(a+bx)}{6b^2g^4(bc-ad)^2} - \frac{Bd^3i \log(bc-ad)}{6b^2g^4(bc-ad)^2}$$

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x])))/(a*g + b*g*x)^4,x]

[Out] $-(B*(b*c - a*d)*i)/(9*b^2*g^4*(a + b*x)^3) - (B*d*i)/(12*b^2*g^4*(a + b*x)^2) + (B*d^2*i)/(6*b^2*(b*c - a*d)*g^4*(a + b*x)) + (B*d^3*i*Log[a + b*x])/(6*b^2*(b*c - a*d)^2*g^4) - ((b*c - a*d)*i*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(3*b^2*g^4*(a + b*x)^3) - (d*i*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(2*b^2*g^4*(a + b*x)^2) - (B*d^3*i*Log[c + d*x])/(6*b^2*(b*c - a*d)^2*g^4)$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 44

Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_.))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFX^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFX^p])^(n - 1)*D[RFX, x])/RFX, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFX, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFX^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFX, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned} \int \frac{(8c + 8dx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{(ag + bgx)^4} dx &= \int \left(\frac{8(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{bg^4(a + bx)^4} + \frac{8d \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{bg^4(a + bx)^3} \right) dx \\ &= \frac{(8d) \int \frac{A + B \log \left(\frac{e(a+bx)}{c+dx} \right)}{(a+bx)^3} dx}{bg^4} + \frac{(8(bc - ad)) \int \frac{A + B \log \left(\frac{e(a+bx)}{c+dx} \right)}{(a+bx)^4} dx}{bg^4} \\ &= -\frac{8(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{3b^2g^4(a + bx)^3} - \frac{4d \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g^4(a + bx)^2} + \frac{(4Bd)}{3b^2g^4} \\ &= -\frac{8(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{3b^2g^4(a + bx)^3} - \frac{4d \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g^4(a + bx)^2} + \frac{(4Bd)}{3b^2g^4} \\ &= -\frac{8(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{3b^2g^4(a + bx)^3} - \frac{4d \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g^4(a + bx)^2} + \frac{(4Bd)}{3b^2g^4} \\ &= -\frac{8B(bc - ad)}{9b^2g^4(a + bx)^3} - \frac{2Bd}{3b^2g^4(a + bx)^2} + \frac{4Bd^2}{3b^2(bc - ad)g^4(a + bx)} + \frac{4Bd^3}{3b^2g^4} \end{aligned}$$

Mathematica [A] time = 0.39, size = 187, normalized size = 1.08

$$\frac{i \left(\frac{12Abc}{(a+bx)^3} + \frac{18Ad}{(a+bx)^2} - \frac{12aAd}{(a+bx)^3} - \frac{6Bd^3 \log(a+bx)}{(bc-ad)^2} + \frac{6Bd^3 \log(c+dx)}{(bc-ad)^2} - \frac{6Bd^2}{(a+bx)(bc-ad)} + \frac{6B(ad+2bc+3bdx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{(a+bx)^3} + \frac{4Bc}{(a+bx)^3} + \frac{4Bd}{(a+bx)^2} \right)}{36b^2g^4}$$

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a*g + b*g*x)^4,x]

[Out]
$$-1/36*(i*((12*A*b*c)/(a + b*x)^3 + (4*b*B*c)/(a + b*x)^3 - (12*a*A*d)/(a + b*x)^3 - (4*a*B*d)/(a + b*x)^3 + (18*A*d)/(a + b*x)^2 + (3*B*d)/(a + b*x)^2 - (6*B*d^2)/((b*c - a*d)*(a + b*x)) - (6*B*d^3*Log[a + b*x])/(b*c - a*d)^2 + (6*B*(2*b*c + a*d + 3*b*d*x)*Log[(e*(a + b*x))/(c + d*x)]/(a + b*x)^3 + (6*B*d^3*Log[c + d*x])/(b*c - a*d)^2))/(b^2*g^4)$$

fricas [B] time = 1.08, size = 363, normalized size = 2.10

$$\frac{6(Bb^3cd^2 - Bab^2d^3)ix^2 - 3((6A + B)b^3c^2d - 6(2A + B)ab^2cd^2 + (6A + 5B)a^2bd^3)ix - (4(3A + B)b^3c^3 - 9(2A + B)a^2b^2cd^2)}{36((b^7c^2 - 2ab^6cd + a^2b^5d^2)g^4x^3 + 3(ab^6c^2 - 2a^2b^5cd + a^3b^4d^2)g^4x^2 + 3(a^2b^5c^2 - 2a^3b^4cd + a^4b^3d^2)g^4x + (a^3b^4c^2 - 2a^4b^3d^2)g^4)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^4,x, algorithm="fricas")

[Out]
$$1/36*(6*(B*b^3*c*d^2 - B*a*b^2*d^3)*i*x^2 - 3*((6*A + B)*b^3*c^2*d - 6*(2*A + B)*a*b^2*c*d^2 + (6*A + 5*B)*a^2*b*d^3)*i*x - (4*(3*A + B)*b^3*c^3 - 9*(2*A + B)*a*b^2*c^2*d + (6*A + 5*B)*a^3*d^3)*i + 6*(B*b^3*d^3*i*x^3 + 3*B*a*b^2*d^3*i*x^2 - 3*(B*b^3*c^2*d - 2*B*a*b^2*c*d^2)*i*x - (2*B*b^3*c^3 - 3*B*a*b^2*c^2*d)*i)*log((b*e*x + a*e)/(d*x + c)))/((b^7*c^2 - 2*a*b^6*c*d + a^2*b^5*d^2)*g^4*x^3 + 3*(a*b^6*c^2 - 2*a^2*b^5*c*d + a^3*b^4*d^2)*g^4*x^2 + 3*(a^2*b^5*c^2 - 2*a^3*b^4*c*d + a^4*b^3*d^2)*g^4*x + (a^3*b^4*c^2 - 2*a^4*b^3*d^2)*g^4)$$

giac [A] time = 1.46, size = 244, normalized size = 1.41

$$\frac{\left(12 B b i e^4 \log\left(\frac{b x e+a e}{d x+c}\right) - \frac{18(b x e+a e) B d i e^3 \log\left(\frac{b x e+a e}{d x+c}\right)}{d x+c} + 12 A b i e^4 + 4 B b i e^4 - \frac{18(b x e+a e) A d i e^3}{d x+c} - \frac{9(b x e+a e) B d i e^3}{d x+c}\right)\left(\frac{b c}{(b c e-a d e)(b c e-a d e)}\right)}{36\left(\frac{(b x e+a e)^3 b c g^4}{(d x+c)^3} - \frac{(b x e+a e)^3 a d g^4}{(d x+c)^3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^4,x, algorithm="giac")

[Out]
$$-1/36*(12*B*b*i*e^4*log((b*x*e + a*e)/(d*x + c)) - 18*(b*x*e + a*e)*B*d*i*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c) + 12*A*b*i*e^4 + 4*B*b*i*e^4 - 18*(b*x*e + a*e)*A*d*i*e^3/(d*x + c) - 9*(b*x*e + a*e)*B*d*i*e^3/(d*x + c))*$$

$b*c/((b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d))/((b*x*e + a*e)^3*b*c*g^4/(d*x + c)^3 - (b*x*e + a*e)^3*a*d*g^4/(d*x + c)^3)$

maple [B] time = 0.05, size = 804, normalized size = 4.65

$$\frac{Babd e^3 i \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{3(ad-bc)^3 \left(\frac{ae}{dx+c} - \frac{bce}{(dx+c)d} + \frac{be}{d}\right)^3 g^4} + \frac{B b^2 c e^3 i \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{3(ad-bc)^3 \left(\frac{ae}{dx+c} - \frac{bce}{(dx+c)d} + \frac{be}{d}\right)^3 g^4} - \frac{Aabd e^3 i}{3(ad-bc)^3 \left(\frac{ae}{dx+c} - \frac{bce}{(dx+c)d} + \frac{be}{d}\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((d*i*x+c*i)*(B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^4,x)`

[Out] $\frac{1}{2}d^2e^{2i}/(a*d-b*c)^3/g^4A/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^{2*a}$
 $-1/2*d*e^{2*i}/(a*d-b*c)^3/g^4A/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^{2*b}$
 $c-1/3*d*e^{3*i}/(a*d-b*c)^3/g^4A*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3$
 $*a+1/3*e^{3*i}/(a*d-b*c)^3/g^4A*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3$
 $*c+1/2*d^2e^{2i}/(a*d-b*c)^3/g^4B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^{2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a}$
 $-1/2*d*e^{2*i}/(a*d-b*c)^3/g^4B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^{2*a-1/4}$
 $d*e^{2*i}/(a*d-b*c)^3/g^4B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^{2*b*c-1/3}$
 $*d*e^{3*i}/(a*d-b*c)^3/g^4B*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a$
 $+1/3*e^{3*i}/(a*d-b*c)^3/g^4B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c$
 $-1/9*d*e^{3*i}/(a*d-b*c)^3/g^4B*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*a+1/9*e^{3*i}/(a*d-b*c)^3/g^4B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*c$

maxima [B] time = 1.38, size = 933, normalized size = 5.39

$$-\frac{1}{36} Bdi \left(\frac{6(3bx+a) \log\left(\frac{bex}{dx+c} + \frac{ae}{dx+c}\right)}{b^5g^4x^3 + 3ab^4g^4x^2 + 3a^2b^3g^4x + a^3b^2g^4} + \frac{5ab^2c^2 - 22a^2bcd + 5a^3d^2 - 6a^4cd}{(b^7c^2 - 2ab^6cd + a^2b^5d^2)g^4x^3 + 3(ab^6c^2 - 2a^2b^5cd + a^3b^4cd)} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^4,x, algorithm="maxima")`

[Out] $-1/36*B*d*i*(6*(3*b*x + a)*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^5*g^4*x^3 + 3*a*b^4*g^4*x^2 + 3*a^2*b^3*g^4*x + a^3*b^2*g^4) + (5*a*b^2*c^2 - 22*a^2*b*c*d + 5*a^3*d^2 - 6*(3*b^3*c*d - a*b^2*d^2)*x^2 + 3*(3*b^3*c^2 - 16*a*b^2*c*d + 5*a^2*b*d^2)*x)/((b^7*c^2 - 2*a*b^6*c*d + a^2*b^5*d^2)*g^4*x^3 + 3*(a*b^6*c^2 - 2*a^2*b^5*c*d + a^3*b^4*d^2)*g^4*x^2 + 3*(a^2*b^5*c^2 - 2*a^3*b^4*c*d + a^4*b^3*d^2)*g^4*x + (a^3*b^4*c^2 - 2*a^4*b^3*c*d + a^5*b^2*d^2))$

g^4) - 6(3*b*c*d^2 - a*d^3)*log(b*x + a)/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*g^4) + 6*(3*b*c*d^2 - a*d^3)*log(d*x + c)/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*g^4)) - 1/18*B*c*i*((6*b^2*d^2*x^2 + 2*b^2*c^2 - 7*a*b*c*d + 11*a^2*d^2 - 3*(b^2*c*d - 5*a*b*d^2)*x)/((b^6*c^2 - 2*a*b^5*c*d + a^2*b^4*d^2)*g^4*x^3 + 3*(a*b^5*c^2 - 2*a^2*b^4*c*d + a^3*b^3*d^2)*g^4*x^2 + 3*(a^2*b^4*c^2 - 2*a^3*b^3*c*d + a^4*b^2*d^2)*g^4*x + (a^3*b^3*c^2 - 2*a^4*b^2*c*d + a^5*b*d^2)*g^4) + 6*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^4*g^4*x^3 + 3*a*b^3*g^4*x^2 + 3*a^2*b^2*g^4*x + a^3*b*g^4) + 6*d^3*log(b*x + a)/((b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^3)*g^4) - 6*d^3*log(d*x + c)/((b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^3)*g^4)) - 1/6*(3*b*x + a)*A*d*i/(b^5*g^4*x^3 + 3*a*b^4*g^4*x^2 + 3*a^2*b^3*g^4*x + a^3*b^2*g^4) - 1/3*A*c*i/(b^4*g^4*x^3 + 3*a*b^3*g^4*x^2 + 3*a^2*b^2*g^4*x + a^3*b*g^4)

mupad [B] time = 5.87, size = 361, normalized size = 2.09

$$\frac{\frac{6Aa^2d^2i - 12Ab^2c^2i + 5Ba^2d^2i - 4Bb^2c^2i + 6Aabcdi + 5Babcdi}{6(ad-bc)} + \frac{x(6Aabd^2i + 5Babd^2i - 6Ab^2cdi - Bb^2cdi)}{2(ad-bc)} + \frac{Bb^2d^2ix^2}{ad-bc} \ln\left(\frac{e(a+cx)}{c+ad}\right)}{6a^3b^2g^4 + 18a^2b^3g^4x + 18ab^4g^4x^2 + 6b^5g^4x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x)^4,x)

[Out] - ((6*A*a^2*d^2*i - 12*A*b^2*c^2*i + 5*B*a^2*d^2*i - 4*B*b^2*c^2*i + 6*A*a*b*c*d*i + 5*B*a*b*c*d*i)/(6*(a*d - b*c)) + (x*(6*A*a*b*d^2*i + 5*B*a*b*d^2*i - 6*A*b^2*c*d*i - B*b^2*c*d*i))/(2*(a*d - b*c)) + (B*b^2*d^2*i*x^2)/(a*d - b*c))/(6*a^3*b^2*g^4 + 6*b^5*g^4*x^3 + 18*a^2*b^3*g^4*x + 18*a*b^4*g^4*x^2) - (log((e*(a + b*x))/(c + d*x))*((B*c*i)/(3*b^2*g^4) + (B*a*d*i)/(6*b^3*g^4) + (B*d*i*x)/(2*b^2*g^4)))/(3*a^2*x + a^3/b + b^2*x^3 + 3*a*b*x^2) - (B*d^3*i*atanh((6*b^4*c^2*g^4 - 6*a^2*b^2*d^2*g^4)/(6*b^2*g^4*(a*d - b*c)^2) - (2*b*d*x)/(a*d - b*c)))/(3*b^2*g^4*(a*d - b*c)^2)

sympy [B] time = 11.30, size = 629, normalized size = 3.64

$$\frac{Bd^3i \log\left(x + \frac{\frac{Ba^3d^6i}{(ad-bc)^2} + \frac{3Ba^2bcd^5i}{(ad-bc)^2} - \frac{3Bab^2c^2d^4i}{(ad-bc)^2} + Bad^4i + \frac{Bb^3c^3d^3i}{(ad-bc)^2} + Bbcd^3i}{2Bbd^4i}\right)}{6b^2g^4(ad-bc)^2} + \frac{Bd^3i \log\left(x + \frac{\frac{Ba^3d^6i}{(ad-bc)^2} - \frac{3Ba^2bcd^5i}{(ad-bc)^2} + \frac{3Bab^2c^2d^4i}{(ad-bc)^2} + Bad^4i - \frac{Bb^3c^3d^3i}{(ad-bc)^2}}{2Bbd^4i}\right)}{6b^2g^4(ad-bc)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)**4,x)

[Out] -B*d**3*i*log(x + (-B*a**3*d**6*i/(a*d - b*c)**2 + 3*B*a**2*b*c*d**5*i/(a*d - b*c)**2 - 3*B*a*b**2*c**2*d**4*i/(a*d - b*c)**2 + B*a*d**4*i + B*b**3*c*

$$\begin{aligned}
& *3*d**3*i/(a*d - b*c)**2 + B*b*c*d**3*i)/(2*B*b*d**4*i))/(6*b**2*g**4*(a*d \\
& - b*c)**2) + B*d**3*i*log(x + (B*a**3*d**6*i/(a*d - b*c)**2 - 3*B*a**2*b*c* \\
& d**5*i/(a*d - b*c)**2 + 3*B*a*b**2*c**2*d**4*i/(a*d - b*c)**2 + B*a*d**4*i \\
& - B*b**3*c**3*d**3*i/(a*d - b*c)**2 + B*b*c*d**3*i)/(2*B*b*d**4*i))/(6*b**2 \\
& *g**4*(a*d - b*c)**2) + (-B*a*d*i - 2*B*b*c*i - 3*B*b*d*i*x)*log(e*(a + b*x \\
&)/(c + d*x))/(6*a**3*b**2*g**4 + 18*a**2*b**3*g**4*x + 18*a*b**4*g**4*x**2 \\
& + 6*b**5*g**4*x**3) + (-6*A*a**2*d**2*i - 6*A*a*b*c*d*i + 12*A*b**2*c**2*i \\
& - 5*B*a**2*d**2*i - 5*B*a*b*c*d*i + 4*B*b**2*c**2*i - 6*B*b**2*d**2*i*x**2 \\
& + x*(-18*A*a*b*d**2*i + 18*A*b**2*c*d*i - 15*B*a*b*d**2*i + 3*B*b**2*c*d*i) \\
&)/(36*a**4*b**2*d*g**4 - 36*a**3*b**3*c*g**4 + x**3*(36*a*b**5*d*g**4 - 36* \\
& b**6*c*g**4) + x**2*(108*a**2*b**4*d*g**4 - 108*a*b**5*c*g**4) + x*(108*a** \\
& 3*b**3*d*g**4 - 108*a**2*b**4*c*g**4))
\end{aligned}$$

$$3.9 \quad \int \frac{(ci+dx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{(ag+bgx)^5} dx$$

Optimal. Leaf size=269

$$-\frac{b^2 i(c+dx)^4 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{4g^5(a+bx)^4(bc-ad)^3} - \frac{d^2 i(c+dx)^2 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{2g^5(a+bx)^2(bc-ad)^3} + \frac{2bdi(c+dx)^3 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{3g^5(a+bx)^3(bc-ad)^3} - \frac{16g^5 i(c+dx)^5 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{16g^5(a+bx)^5(bc-ad)^3}$$

[Out] $-1/4*B*d^2*i*(d*x+c)^2/(-a*d+b*c)^3/g^5/(b*x+a)^2+2/9*b*B*d*i*(d*x+c)^3/(-a*d+b*c)^3/g^5/(b*x+a)^3-1/16*b^2*B*i*(d*x+c)^4/(-a*d+b*c)^3/g^5/(b*x+a)^4-1/2*d^2*i*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^3/g^5/(b*x+a)^2+2/3*b*d*i*(d*x+c)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^3/g^5/(b*x+a)^3-1/4*b^2*i*(d*x+c)^4*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^3/g^5/(b*x+a)^4$

Rubi [A] time = 0.39, antiderivative size = 257, normalized size of antiderivative = 0.96, number of steps used = 10, number of rules used = 4, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$, Rules used = {2528, 2525, 12, 44}

$$-\frac{di \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{3b^2g^5(a+bx)^3} - \frac{i(bc-ad) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{4b^2g^5(a+bx)^4} - \frac{Bd^3i}{12b^2g^5(a+bx)(bc-ad)^2} + \frac{Bd^2i}{24b^2g^5(a+bx)^2(bc-ad)}$$

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x])))/(a*g + b*g*x)^5,x]

[Out] $-(B*(b*c - a*d)*i)/(16*b^2*g^5*(a + b*x)^4) - (B*d*i)/(36*b^2*g^5*(a + b*x)^3) + (B*d^2*i)/(24*b^2*(b*c - a*d)*g^5*(a + b*x)^2) - (B*d^3*i)/(12*b^2*(b*c - a*d)^2*g^5*(a + b*x)) - (B*d^4*i*Log[a + b*x])/(12*b^2*(b*c - a*d)^3*g^5) - ((b*c - a*d)*i*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(4*b^2*g^5*(a + b*x)^4) - (d*i*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(3*b^2*g^5*(a + b*x)^3) + (B*d^4*i*Log[c + d*x])/(12*b^2*(b*c - a*d)^3*g^5)$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 44

Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_.))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFX^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFX^p])^(n - 1)*D[RFX, x])/RFX, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFX, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFX^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFX, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned} \int \frac{(9c + 9dx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{(ag + bgx)^5} dx &= \int \left(\frac{9(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{bg^5(a + bx)^5} + \frac{9d \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{bg^5(a + bx)^4} \right) dx \\ &= \frac{(9d) \int \frac{A + B \log \left(\frac{e(a+bx)}{c+dx} \right)}{(a+bx)^4} dx}{bg^5} + \frac{(9(bc - ad)) \int \frac{A + B \log \left(\frac{e(a+bx)}{c+dx} \right)}{(a+bx)^5} dx}{bg^5} \\ &= -\frac{9(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{4b^2g^5(a + bx)^4} - \frac{3d \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g^5(a + bx)^3} + \frac{(3Bd)}{b^2g^5(a + bx)^3} \\ &= -\frac{9(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{4b^2g^5(a + bx)^4} - \frac{3d \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g^5(a + bx)^3} + \frac{(3Bd)}{b^2g^5(a + bx)^3} \\ &= -\frac{9(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{4b^2g^5(a + bx)^4} - \frac{3d \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g^5(a + bx)^3} + \frac{(3Bd)}{b^2g^5(a + bx)^3} \\ &= -\frac{9B(bc - ad)}{16b^2g^5(a + bx)^4} - \frac{Bd}{4b^2g^5(a + bx)^3} + \frac{3Bd^2}{8b^2(bc - ad)g^5(a + bx)^2} - \frac{3Bd}{4b^2g^5(a + bx)^3} \end{aligned}$$

Mathematica [A] time = 0.47, size = 210, normalized size = 0.78

$$i \left(\frac{36Abc}{(a+bx)^4} + \frac{48Ad}{(a+bx)^3} - \frac{36aAd}{(a+bx)^4} + \frac{12Bd^4 \log(a+bx)}{(bc-ad)^3} - \frac{12Bd^4 \log(c+dx)}{(bc-ad)^3} + \frac{12Bd^3}{(a+bx)(bc-ad)^2} - \frac{6Bd^2}{(a+bx)^2(bc-ad)} + \frac{12B(ad+3bc+4bdx) \log\left(\frac{e(a-c)}{c}\right)}{(a+bx)^4} \right)$$

$$144b^2g^5$$

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])/(a*g + b*g*x)^5, x]

[Out] -1/144*(i*((36*A*b*c)/(a + b*x)^4 + (9*b*B*c)/(a + b*x)^4 - (36*a*A*d)/(a + b*x)^4 - (9*a*B*d)/(a + b*x)^4 + (48*A*d)/(a + b*x)^3 + (4*B*d)/(a + b*x)^3 - (6*B*d^2)/((b*c - a*d)*(a + b*x)^2) + (12*B*d^3)/((b*c - a*d)^2*(a + b*x)) + (12*B*d^4*Log[a + b*x])/(b*c - a*d)^3 + (12*B*(3*b*c + a*d + 4*b*d*x)*Log[(e*(a + b*x))/(c + d*x)])/(a + b*x)^4 - (12*B*d^4*Log[c + d*x])/(b*c - a*d)^3))/(b^2*g^5)

fricas [B] time = 0.93, size = 602, normalized size = 2.24

$$12(Bb^4cd^3 - Bab^3d^4)ix^3 - 6(Bb^4c^2d^2 - 8Bab^3cd^3 + 7Ba^2b^2d^4)ix^2 + 4((12A + B)b^4c^3d - 6(6A + B)ab^3c^2d^2 - a^3b^6d^3)$$

$$144((b^9c^3 - 3ab^8c^2d + 3a^2b^7cd^2 - a^3b^6d^3))$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^5, x, algorithm="fricas")

[Out] -1/144*(12*(B*b^4*c*d^3 - B*a*b^3*d^4)*i*x^3 - 6*(B*b^4*c^2*d^2 - 8*B*a*b^3*c*d^3 + 7*B*a^2*b^2*d^4)*i*x^2 + 4*((12*A + B)*b^4*c^3*d - 6*(6*A + B)*a*b^3*c^2*d^2 + 18*(2*A + B)*a^2*b^2*c*d^3 - (12*A + 13*B)*a^3*b*d^4)*i*x + (9*(4*A + B)*b^4*c^4 - 32*(3*A + B)*a*b^3*c^3*d + 36*(2*A + B)*a^2*b^2*c^2*d^2 - (12*A + 13*B)*a^4*d^4)*i + 12*(B*b^4*d^4*i*x^4 + 4*B*a*b^3*d^4*i*x^3 + 6*B*a^2*b^2*d^4*i*x^2 + 4*(B*b^4*c^3*d - 3*B*a*b^3*c^2*d^2 + 3*B*a^2*b^2*c*d^3)*i*x + (3*B*b^4*c^4 - 8*B*a*b^3*c^3*d + 6*B*a^2*b^2*c^2*d^2)*i)*log((b*e*x + a*e)/(d*x + c)))/((b^9*c^3 - 3*a*b^8*c^2*d + 3*a^2*b^7*c*d^2 - a^3*b^6*d^3)*g^5*x^4 + 4*(a*b^8*c^3 - 3*a^2*b^7*c^2*d + 3*a^3*b^6*c*d^2 - a^4*b^5*d^3)*g^5*x^3 + 6*(a^2*b^7*c^3 - 3*a^3*b^6*c^2*d + 3*a^4*b^5*c*d^2 - a^5*b^4*d^3)*g^5*x^2 + 4*(a^3*b^6*c^3 - 3*a^4*b^5*c^2*d + 3*a^5*b^4*c*d^2 - a^6*b^3*d^3)*g^5*x + (a^4*b^5*c^3 - 3*a^5*b^4*c^2*d + 3*a^6*b^3*c*d^2 - a^7*b^2*d^3)*g^5)

giac [A] time = 1.44, size = 391, normalized size = 1.45

$$\frac{\left(36 B b^2 i e^5 \log\left(\frac{bxe+ae}{dx+c}\right) - \frac{96 (bxe+ae) B b d i e^4 \log\left(\frac{bxe+ae}{dx+c}\right)}{dx+c} + \frac{72 (bxe+ae)^2 B d^2 i e^3 \log\left(\frac{bxe+ae}{dx+c}\right)}{(dx+c)^2} + 36 A b^2 i e^5 + 9 B b^2 i e^5 - \frac{96 (bxe+ae)}{dx+c} \right)}{144 \left(\frac{(bxe+ae)^4 b^2 c^2 g^5}{(dx+c)^4} - \frac{2 (bxe+ae)^4 a b c d g^5}{(dx+c)^4} \right)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^5,x, algorithm="giac")

[Out] -1/144*(36*B*b^2*i*e^5*log((b*x*e + a*e)/(d*x + c)) - 96*(b*x*e + a*e)*B*b*d*i*e^4*log((b*x*e + a*e)/(d*x + c))/(d*x + c) + 72*(b*x*e + a*e)^2*B*d^2*i*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 + 36*A*b^2*i*e^5 + 9*B*b^2*i*e^5 - 96*(b*x*e + a*e)*A*b*d*i*e^4/(d*x + c) - 32*(b*x*e + a*e)*B*b*d*i*e^4/(d*x + c) + 72*(b*x*e + a*e)^2*A*d^2*i*e^3/(d*x + c)^2 + 36*(b*x*e + a*e)^2*B*d^2*i*e^3/(d*x + c)^2)*(b*c/((b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))/((b*x*e + a*e)^4*b^2*c^2*g^5/(d*x + c)^4 - 2*(b*x*e + a*e)^4*a*b*c*d*g^5/(d*x + c)^4 + (b*x*e + a*e)^4*a^2*d^2*g^5/(d*x + c)^4)

maple [B] time = 0.05, size = 1226, normalized size = 4.56

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*i*x+c*i)*(B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^5,x)

[Out] 1/2*d^3*e^2*i/(a*d-b*c)^4/g^5*A/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a-1/2*d^2*e^2*i/(a*d-b*c)^4/g^5*A/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*b*c-2/3*d^2*e^3*i/(a*d-b*c)^4/g^5*A*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*a+2/3*d*e^3*i/(a*d-b*c)^4/g^5*A*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*c+1/4*d*e^4*i/(a*d-b*c)^4/g^5*A*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*a-1/4*e^4*i/(a*d-b*c)^4/g^5*A*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*c+1/2*d^3*e^2*i/(a*d-b*c)^4/g^5*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-1/2*d^2*e^2*i/(a*d-b*c)^4/g^5*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*c+1/4*d^3*e^2*i/(a*d-b*c)^4/g^5*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a-1/4*d^2*e^2*i/(a*d-b*c)^4/g^5*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*b*c-2/3*d^2*e^3*i/(a*d-b*c)^4/g^5*B*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+2/3*d*e^3*i/(a*d-b*c)^4/g^5*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-2/9*d^2*e^3*i/(a*d-b*c)^4/g^5*B*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/

$$d^3e^{3a+2/9d}e^{3i}/(a*d-b*c)^4/g^5B*b^2/(1/(d*x+c)*a*e^{-1/(d*x+c)}*b*c/d^3e^{b/d}e)^{3c+1/4d}e^{4i}/(a*d-b*c)^4/g^5B*b^2/(1/(d*x+c)*a*e^{-1/(d*x+c)}*b*c/d^3e^{b/d}e)^4*\ln(b/d^3e^{b/d}e+(a*d-b*c)/(d*x+c)/d^3e^{b/d}e)*a^{-1/4}e^{4i}/(a*d-b*c)^4/g^5B*b^3/(1/(d*x+c)*a*e^{-1/(d*x+c)}*b*c/d^3e^{b/d}e)^4*\ln(b/d^3e^{b/d}e+(a*d-b*c)/(d*x+c)/d^3e^{b/d}e)*c+1/16*d^4e^{4i}/(a*d-b*c)^4/g^5B*b^2/(1/(d*x+c)*a*e^{-1/(d*x+c)}*b*c/d^3e^{b/d}e)^4*a^{-1/16}e^{4i}/(a*d-b*c)^4/g^5B*b^3/(1/(d*x+c)*a*e^{-1/(d*x+c)}*b*c/d^3e^{b/d}e)^4*c$$

maxima [B] time = 1.80, size = 1386, normalized size = 5.15

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^5,x, algorithm="maxima")

[Out]
$$\begin{aligned} & -1/144*B*d*i*(12*(4*b*x + a)*\log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^6*g^5*x^4 + 4*a*b^5*g^5*x^3 + 6*a^2*b^4*g^5*x^2 + 4*a^3*b^3*g^5*x + a^4*b^2*g^5) \\ & + (7*a*b^3*c^3 - 33*a^2*b^2*c^2*d + 75*a^3*b*c*d^2 - 13*a^4*d^3 + 12*(4*b^4*c*d^2 - a*b^3*d^3)*x^3 - 6*(4*b^4*c^2*d - 29*a*b^3*c*d^2 + 7*a^2*b^2*d^3)*x^2 \\ & + 4*(4*b^4*c^3 - 21*a*b^3*c^2*d + 57*a^2*b^2*c*d^2 - 13*a^3*b*d^3)*x)/(b^9*c^3 - 3*a*b^8*c^2*d + 3*a^2*b^7*c*d^2 - a^3*b^6*d^3)*g^5*x^4 + 4*(a*b^8*c^3 - 3*a^2*b^7*c^2*d + 3*a^3*b^6*c*d^2 - a^4*b^5*d^3)*g^5*x^3 + 6*(a^2*b^7*c^3 - 3*a^3*b^6*c^2*d + 3*a^4*b^5*c*d^2 - a^5*b^4*d^3)*g^5*x^2 + 4*(a^3*b^6*c^3 - 3*a^4*b^5*c^2*d + 3*a^5*b^4*c*d^2 - a^6*b^3*d^3)*g^5*x + (a^4*b^5*c^3 - 3*a^5*b^4*c^2*d + 3*a^6*b^3*c*d^2 - a^7*b^2*d^3)*g^5) + 12*(4*b*c*d^3 - a*d^4)*\log(b*x + a)/((b^6*c^4 - 4*a*b^5*c^3*d + 6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*g^5) - 12*(4*b*c*d^3 - a*d^4)*\log(d*x + c)/((b^6*c^4 - 4*a*b^5*c^3*d + 6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*g^5) + 1/48*B*c*i*((12*b^3*d^3*x^3 - 3*b^3*c^3 + 13*a*b^2*c^2*d - 23*a^2*b*c*d^2 + 25*a^3*d^3 - 6*(b^3*c*d^2 - 7*a*b^2*d^3)*x^2 + 4*(b^3*c^2*d - 5*a*b^2*c*d^2 + 13*a^2*b*d^3)*x)/((b^8*c^3 - 3*a*b^7*c^2*d + 3*a^2*b^6*c*d^2 - a^3*b^5*d^3)*g^5*x^4 + 4*(a*b^7*c^3 - 3*a^2*b^6*c^2*d + 3*a^3*b^5*c*d^2 - a^4*b^4*d^3)*g^5*x^3 + 6*(a^2*b^6*c^3 - 3*a^3*b^5*c^2*d + 3*a^4*b^4*c*d^2 - a^5*b^3*d^3)*g^5*x^2 + 4*(a^3*b^5*c^3 - 3*a^4*b^4*c^2*d + 3*a^5*b^3*c*d^2 - a^6*b^2*d^3)*g^5*x + (a^4*b^4*c^3 - 3*a^5*b^3*c^2*d + 3*a^6*b^2*c*d^2 - a^7*b*d^3)*g^5) - 12*\log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^5*g^5*x^4 + 4*a*b^4*g^5*x^3 + 6*a^2*b^3*g^5*x^2 + 4*a^3*b^2*g^5*x + a^4*b*g^5) + 12*d^4*\log(b*x + a)/((b^5*c^4 - 4*a*b^4*c^3*d + 6*a^2*b^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)*g^5) - 12*d^4*\log(d*x + c)/((b^5*c^4 - 4*a*b^4*c^3*d + 6*a^2*b^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)*g^5) - 1/12*(4*b*x + a)*A*d*i/(b^6*g^5*x^4 + 4*a*b^5*g^5*x^3 + 6*a^2*b^4*g^5*x^2 + 4*a^3*b^3*g^5*x + a^4*b^2*g^5) - 1/4*A*c*i/(b^5*g^5*x^4 + 4*a*b^4*g^5*x^3 + 6*a^2*b^3*g^5*x^2 + 4*a^3*b^2*g^5*x + a^4*b*g^5) \end{aligned}$$

mupad [B] time = 6.46, size = 590, normalized size = 2.19

$$\frac{B d^4 i \operatorname{atanh}\left(\frac{12 a^3 b^2 d^3 g^5 - 12 a^2 b^3 c d^2 g^5 - 12 a b^4 c^2 d g^5 + 12 b^5 c^3 g^5}{12 b^2 g^5 (a d - b c)^3} + \frac{2 b d x (a^2 d^2 - 2 a b c d + b^2 c^2)}{(a d - b c)^3}\right)}{6 b^2 g^5 (a d - b c)^3} - \frac{\ln\left(\frac{e(a+b x)}{c+d x}\right) \left(\frac{B c i}{4 b^2 g^5} + \frac{B a d}{12 b^3}\right)}{4 a^3 x + \frac{a^4}{b} + b^3 x^4 + 6 a^2 b x}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x)^5,x)

[Out] (B*d^4*i*atanh((12*b^5*c^3*g^5 + 12*a^3*b^2*d^3*g^5 - 12*a*b^4*c^2*d*g^5 - 12*a^2*b^3*c*d^2*g^5)/(12*b^2*g^5*(a*d - b*c)^3) + (2*b*d*x*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))/(a*d - b*c)^3))/(6*b^2*g^5*(a*d - b*c)^3) - (log((e*(a + b*x))/(c + d*x))*(B*c*i)/(4*b^2*g^5) + (B*a*d*i)/(12*b^3*g^5) + (B*d*i*x)/(3*b^2*g^5))/(4*a^3*x + a^4/b + b^3*x^4 + 6*a^2*b*x^2 + 4*a*b^2*x^3) - ((12*A*a^3*d^3*i + 36*A*b^3*c^3*i + 13*B*a^3*d^3*i + 9*B*b^3*c^3*i - 60*A*a*b^2*c^2*d*i + 12*A*a^2*b*c*d^2*i - 23*B*a*b^2*c^2*d*i + 13*B*a^2*b*c*d^2*i)/(12*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (x*(12*A*a^2*b*d^3*i + 13*B*a^2*b*d^3*i + 12*A*b^3*c^2*d*i + B*b^3*c^2*d*i - 24*A*a*b^2*c*d^2*i - 5*B*a*b^2*c*d^2*i))/(3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) - (d*x^2*(B*b^3*c*d*i - 7*B*a*b^2*d^2*i))/(2*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (B*b^3*d^3*i*x^3)/(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))/(12*a^4*b^2*g^5 + 12*b^6*g^5*x^4 + 48*a^3*b^3*g^5*x + 48*a*b^5*g^5*x^3 + 72*a^2*b^4*g^5*x^2)

sympy [B] time = 18.73, size = 928, normalized size = 3.45

$$\frac{B d^4 i \log\left(x + \frac{\frac{B a^4 d^8 i}{(a d - b c)^3} + \frac{4 B a^3 b c d^7 i}{(a d - b c)^3} - \frac{6 B a^2 b^2 c^2 d^6 i}{(a d - b c)^3} + \frac{4 B a b^3 c^3 d^5 i}{(a d - b c)^3} + B a d^5 i - \frac{B b^4 c^4 d^4 i}{(a d - b c)^3} + B b c d^4 i}{2 B b d^5 i}\right)}{12 b^2 g^5 (a d - b c)^3} + \frac{B d^4 i \log\left(x + \frac{\frac{B a^4 d^8 i}{(a d - b c)^3} - \frac{4 B a^3 b c d^7 i}{(a d - b c)^3} + \frac{6 B a^2 b^2 c^2 d^6 i}{(a d - b c)^3} - \frac{4 B a b^3 c^3 d^5 i}{(a d - b c)^3} + B a d^5 i - \frac{B b^4 c^4 d^4 i}{(a d - b c)^3} + B b c d^4 i}{2 B b d^5 i}\right)}{12 b^2 g^5 (a d - b c)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)**5,x)

[Out] -B*d**4*i*log(x + (-B*a**4*d**8*i/(a*d - b*c)**3 + 4*B*a**3*b*c*d**7*i/(a*d - b*c)**3 - 6*B*a**2*b**2*c**2*d**6*i/(a*d - b*c)**3 + 4*B*a*b**3*c**3*d**5*i/(a*d - b*c)**3 + B*a*d**5*i - B*b**4*c**4*d**4*i/(a*d - b*c)**3 + B*b*c*d**4*i)/(2*B*b*d**5*i))/(12*b**2*g**5*(a*d - b*c)**3) + B*d**4*i*log(x + (B*a**4*d**8*i/(a*d - b*c)**3 - 4*B*a**3*b*c*d**7*i/(a*d - b*c)**3 + 6*B*a**2*b**2*c**2*d**6*i/(a*d - b*c)**3 - 4*B*a*b**3*c**3*d**5*i/(a*d - b*c)**3 + B*a*d**5*i + B*b**4*c**4*d**4*i/(a*d - b*c)**3 + B*b*c*d**4*i)/(2*B*b*d**5*i))/(12*b**2*g**5*(a*d - b*c)**3) + (-B*a*d*i - 3*B*b*c*i - 4*B*b*d*i*x)*log(e*(a + b*x)/(c + d*x))/(12*a**4*b**2*g**5 + 48*a**3*b**3*g**5*x + 72*a**2*b**4*g**5*x^2)

$$\begin{aligned}
& 2*b^{**4}*g^{**5}*x^{**2} + 48*a*b^{**5}*g^{**5}*x^{**3} + 12*b^{**6}*g^{**5}*x^{**4}) + (-12*A*a^{**3}*d \\
& **3*i - 12*A*a^{**2}*b*c*d^{**2}*i + 60*A*a*b^{**2}*c^{**2}*d*i - 36*A*b^{**3}*c^{**3}*i - 13 \\
& *B*a^{**3}*d^{**3}*i - 13*B*a^{**2}*b*c*d^{**2}*i + 23*B*a*b^{**2}*c^{**2}*d*i - 9*B*b^{**3}*c^{** \\
& 3*i - 12*B*b^{**3}*d^{**3}*i*x^{**3} + x^{**2}*(-42*B*a*b^{**2}*d^{**3}*i + 6*B*b^{**3}*c*d^{**2}*i \\
&) + x*(-48*A*a^{**2}*b*d^{**3}*i + 96*A*a*b^{**2}*c*d^{**2}*i - 48*A*b^{**3}*c^{**2}*d*i - 52 \\
& *B*a^{**2}*b*d^{**3}*i + 20*B*a*b^{**2}*c*d^{**2}*i - 4*B*b^{**3}*c^{**2}*d*i))/(144*a^{**6}*b^{** \\
& 2*d^{**2}*g^{**5} - 288*a^{**5}*b^{**3}*c*d*g^{**5} + 144*a^{**4}*b^{**4}*c^{**2}*g^{**5} + x^{**4}*(144* \\
& a^{**2}*b^{**6}*d^{**2}*g^{**5} - 288*a*b^{**7}*c*d*g^{**5} + 144*b^{**8}*c^{**2}*g^{**5}) + x^{**3}*(576 \\
& *a^{**3}*b^{**5}*d^{**2}*g^{**5} - 1152*a^{**2}*b^{**6}*c*d*g^{**5} + 576*a*b^{**7}*c^{**2}*g^{**5}) + x \\
& **2*(864*a^{**4}*b^{**4}*d^{**2}*g^{**5} - 1728*a^{**3}*b^{**5}*c*d*g^{**5} + 864*a^{**2}*b^{**6}*c^{**2} \\
& *g^{**5}) + x*(576*a^{**5}*b^{**3}*d^{**2}*g^{**5} - 1152*a^{**4}*b^{**4}*c*d*g^{**5} + 576*a^{**3}*b^{** \\
& 5*c^{**2}*g^{**5})
\end{aligned}$$

3.10 $\int (ag + bgx)^3 (ci + dix)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) dx$

Optimal. Leaf size=423

$$\frac{b^3 g^3 i^2 (c + dx)^6 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{6d^4} - \frac{3b^2 g^3 i^2 (c + dx)^5 (bc - ad) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{5d^4} - \frac{g^3 i^2 (c + dx)^3 (bc - ad)^3}{3d^4}$$

[Out] $\frac{1}{60} B (-a*d+b*c)^5 g^3 i^2 x / b^2 / d^3 + \frac{1}{120} B (-a*d+b*c)^4 g^3 i^2 (d*x+c)^2 / b / d^4 - \frac{19}{180} B (-a*d+b*c)^3 g^3 i^2 (d*x+c)^3 / d^4 + \frac{13}{120} b B (-a*d+b*c)^2 g^3 i^2 (d*x+c)^4 / d^4 - \frac{1}{30} b^2 B (-a*d+b*c) g^3 i^2 (d*x+c)^5 / d^4 + \frac{1}{60} B (-a*d+b*c)^6 g^3 i^2 \ln((b*x+a)/(d*x+c)) / b^3 / d^4 - \frac{1}{3} (-a*d+b*c)^3 g^3 i^2 (d*x+c)^3 (A+B \ln(e*(b*x+a)/(d*x+c))) / d^4 + \frac{3}{4} b (-a*d+b*c)^2 g^3 i^2 (d*x+c)^4 (A+B \ln(e*(b*x+a)/(d*x+c))) / d^4 - \frac{3}{5} b^2 (-a*d+b*c) g^3 i^2 (d*x+c)^5 (A+B \ln(e*(b*x+a)/(d*x+c))) / d^4 + \frac{1}{6} b^3 g^3 i^2 (d*x+c)^6 (A+B \ln(e*(b*x+a)/(d*x+c))) / d^4 + \frac{1}{60} B (-a*d+b*c)^6 g^3 i^2 \ln(d*x+c) / b^3 / d^4$

Rubi [A] time = 0.66, antiderivative size = 330, normalized size of antiderivative = 0.78, number of steps used = 14, number of rules used = 4, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.100$, Rules used = {2528, 2525, 12, 43}

$$\frac{d^2 g^3 i^2 (a + bx)^6 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{6b^3} + \frac{g^3 i^2 (a + bx)^4 (bc - ad)^2 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{4b^3} + \frac{2d g^3 i^2 (a + bx)^5 (bc - ad)}{5b^3}$$

Antiderivative was successfully verified.

[In] Int[(a*g + b*g*x)^3*(c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]),x]

[Out] $-\frac{B(b*c - a*d)^5 g^3 i^2 x}{(60*b^2*d^3)} + \frac{B(b*c - a*d)^4 g^3 i^2 (a + b*x)^2}{(120*b^3*d^2)} - \frac{B(b*c - a*d)^3 g^3 i^2 (a + b*x)^3}{(180*b^3*d)} - \frac{(7*B(b*c - a*d)^2 g^3 i^2 (a + b*x)^4)}{(120*b^3)} - \frac{B*d*(b*c - a*d) g^3 i^2 (a + b*x)^5}{(30*b^3)} + \frac{((b*c - a*d)^2 g^3 i^2 (a + b*x)^4 (A + B*Log[(e*(a + b*x))/(c + d*x)]))}{(4*b^3)} + \frac{(2*d*(b*c - a*d) g^3 i^2 (a + b*x)^5 (A + B*Log[(e*(a + b*x))/(c + d*x)]))}{(5*b^3)} + \frac{(d^2 g^3 i^2 (a + b*x)^6 (A + B*Log[(e*(a + b*x))/(c + d*x)]))}{(6*b^3)} + \frac{B(b*c - a*d)^6 g^3 i^2 \text{Log}[c + d*x]}{(60*b^3*d^4)}$

Rule 12

Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_) /; FreeQ[b, x]]

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && (!IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunci
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int (10c + 10dx)^2 (ag + bgx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) dx &= \int \left(\frac{100(bc - ad)^2 (ag + bgx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2} + \right. \\
&= \frac{(100(bc - ad)^2) \int (ag + bgx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) dx}{b^2} \\
&= \frac{25(bc - ad)^2 g^3 (a + bx)^4 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3} + \frac{40d(bc - ad)^2 g^3 (a + bx)^4}{b^3} \\
&= \frac{25(bc - ad)^2 g^3 (a + bx)^4 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3} + \frac{40d(bc - ad)^2 g^3 (a + bx)^4}{b^3} \\
&= \frac{25(bc - ad)^2 g^3 (a + bx)^4 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3} + \frac{40d(bc - ad)^2 g^3 (a + bx)^4}{b^3} \\
&= -\frac{5B(bc - ad)^5 g^3 x}{3b^2 d^3} + \frac{5B(bc - ad)^4 g^3 (a + bx)^2}{6b^3 d^2} - \frac{5B(bc - ad)^3 g^3 (a + bx)}{6b^3 d}
\end{aligned}$$

Mathematica [A] time = 0.36, size = 429, normalized size = 1.01

$$g^3 i^2 \left(60d^6(a+bx)^6 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right) + 144d^5(a+bx)^5(bc-ad) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right) + 90d^4(a+bx)^4(bc-ad) \right)$$

Antiderivative was successfully verified.

[In] Integrate[(a*g + b*g*x)^3*(c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])],x]

[Out] (g^3*i^2*(90*d^4*(b*c - a*d)^2*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 144*d^5*(b*c - a*d)*(a + b*x)^5*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 60*d^6*(a + b*x)^6*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 15*B*(b*c - a*d)^3*(6*b*d*(b*c - a*d)^2*x + 3*d^2*(-(b*c) + a*d)*(a + b*x)^2 + 2*d^3*(a + b*x)^3 - 6*(b*c - a*d)^3*Log[c + d*x]) + 12*B*(b*c - a*d)^2*(12*b*d*(b*c - a*d)^3*x - 6*d^2*(b*c - a*d)^2*(a + b*x)^2 + 4*d^3*(b*c - a*d)*(a + b*x)^3 - 3*d^4*(a + b*x)^4 - 12*(b*c - a*d)^4*Log[c + d*x]) - B*(b*c - a*d)*(60*b*d*(b*c - a*d)^4*x + 30*d^2*(-(b*c) + a*d)^3*(a + b*x)^2 + 20*d^3*(b*c - a*d)^2*(a + b*x)^3 + 15*d^4*(-(b*c) + a*d)*(a + b*x)^4 + 12*d^5*(a + b*x)^5 - 60*(b*c - a*d)^5*Log[c + d*x]))/(360*b^3*d^4)

fricas [A] time = 1.38, size = 724, normalized size = 1.71

$$60 A b^6 d^6 g^3 i^2 x^6 + 12 \left((12 A - B) b^6 c d^5 + (18 A + B) a b^5 d^6 \right) g^3 i^2 x^5 + 3 \left((30 A - 7 B) b^6 c^2 d^4 + 6 (30 A - B) a b^5 c d^5 - \dots \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorithm="fricas")

[Out] 1/360*(60*A*b^6*d^6*g^3*i^2*x^6 + 12*((12*A - B)*b^6*c*d^5 + (18*A + B)*a*b^5*d^6)*g^3*i^2*x^5 + 3*((30*A - 7*B)*b^6*c^2*d^4 + 6*(30*A - B)*a*b^5*c*d^5 + (90*A + 13*B)*a^2*b^4*d^6)*g^3*i^2*x^4 - 2*(B*b^6*c^3*d^3 - 3*(60*A - 13*B)*a*b^5*c^2*d^4 - 3*(120*A + 7*B)*a^2*b^4*c*d^5 - (60*A + 19*B)*a^3*b^3*d^6)*g^3*i^2*x^3 + 3*(B*b^6*c^4*d^2 - 6*B*a*b^5*c^3*d^3 + 30*(6*A - B)*a^2*b^4*c^2*d^4 + 2*(60*A + 17*B)*a^3*b^3*c*d^5 + B*a^4*b^2*d^6)*g^3*i^2*x^2 - 6*(B*b^6*c^5*d - 6*B*a*b^5*c^4*d^2 + 15*B*a^2*b^4*c^3*d^3 - 5*(12*A + B)*a^3*b^3*c^2*d^4 - 6*B*a^4*b^2*c*d^5 + B*a^5*b*d^6)*g^3*i^2*x + 6*(15*B*a^4*b^2*c^2*d^4 - 6*B*a^5*b*c*d^5 + B*a^6*d^6)*g^3*i^2*log(b*x + a) + 6*(B*b^6*c^6 - 6*B*a*b^5*c^5*d + 15*B*a^2*b^4*c^4*d^2 - 20*B*a^3*b^3*c^3*d^3)*g^3*i^2*log(d*x + c) + 6*(10*B*b^6*d^6*g^3*i^2*x^6 + 60*B*a^3*b^3*c^2*d^4*g^3*i^2*x^5 + 12*(2*B*b^6*c*d^5 + 3*B*a*b^5*d^6)*g^3*i^2*x^5 + 15*(B*b^6*c^2*d^4 + 6*B*a*b^5*c*d^5 + 3*B*a^2*b^4*d^6)*g^3*i^2*x^4 + 20*(3*B*a*b^5*c^2*d^4 + 6*B*a

$$\begin{aligned} &^2*b^4*c*d^5 + B*a^3*b^3*d^6)*g^3*i^2*x^3 + 30*(3*B*a^2*b^4*c^2*d^4 + 2*B*a \\ &^3*b^3*c*d^5)*g^3*i^2*x^2)*\log((b*e*x + a*e)/(d*x + c)))/(b^3*d^4) \end{aligned}$$

giac [B] time = 1.82, size = 7651, normalized size = 18.09

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorithm="giac")

[Out]
$$\begin{aligned} &1/360*(6*B*b^{13}*c^7*g^3*e^7*\log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 42*B*a* \\ &b^{12}*c^6*d*g^3*e^7*\log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 126*B*a^2*b^{11}*c \\ &^5*d^2*g^3*e^7*\log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 210*B*a^3*b^{10}*c^4*d \\ &^3*g^3*e^7*\log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 210*B*a^4*b^9*c^3*d^4*g^3* \\ &e^7*\log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 126*B*a^5*b^8*c^2*d^5*g^3*e^7 \\ &* \log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 42*B*a^6*b^7*c*d^6*g^3*e^7*\log(-b* \\ &e + (b*x*e + a*e)*d/(d*x + c)) - 6*B*a^7*b^6*d^7*g^3*e^7*\log(-b*e + (b*x*e \\ &+ a*e)*d/(d*x + c)) - 36*(b*x*e + a*e)*B*b^{12}*c^7*d*g^3*e^6*\log(-b*e + (b*x \\ &*e + a*e)*d/(d*x + c))/(d*x + c) + 252*(b*x*e + a*e)*B*a*b^{11}*c^6*d^2*g^3*e \\ &^6*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) - 756*(b*x*e + a*e)*B*a^ \\ &2*b^{10}*c^5*d^3*g^3*e^6*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 12 \\ &60*(b*x*e + a*e)*B*a^3*b^9*c^4*d^4*g^3*e^6*\log(-b*e + (b*x*e + a*e)*d/(d*x \\ &+ c))/(d*x + c) - 1260*(b*x*e + a*e)*B*a^4*b^8*c^3*d^5*g^3*e^6*\log(-b*e + (\\ &b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 756*(b*x*e + a*e)*B*a^5*b^7*c^2*d^6*g \\ &^3*e^6*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) - 252*(b*x*e + a*e)* \\ &B*a^6*b^6*c*d^7*g^3*e^6*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 3 \\ &6*(b*x*e + a*e)*B*a^7*b^5*d^8*g^3*e^6*\log(-b*e + (b*x*e + a*e)*d/(d*x + c)) \\ &/ (d*x + c) + 90*(b*x*e + a*e)^2*B*b^{11}*c^7*d^2*g^3*e^5*\log(-b*e + (b*x*e + \\ &a*e)*d/(d*x + c))/(d*x + c)^2 - 630*(b*x*e + a*e)^2*B*a*b^{10}*c^6*d^3*g^3*e^ \\ &5*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 + 1890*(b*x*e + a*e)^2* \\ &B*a^2*b^9*c^5*d^4*g^3*e^5*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 \\ &- 3150*(b*x*e + a*e)^2*B*a^3*b^8*c^4*d^5*g^3*e^5*\log(-b*e + (b*x*e + a*e)* \\ &d/(d*x + c))/(d*x + c)^2 + 3150*(b*x*e + a*e)^2*B*a^4*b^7*c^3*d^6*g^3*e^5*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 1890*(b*x*e + a*e)^2*B*a^ \\ &5*b^6*c^2*d^7*g^3*e^5*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 + \\ &630*(b*x*e + a*e)^2*B*a^6*b^5*c*d^8*g^3*e^5*\log(-b*e + (b*x*e + a*e)*d/(d*x \\ &+ c))/(d*x + c)^2 - 90*(b*x*e + a*e)^2*B*a^7*b^4*d^9*g^3*e^5*\log(-b*e + (b \\ &x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 120*(b*x*e + a*e)^3*B*b^{10}*c^7*d^3*g \\ &^3*e^4*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 + 840*(b*x*e + a*e) \\ &^3*B*a*b^9*c^6*d^4*g^3*e^4*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) \\ &^3 - 2520*(b*x*e + a*e)^3*B*a^2*b^8*c^5*d^5*g^3*e^4*\log(-b*e + (b*x*e + a*e) \\ &)*d/(d*x + c))/(d*x + c)^3 + 4200*(b*x*e + a*e)^3*B*a^3*b^7*c^4*d^6*g^3*e^4 \\ &* \log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 - 4200*(b*x*e + a*e)^3*B \\ &a^4*b^6*c^3*d^7*g^3*e^4*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 \end{aligned}$$

$$\begin{aligned}
& + 2520*(b*x*e + a*e)^3*B*a^5*b^5*c^2*d^8*g^3*e^4*\log(-b*e + (b*x*e + a*e)*d \\
& / (d*x + c)) / (d*x + c)^3 - 840*(b*x*e + a*e)^3*B*a^6*b^4*c*d^9*g^3*e^4*\log(- \\
& b*e + (b*x*e + a*e)*d / (d*x + c)) / (d*x + c)^3 + 120*(b*x*e + a*e)^3*B*a^7*b^ \\
& 3*d^10*g^3*e^4*\log(-b*e + (b*x*e + a*e)*d / (d*x + c)) / (d*x + c)^3 + 90*(b*x* \\
& e + a*e)^4*B*b^9*c^7*d^4*g^3*e^3*\log(-b*e + (b*x*e + a*e)*d / (d*x + c)) / (d*x \\
& + c)^4 - 630*(b*x*e + a*e)^4*B*a*b^8*c^6*d^5*g^3*e^3*\log(-b*e + (b*x*e + a \\
& *e)*d / (d*x + c)) / (d*x + c)^4 + 1890*(b*x*e + a*e)^4*B*a^2*b^7*c^5*d^6*g^3*e \\
& ^3*\log(-b*e + (b*x*e + a*e)*d / (d*x + c)) / (d*x + c)^4 - 3150*(b*x*e + a*e)^4 \\
& *B*a^3*b^6*c^4*d^7*g^3*e^3*\log(-b*e + (b*x*e + a*e)*d / (d*x + c)) / (d*x + c)^ \\
& 4 + 3150*(b*x*e + a*e)^4*B*a^4*b^5*c^3*d^8*g^3*e^3*\log(-b*e + (b*x*e + a*e) \\
& *d / (d*x + c)) / (d*x + c)^4 - 1890*(b*x*e + a*e)^4*B*a^5*b^4*c^2*d^9*g^3*e^3* \\
& \log(-b*e + (b*x*e + a*e)*d / (d*x + c)) / (d*x + c)^4 + 630*(b*x*e + a*e)^4*B*a \\
& ^6*b^3*c*d^10*g^3*e^3*\log(-b*e + (b*x*e + a*e)*d / (d*x + c)) / (d*x + c)^4 - 9 \\
& 0*(b*x*e + a*e)^4*B*a^7*b^2*d^11*g^3*e^3*\log(-b*e + (b*x*e + a*e)*d / (d*x + \\
& c)) / (d*x + c)^4 - 36*(b*x*e + a*e)^5*B*b^8*c^7*d^5*g^3*e^2*\log(-b*e + (b*x* \\
& e + a*e)*d / (d*x + c)) / (d*x + c)^5 + 252*(b*x*e + a*e)^5*B*a*b^7*c^6*d^6*g^3 \\
& *e^2*\log(-b*e + (b*x*e + a*e)*d / (d*x + c)) / (d*x + c)^5 - 756*(b*x*e + a*e)^ \\
& 5*B*a^2*b^6*c^5*d^7*g^3*e^2*\log(-b*e + (b*x*e + a*e)*d / (d*x + c)) / (d*x + c) \\
& ^5 + 1260*(b*x*e + a*e)^5*B*a^3*b^5*c^4*d^8*g^3*e^2*\log(-b*e + (b*x*e + a*e) \\
&) *d / (d*x + c)) / (d*x + c)^5 - 1260*(b*x*e + a*e)^5*B*a^4*b^4*c^3*d^9*g^3*e^2 \\
& * \log(-b*e + (b*x*e + a*e)*d / (d*x + c)) / (d*x + c)^5 + 756*(b*x*e + a*e)^5*B \\
& a^5*b^3*c^2*d^10*g^3*e^2*\log(-b*e + (b*x*e + a*e)*d / (d*x + c)) / (d*x + c)^5 \\
& - 252*(b*x*e + a*e)^5*B*a^6*b^2*c*d^11*g^3*e^2*\log(-b*e + (b*x*e + a*e)*d / (\\
& d*x + c)) / (d*x + c)^5 + 36*(b*x*e + a*e)^5*B*a^7*b*d^12*g^3*e^2*\log(-b*e + \\
& (b*x*e + a*e)*d / (d*x + c)) / (d*x + c)^5 + 6*(b*x*e + a*e)^6*B*b^7*c^7*d^6*g^ \\
& 3*e*\log(-b*e + (b*x*e + a*e)*d / (d*x + c)) / (d*x + c)^6 - 42*(b*x*e + a*e)^6* \\
& B*a*b^6*c^6*d^7*g^3*e*\log(-b*e + (b*x*e + a*e)*d / (d*x + c)) / (d*x + c)^6 + 1 \\
& 26*(b*x*e + a*e)^6*B*a^2*b^5*c^5*d^8*g^3*e*\log(-b*e + (b*x*e + a*e)*d / (d*x \\
& + c)) / (d*x + c)^6 - 210*(b*x*e + a*e)^6*B*a^3*b^4*c^4*d^9*g^3*e*\log(-b*e + \\
& (b*x*e + a*e)*d / (d*x + c)) / (d*x + c)^6 + 210*(b*x*e + a*e)^6*B*a^4*b^3*c^3* \\
& d^10*g^3*e*\log(-b*e + (b*x*e + a*e)*d / (d*x + c)) / (d*x + c)^6 - 126*(b*x*e + \\
& a*e)^6*B*a^5*b^2*c^2*d^11*g^3*e*\log(-b*e + (b*x*e + a*e)*d / (d*x + c)) / (d*x \\
& + c)^6 + 42*(b*x*e + a*e)^6*B*a^6*b*c*d^12*g^3*e*\log(-b*e + (b*x*e + a*e)* \\
& d / (d*x + c)) / (d*x + c)^6 - 6*(b*x*e + a*e)^6*B*a^7*d^13*g^3*e*\log(-b*e + (b \\
& *x*e + a*e)*d / (d*x + c)) / (d*x + c)^6 - 90*(b*x*e + a*e)^4*B*b^9*c^7*d^4*g^3 \\
& *e^3*\log((b*x*e + a*e) / (d*x + c)) / (d*x + c)^4 + 630*(b*x*e + a*e)^4*B*a*b^8 \\
& *c^6*d^5*g^3*e^3*\log((b*x*e + a*e) / (d*x + c)) / (d*x + c)^4 - 1890*(b*x*e + a \\
& *e)^4*B*a^2*b^7*c^5*d^6*g^3*e^3*\log((b*x*e + a*e) / (d*x + c)) / (d*x + c)^4 + \\
& 3150*(b*x*e + a*e)^4*B*a^3*b^6*c^4*d^7*g^3*e^3*\log((b*x*e + a*e) / (d*x + c)) \\
& / (d*x + c)^4 - 3150*(b*x*e + a*e)^4*B*a^4*b^5*c^3*d^8*g^3*e^3*\log((b*x*e + \\
& a*e) / (d*x + c)) / (d*x + c)^4 + 1890*(b*x*e + a*e)^4*B*a^5*b^4*c^2*d^9*g^3*e^ \\
& 3*\log((b*x*e + a*e) / (d*x + c)) / (d*x + c)^4 - 630*(b*x*e + a*e)^4*B*a^6*b^3* \\
& c*d^10*g^3*e^3*\log((b*x*e + a*e) / (d*x + c)) / (d*x + c)^4 + 90*(b*x*e + a*e)^ \\
& 4*B*a^7*b^2*d^11*g^3*e^3*\log((b*x*e + a*e) / (d*x + c)) / (d*x + c)^4 + 36*(b*x \\
& *e + a*e)^5*B*b^8*c^7*d^5*g^3*e^2*\log((b*x*e + a*e) / (d*x + c)) / (d*x + c)^5
\end{aligned}$$

$$\begin{aligned}
& - 252*(b*x*e + a*e)^5*B*a*b^7*c^6*d^6*g^3*e^2*\log((b*x*e + a*e)/(d*x + c))/ \\
& (d*x + c)^5 + 756*(b*x*e + a*e)^5*B*a^2*b^6*c^5*d^7*g^3*e^2*\log((b*x*e + a* \\
& e)/(d*x + c))/(d*x + c)^5 - 1260*(b*x*e + a*e)^5*B*a^3*b^5*c^4*d^8*g^3*e^2* \\
& \log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 + 1260*(b*x*e + a*e)^5*B*a^4*b^4*c \\
& ^3*d^9*g^3*e^2*\log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 - 756*(b*x*e + a*e) \\
& ^5*B*a^5*b^3*c^2*d^10*g^3*e^2*\log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 + 25 \\
& 2*(b*x*e + a*e)^5*B*a^6*b^2*c*d^11*g^3*e^2*\log((b*x*e + a*e)/(d*x + c))/(d* \\
& x + c)^5 - 36*(b*x*e + a*e)^5*B*a^7*b*d^12*g^3*e^2*\log((b*x*e + a*e)/(d*x + \\
& c))/(d*x + c)^5 - 6*(b*x*e + a*e)^6*B*b^7*c^7*d^6*g^3*e*\log((b*x*e + a*e)/ \\
& (d*x + c))/(d*x + c)^6 + 42*(b*x*e + a*e)^6*B*a*b^6*c^6*d^7*g^3*e*\log((b*x* \\
& e + a*e)/(d*x + c))/(d*x + c)^6 - 126*(b*x*e + a*e)^6*B*a^2*b^5*c^5*d^8*g^3 \\
& *e*\log((b*x*e + a*e)/(d*x + c))/(d*x + c)^6 + 210*(b*x*e + a*e)^6*B*a^3*b^4 \\
& *c^4*d^9*g^3*e*\log((b*x*e + a*e)/(d*x + c))/(d*x + c)^6 - 210*(b*x*e + a*e) \\
& ^6*B*a^4*b^3*c^3*d^10*g^3*e*\log((b*x*e + a*e)/(d*x + c))/(d*x + c)^6 + 126* \\
& (b*x*e + a*e)^6*B*a^5*b^2*c^2*d^11*g^3*e*\log((b*x*e + a*e)/(d*x + c))/(d*x \\
& + c)^6 - 42*(b*x*e + a*e)^6*B*a^6*b*c*d^12*g^3*e*\log((b*x*e + a*e)/(d*x + c) \\
&)/(d*x + c)^6 + 6*(b*x*e + a*e)^6*B*a^7*d^13*g^3*e*\log((b*x*e + a*e)/(d*x \\
& + c))/(d*x + c)^6 + 6*A*b^13*c^7*g^3*e^7 + 2*B*b^13*c^7*g^3*e^7 - 42*A*a*b^ \\
& 12*c^6*d*g^3*e^7 - 14*B*a*b^12*c^6*d*g^3*e^7 + 126*A*a^2*b^11*c^5*d^2*g^3*e \\
& ^7 + 42*B*a^2*b^11*c^5*d^2*g^3*e^7 - 210*A*a^3*b^10*c^4*d^3*g^3*e^7 - 70*B* \\
& a^3*b^10*c^4*d^3*g^3*e^7 + 210*A*a^4*b^9*c^3*d^4*g^3*e^7 + 70*B*a^4*b^9*c^3 \\
& *d^4*g^3*e^7 - 126*A*a^5*b^8*c^2*d^5*g^3*e^7 - 42*B*a^5*b^8*c^2*d^5*g^3*e^7 \\
& + 42*A*a^6*b^7*c*d^6*g^3*e^7 + 14*B*a^6*b^7*c*d^6*g^3*e^7 - 6*A*a^7*b^6*d^ \\
& 7*g^3*e^7 - 2*B*a^7*b^6*d^7*g^3*e^7 - 36*(b*x*e + a*e)*A*b^12*c^7*d*g^3*e^6 \\
& /(d*x + c) - 6*(b*x*e + a*e)*B*b^12*c^7*d*g^3*e^6/(d*x + c) + 252*(b*x*e + \\
& a*e)*A*a*b^11*c^6*d^2*g^3*e^6/(d*x + c) + 42*(b*x*e + a*e)*B*a*b^11*c^6*d^2 \\
& *g^3*e^6/(d*x + c) - 756*(b*x*e + a*e)*A*a^2*b^10*c^5*d^3*g^3*e^6/(d*x + c) \\
& - 126*(b*x*e + a*e)*B*a^2*b^10*c^5*d^3*g^3*e^6/(d*x + c) + 1260*(b*x*e + a \\
& e)*A*a^3*b^9*c^4*d^4*g^3*e^6/(d*x + c) + 210*(b*x*e + a*e)*B*a^3*b^9*c^4*d \\
& ^4*g^3*e^6/(d*x + c) - 1260*(b*x*e + a*e)*A*a^4*b^8*c^3*d^5*g^3*e^6/(d*x + \\
& c) - 210*(b*x*e + a*e)*B*a^4*b^8*c^3*d^5*g^3*e^6/(d*x + c) + 756*(b*x*e + a \\
& e)*A*a^5*b^7*c^2*d^6*g^3*e^6/(d*x + c) + 126*(b*x*e + a*e)*B*a^5*b^7*c^2*d \\
& ^6*g^3*e^6/(d*x + c) - 252*(b*x*e + a*e)*A*a^6*b^6*c*d^7*g^3*e^6/(d*x + c) \\
& - 42*(b*x*e + a*e)*B*a^6*b^6*c*d^7*g^3*e^6/(d*x + c) + 36*(b*x*e + a*e)*A*a \\
& ^7*b^5*d^8*g^3*e^6/(d*x + c) + 6*(b*x*e + a*e)*B*a^7*b^5*d^8*g^3*e^6/(d*x + \\
& c) + 90*(b*x*e + a*e)^2*A*b^11*c^7*d^2*g^3*e^5/(d*x + c)^2 - 3*(b*x*e + a \\
& e)^2*B*b^11*c^7*d^2*g^3*e^5/(d*x + c)^2 - 630*(b*x*e + a*e)^2*A*a*b^10*c^6* \\
& d^3*g^3*e^5/(d*x + c)^2 + 21*(b*x*e + a*e)^2*B*a*b^10*c^6*d^3*g^3*e^5/(d*x \\
& + c)^2 + 1890*(b*x*e + a*e)^2*A*a^2*b^9*c^5*d^4*g^3*e^5/(d*x + c)^2 - 63*(b \\
& *x*e + a*e)^2*B*a^2*b^9*c^5*d^4*g^3*e^5/(d*x + c)^2 - 3150*(b*x*e + a*e)^2* \\
& A*a^3*b^8*c^4*d^5*g^3*e^5/(d*x + c)^2 + 105*(b*x*e + a*e)^2*B*a^3*b^8*c^4*d \\
& ^5*g^3*e^5/(d*x + c)^2 + 3150*(b*x*e + a*e)^2*A*a^4*b^7*c^3*d^6*g^3*e^5/(d* \\
& x + c)^2 - 105*(b*x*e + a*e)^2*B*a^4*b^7*c^3*d^6*g^3*e^5/(d*x + c)^2 - 1890 \\
& *(b*x*e + a*e)^2*A*a^5*b^6*c^2*d^7*g^3*e^5/(d*x + c)^2 + 63*(b*x*e + a*e)^2 \\
& *B*a^5*b^6*c^2*d^7*g^3*e^5/(d*x + c)^2 + 630*(b*x*e + a*e)^2*A*a^6*b^5*c*d^
\end{aligned}$$

$$\begin{aligned}
& 8g^3e^5/(dx+c)^2 - 21(bxe+ae)^2Ba^6b^5cd^8g^3e^5/(dx+c)^2 - 90(bxe+ae)^2Aa^7b^4d^9g^3e^5/(dx+c)^2 + 3(bxe+ae)^2Ba^7b^4d^9g^3e^5/(dx+c)^2 - 120(bxe+ae)^3Aab^10c^7d^3g^3e^4/(dx+c)^3 + 34(bxe+ae)^3Bb^10c^7d^3g^3e^4/(dx+c)^3 \\
& + 840(bxe+ae)^3Aa^9c^6d^4g^3e^4/(dx+c)^3 - 238(bxe+ae)^3Bab^9c^6d^4g^3e^4/(dx+c)^3 - 2520(bxe+ae)^3Aa^2b^8c^5d^5g^3e^4/(dx+c)^3 + 714(bxe+ae)^3Ba^2b^8c^5d^5g^3e^4/(dx+c)^3 + 4200(bxe+ae)^3Aa^3b^7c^4d^6g^3e^4/(dx+c)^3 - 1190(bxe+ae)^3Ba^3b^7c^4d^6g^3e^4/(dx+c)^3 - 4200(bxe+ae)^3Aa^4b^6c^3d^7g^3e^4/(dx+c)^3 + 1190(bxe+ae)^3Ba^4b^6c^3d^7g^3e^4/(dx+c)^3 + 2520(bxe+ae)^3Aa^5b^5c^2d^8g^3e^4/(dx+c)^3 - 714(bxe+ae)^3Ba^5b^5c^2d^8g^3e^4/(dx+c)^3 - 840(bxe+ae)^3Aa^6b^4cd^9g^3e^4/(dx+c)^3 + 238(bxe+ae)^3Ba^6b^4cd^9g^3e^4/(dx+c)^3 + 120(bxe+ae)^3Aa^7b^3d^10g^3e^4/(dx+c)^3 - 34(bxe+ae)^3Ba^7b^3d^10g^3e^4/(dx+c)^3 - 33(bxe+ae)^4Bb^9c^7d^4g^3e^3/(dx+c)^4 + 231(bxe+ae)^4Bab^8c^6d^5g^3e^3/(dx+c)^4 - 693(bxe+ae)^4Ba^2b^7c^5d^6g^3e^3/(dx+c)^4 + 1155(bxe+ae)^4Ba^3b^6c^4d^7g^3e^3/(dx+c)^4 - 1155(bxe+ae)^4Ba^4b^5c^3d^8g^3e^3/(dx+c)^4 + 693(bxe+ae)^4Ba^5b^4c^2d^9g^3e^3/(dx+c)^4 - 231(bxe+ae)^4Ba^6b^3cd^10g^3e^3/(dx+c)^4 + 33(bxe+ae)^4Ba^7b^2d^11g^3e^3/(dx+c)^4 + 6(bxe+ae)^5Bb^8c^7d^5g^3e^2/(dx+c)^5 - 42(bxe+ae)^5Bab^7c^6d^6g^3e^2/(dx+c)^5 + 126(bxe+ae)^5Ba^2b^6c^5d^7g^3e^2/(dx+c)^5 - 210(bxe+ae)^5Ba^3b^5c^4d^8g^3e^2/(dx+c)^5 + 210(bxe+ae)^5Ba^4b^4c^3d^9g^3e^2/(dx+c)^5 - 126(bxe+ae)^5Ba^5b^3c^2d^10g^3e^2/(dx+c)^5 + 42(bxe+ae)^5Ba^6b^2cd^11g^3e^2/(dx+c)^5 - 6(bxe+ae)^5Ba^7bd^12g^3e^2/(dx+c)^5 * (bc/((bce-ade)*(bc-ad)) - ad/((bce-ade)*(bc-ad)))/(b^9d^4e^6 - 6(bxe+ae)*b^8d^5e^5/(dx+c) + 15(bxe+ae)^2b^7d^6e^4/(dx+c)^2 - 20(bxe+ae)^3b^6d^7e^3/(dx+c)^3 + 15(bxe+ae)^4b^5d^8e^2/(dx+c)^4 - 6(bxe+ae)^5b^4d^9e/(dx+c)^5 + (bxe+ae)^6b^3d^10/(dx+c)^6)
\end{aligned}$$

maple [B] time = 0.19, size = 9298, normalized size = 21.98

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)^3*(d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A),x)

[Out] result too large to display

maxima [B] time = 1.69, size = 1789, normalized size = 4.23

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorithm="maxima")

[Out] $\frac{1}{6}A^3b^3d^2g^3i^2x^6 + \frac{2}{5}A^3b^3cdg^3i^2x^5 + \frac{3}{5}A^3b^2d^2g^3i^2x^5 + \frac{1}{4}A^3b^3c^2g^3i^2x^4 + \frac{3}{2}A^3b^2cdg^3i^2x^4 + \frac{3}{4}A^3a^2b^2d^2g^3i^2x^4 + A^3a^2b^2c^2g^3i^2x^3 + 2A^3a^2b^2cdg^3i^2x^3 + \frac{1}{3}A^3a^3d^2g^3i^2x^3 + \frac{3}{2}A^3a^2b^2c^2g^3i^2x^2 + A^3a^3cdg^3i^2x^2 + (x \log(bex/(dx+c)) + a/(dx+c)) + a \log(bx+a)/b - c \log(dx+c)/d)B^3a^3c^2g^3i^2 + \frac{3}{2}(x^2 \log(bex/(dx+c)) + a/(dx+c)) - a^2 \log(bx+a)/b^2 + c^2 \log(dx+c)/d^2 - (bc-ad)x/(bd))B^3a^2b^2c^2g^3i^2 + \frac{1}{2}(2x^3 \log(bex/(dx+c)) + a/(dx+c)) + 2a^3 \log(bx+a)/b^3 - 2c^3 \log(dx+c)/d^3 - ((b^2cd-ad^2)x^2 - 2(b^2c^2-ad^2)x)/(b^2d^2))B^3a^2b^2cdg^3i^2 + \frac{1}{24}(6x^4 \log(bex/(dx+c)) + a/(dx+c)) - 6a^4 \log(bx+a)/b^4 + 6c^4 \log(dx+c)/d^4 - (2(b^3cd^2-ab^2d^3)x^3 - 3(b^3c^2d-ad^2b^2d^3)x^2 + 6(b^3c^3-ad^3d^3)x)/(b^3d^3))B^3b^3c^2g^3i^2 + (x^2 \log(bex/(dx+c)) + a/(dx+c)) - a^2 \log(bx+a)/b^2 + c^2 \log(dx+c)/d^2 - (bc-ad)x/(bd))B^3a^3cdg^3i^2 + (2x^3 \log(bex/(dx+c)) + a/(dx+c)) + 2a^3 \log(bx+a)/b^3 - 2c^3 \log(dx+c)/d^3 - ((b^2cd-ad^2)x^2 - 2(b^2c^2-ad^2)x)/(b^2d^2))B^3a^2b^2cdg^3i^2 + \frac{1}{4}(6x^4 \log(bex/(dx+c)) + a/(dx+c)) - 6a^4 \log(bx+a)/b^4 + 6c^4 \log(dx+c)/d^4 - (2(b^3cd^2-ab^2d^3)x^3 - 3(b^3c^2d-ad^2b^2d^3)x^2 + 6(b^3c^3-ad^3d^3)x)/(b^3d^3))B^3a^2b^2cdg^3i^2 + \frac{1}{30}(12x^5 \log(bex/(dx+c)) + a/(dx+c)) + 12a^5 \log(bx+a)/b^5 - 12c^5 \log(dx+c)/d^5 - (3(b^4cd^3-ab^3d^4)x^4 - 4(b^4c^2d^2-ad^2b^2d^4)x^3 + 6(b^4c^3d-ad^3b^2d^4)x^2 - 12(b^4c^4-ad^4d^4)x)/(b^4d^4))B^3b^3cdg^3i^2 + \frac{1}{6}(2x^3 \log(bex/(dx+c)) + a/(dx+c)) + 2a^3 \log(bx+a)/b^3 - 2c^3 \log(dx+c)/d^3 - ((b^2cd-ad^2)x^2 - 2(b^2c^2-ad^2)x)/(b^2d^2))B^3a^3d^2g^3i^2 + \frac{1}{8}(6x^4 \log(bex/(dx+c)) + a/(dx+c)) - 6a^4 \log(bx+a)/b^4 + 6c^4 \log(dx+c)/d^4 - (2(b^3cd^2-ab^2d^3)x^3 - 3(b^3c^2d-ad^2b^2d^3)x^2 + 6(b^3c^3-ad^3d^3)x)/(b^3d^3))B^3a^2b^2d^2g^3i^2 + \frac{1}{20}(12x^5 \log(bex/(dx+c)) + a/(dx+c)) + 12a^5 \log(bx+a)/b^5 - 12c^5 \log(dx+c)/d^5 - (3(b^4cd^3-ab^3d^4)x^4 - 4(b^4c^2d^2-ad^2b^2d^4)x^3 + 6(b^4c^3d-ad^3b^2d^4)x^2 - 12(b^4c^4-ad^4d^4)x)/(b^4d^4))B^3a^2b^2d^2g^3i^2 + \frac{1}{360}(60x^6 \log(bex/(dx+c)) + a/(dx+c)) - 60a^6 \log(bx+a)/b^6 + 60c^6 \log(dx+c)/d^6 - (12(b^5cd^4-ab^4d^5)x^5 - 15(b^5c^2d^3-ad^2b^3d^5)x^4 + 20(b^5c^3d^2-ad^3b^2d^5)x^3 - 30(b^5c^4d-ad^4b^2d^5)x^2 + 60(b^5c^5-ad^5d^5)x)/(b^5d^5))B^3b^3d^2g^3i^2 + A^3a^3c^2g^3i^2x$

mupad [B] time = 5.89, size = 2473, normalized size = 5.85

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{int}((a*g + b*g*x)^3*(c*i + d*i*x)^2*(A + B*\log((e*(a + b*x))/(c + d*x))),x)$

[Out] $x^3*((g^3*i^2*(16*A*a^3*d^3 + 4*A*b^3*c^3 + 3*B*a^3*d^3 - B*b^3*c^3 + 48*A*a*b^2*c^2*d + 72*A*a^2*b*c*d^2 - 5*B*a*b^2*c^2*d + 3*B*a^2*b*c*d^2))/(12*d) + ((60*a*d + 60*b*c)*(((b^2*d*g^3*i^2*(24*A*a*d + 18*A*b*c + B*a*d - B*b*c))/6 - (A*b^2*d*g^3*i^2*(60*a*d + 60*b*c))/60)*(60*a*d + 60*b*c))/(60*b*d) - (b*g^3*i^2*(30*A*a^2*d^2 + 15*A*b^2*c^2 + 3*B*a^2*d^2 - 2*B*b^2*c^2 + 60*A*a*b*c*d - B*a*b*c*d))/5 + A*a*b^2*c*d*g^3*i^2))/(180*b*d) - (a*c*((b^2*d*g^3*i^2*(24*A*a*d + 18*A*b*c + B*a*d - B*b*c))/6 - (A*b^2*d*g^3*i^2*(60*a*d + 60*b*c))/60))/(3*b*d) - x^4*(((b^2*d*g^3*i^2*(24*A*a*d + 18*A*b*c + B*a*d - B*b*c))/6 - (A*b^2*d*g^3*i^2*(60*a*d + 60*b*c))/60)*(60*a*d + 60*b*c))/(240*b*d) - (b*g^3*i^2*(30*A*a^2*d^2 + 15*A*b^2*c^2 + 3*B*a^2*d^2 - 2*B*b^2*c^2 + 60*A*a*b*c*d - B*a*b*c*d))/20 + (A*a*b^2*c*d*g^3*i^2)/4) + x^2*((a*c*((b^2*d*g^3*i^2*(24*A*a*d + 18*A*b*c + B*a*d - B*b*c))/6 - (A*b^2*d*g^3*i^2*(60*a*d + 60*b*c))/60)*(60*a*d + 60*b*c))/(60*b*d) - (b*g^3*i^2*(30*A*a^2*d^2 + 15*A*b^2*c^2 + 3*B*a^2*d^2 - 2*B*b^2*c^2 + 60*A*a*b*c*d - B*a*b*c*d))/5 + A*a*b^2*c*d*g^3*i^2))/(2*b*d) - ((60*a*d + 60*b*c)*((g^3*i^2*(16*A*a^3*d^3 + 4*A*b^3*c^3 + 3*B*a^3*d^3 - B*b^3*c^3 + 48*A*a*b^2*c^2*d + 72*A*a^2*b*c*d^2 - 5*B*a*b^2*c^2*d + 3*B*a^2*b*c*d^2))/(4*d) + ((60*a*d + 60*b*c)*(((b^2*d*g^3*i^2*(24*A*a*d + 18*A*b*c + B*a*d - B*b*c))/6 - (A*b^2*d*g^3*i^2*(60*a*d + 60*b*c))/60)*(60*a*d + 60*b*c))/(60*b*d) - (b*g^3*i^2*(30*A*a^2*d^2 + 15*A*b^2*c^2 + 3*B*a^2*d^2 - 2*B*b^2*c^2 + 60*A*a*b*c*d - B*a*b*c*d))/5 + A*a*b^2*c*d*g^3*i^2))/(60*b*d) - (a*c*((b^2*d*g^3*i^2*(24*A*a*d + 18*A*b*c + B*a*d - B*b*c))/6 - (A*b^2*d*g^3*i^2*(60*a*d + 60*b*c))/60))/(b*d)))/(120*b*d) + (a*g^3*i^2*(3*A*a^3*d^3 + 12*A*b^3*c^3 + B*a^3*d^3 - 3*B*b^3*c^3 + 54*A*a*b^2*c^2*d + 36*A*a^2*b*c*d^2 - 3*B*a*b^2*c^2*d + 5*B*a^2*b*c*d^2))/(6*b*d) + \log((e*(a + b*x))/(c + d*x))*(B*a^3*c^2*g^3*i^2*x + (B*a*g^3*i^2*x^3*(a^2*d^2 + 3*b^2*c^2 + 6*a*b*c*d))/3 + (B*b*g^3*i^2*x^4*(3*a^2*d^2 + b^2*c^2 + 6*a*b*c*d))/4 + (B*b^3*d^2*g^3*i^2*x^6)/6 + (B*a^2*c*g^3*i^2*x^2*(2*a*d + 3*b*c))/2 + (B*b^2*d*g^3*i^2*x^5*(3*a*d + 2*b*c))/5) + x^5*((b^2*d*g^3*i^2*(24*A*a*d + 18*A*b*c + B*a*d - B*b*c))/30 - (A*b^2*d*g^3*i^2*(60*a*d + 60*b*c))/300) - x*(((60*a*d + 60*b*c)*((a*c*((b^2*d*g^3*i^2*(24*A*a*d + 18*A*b*c + B*a*d - B*b*c))/6 - (A*b^2*d*g^3*i^2*(60*a*d + 60*b*c))/60)*(60*a*d + 60*b*c))/(60*b*d) - (b*g^3*i^2*(30*A*a^2*d^2 + 15*A*b^2*c^2 + 3*B*a^2*d^2 - 2*B*b^2*c^2 + 60*A*a*b*c*d - B*a*b*c*d))/5 + A*a*b^2*c*d*g^3*i^2))/(b*d) - ((60*a*d + 60*b*c)*((g^3*i^2*(16*A*a^3*d^3 + 4*A*b^3*c^3 + 3*B*a^3*d^3 - B*b^3*c^3 + 48*A*a*b^2*c^2*d + 72*A*a^2*b*c*d^2 - 5*B*a*b^2*c^2*d + 3*B*a^2*b*c*d^2))/(4*d) + ((60*a*d + 60*b*c)*(((b^2*d*g^3*i^2*(24*A*a*d + 18*A*b*c + B*a*d - B*b*c))/6 - (A*b^2*d*g^3*i^2*(60*a*d + 60*b*c))/60)*(60*a*d + 60*b*c))/(60*b*d) - (b*g^3*i^2*(30*A*a^2*d^2 + 15*A*b^2*c^2 + 3*B*a^2*d^2 - 2*B*b^2*c^2 + 60*A*a*b*c*d - B*a*b*c*d))/5 + A*a*b^2*c*d*g^3*i^2))/(60*b*d) - (a*c*((b^2*d*g^3*i^2*(24*A*a*d + 18*A*b*c + B*a*d - B*b*c))/6 - (A*b^2*d*g^3*i^2*(60*a*d + 60*b*c))/60))/(b*d)))/(60*b*d) + (a*g^$

$$\begin{aligned}
& 3i^2(3Aa^3d^3 + 12Ab^3c^3 + Ba^3d^3 - 3Bb^3c^3 + 54Aab^2c^2d + 36Aa^2b^2cd^2 - 3Bab^2c^2d + 5Ba^2b^2cd^2)/(3bd) \\
& + (ac((g^3i^2(16Aa^3d^3 + 4Ab^3c^3 + 3Ba^3d^3 - Bb^3c^3 + 48Aab^2c^2d + 72Aa^2b^2cd^2 - 5Bab^2c^2d + 3Ba^2b^2cd^2) \\
&))/(4d) + ((60ad + 60bc)((b^2d^2g^3i^2(24Aad + 18Abc + Ba^2d - Bb^2c) - (Ab^2d^2g^3i^2(60ad + 60bc)))/60) * (60ad + 60bc)) / (60bd) \\
& - (bg^3i^2(30Aa^2d^2 + 15Ab^2c^2 + 3Ba^2d^2 - 2Bb^2c^2 + 60Aab^2cd - Ba^2b^2cd))/5 + Aab^2c^2d^2g^3i^2)/(60bd) - (ac((b^2d^2g^3i^2(24Aad + 18Abc + Ba^2d - Bb^2c) - (Ab^2d^2g^3i^2(60ad + 60bc)))/60) / (bd)) / (bd) \\
& - (a^2c^2g^3i^2(6Aa^2d^2 + 12Ab^2c^2 + 2Ba^2d^2 - 3Bb^2c^2 + 24Aab^2cd + Ba^2b^2cd))/(2bd) + (\log(a + bx)(Ba^6d^2g^3i^2 + 15Ba^4b^2c^2g^3i^2 - 6Ba^5b^2cdg^3i^2) / (60b^3) + (\log(c + dx)(Bb^3c^6g^3i^2 - 20Ba^3c^3d^3g^3i^2 - 6Ba^2b^2c^5d^2g^3i^2 + 15Ba^2b^2c^4d^2g^3i^2) / (60d^4) + (Ab^3d^2g^3i^2x^6) / 6)
\end{aligned}$$

sympy [B] time = 13.45, size = 1727, normalized size = 4.08

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)**3*(d*i*x+c*i)**2*(A+B*ln(e*(b*x+a)/(d*x+c))),x)

[Out] A*b**3*d**2*g**3*i**2*x**6/6 + B*a**4*g**3*i**2*(a**2*d**2 - 6*a*b*c*d + 15*b**2*c**2)*log(x + (B*a**6*c*d**5*g**3*i**2 - 6*B*a**5*b*c**2*d**4*g**3*i**2 + B*a**5*d**4*g**3*i**2*(a**2*d**2 - 6*a*b*c*d + 15*b**2*c**2)/b + 35*B*a**4*b**2*c**3*d**3*g**3*i**2 - B*a**4*c*d**3*g**3*i**2*(a**2*d**2 - 6*a*b*c*d + 15*b**2*c**2) - 15*B*a**3*b**3*c**4*d**2*g**3*i**2 + 6*B*a**2*b**4*c**5*d*g**3*i**2 - B*a*b**5*c**6*g**3*i**2)/(B*a**6*d**6*g**3*i**2 - 6*B*a**5*b*c*d**5*g**3*i**2 + 15*B*a**4*b**2*c**2*d**4*g**3*i**2 + 20*B*a**3*b**3*c**3*d**3*g**3*i**2 - 15*B*a**2*b**4*c**4*d**2*g**3*i**2 + 6*B*a*b**5*c**5*d*g**3*i**2 - B*b**6*c**6*g**3*i**2))/(60*b**3) - B*c**3*g**3*i**2*(20*a**3*d**3 - 15*a**2*b*c*d**2 + 6*a*b**2*c**2*d - b**3*c**3)*log(x + (B*a**6*c*d**5*g**3*i**2 - 6*B*a**5*b*c**2*d**4*g**3*i**2 + 35*B*a**4*b**2*c**3*d**3*g**3*i**2 - 15*B*a**3*b**3*c**4*d**2*g**3*i**2 + 6*B*a**2*b**4*c**5*d*g**3*i**2 - B*a*b**5*c**6*g**3*i**2 - B*a*b**2*c**3*g**3*i**2*(20*a**3*d**3 - 15*a**2*b*c*d**2 + 6*a*b**2*c**2*d - b**3*c**3) + B*b**3*c**4*g**3*i**2*(20*a**3*d**3 - 15*a**2*b*c*d**2 + 6*a*b**2*c**2*d - b**3*c**3)/d)/(B*a**6*d**6*g**3*i**2 - 6*B*a**5*b*c*d**5*g**3*i**2 + 15*B*a**4*b**2*c**2*d**4*g**3*i**2 + 20*B*a**3*b**3*c**3*d**3*g**3*i**2 - 15*B*a**2*b**4*c**4*d**2*g**3*i**2 + 6*B*a*b**5*c**5*d*g**3*i**2 - B*b**6*c**6*g**3*i**2))/(60*d**4) + x**5*(3*A*a*b**2*d**2*g**3*i**2/5 + 2*A*b**3*c*d*g**3*i**2/5 + B*a*b**2*d**2*g**3*i**2/30 - B*b**3*c*d*g**3*i**2/30) + x**4*(3*A*a**2*b*d**2*g**3*i**2/4 + 3*A*a*b**2*c*d*g**3*i**2/2 + A*b**3*c**2*g**3*i**2/4 + 13*B*a**2*b*d**2*g**3*i**2/120 - B*a*b**2*c*d*g**3*i**2/20 - 7*B*b**3*c**2*g**3*i**2/120) + x**3*(

$$\begin{aligned}
& A^3 d^2 g^3 i^2/3 + 2 A^2 b c d g^3 i^2 + A^2 b^2 c^2 g^3 i^2 \\
& + 19 B^3 d^2 g^3 i^2/180 + 7 B^2 b c d g^3 i^2/60 - 13 B^2 a b^2 c^2 g^3 i^2/60 - B^3 c^3 g^3 i^2/(180 d) + x^2 (A^3 c d g^3 i^2 \\
& + 3 A^2 b c^2 g^3 i^2/2 + B^4 d^2 g^3 i^2/(120 b) + 17 B^3 a c d g^3 i^2/60 - B^2 b c^2 g^3 i^2/4 - B^2 a b^2 c^3 g^3 i^2/(20 d) \\
& + B^3 c^4 g^3 i^2/(120 d^2)) + x (A^3 c^2 g^3 i^2 - B^5 d^2 g^3 i^2/(60 b^2) + B^4 c d g^3 i^2/(10 b) + B^3 c^2 g^3 i^2/12 \\
& - B^2 b c^3 g^3 i^2/(4 d) + B^2 a b^2 c^4 g^3 i^2/(10 d^2) - B^3 c^5 g^3 i^2/(60 d^3)) + (B^3 c^2 g^3 i^2 x + B^3 c d g^3 i^2 x^2 \\
& + B^3 d^2 g^3 i^2 x^3/3 + 3 B^2 b c^2 g^3 i^2 x^2/2 + 2 B^2 b c d g^3 i^2 x^3 + 3 B^2 b d^2 g^3 i^2 x^4/4 \\
& + B^2 a b^2 c^2 g^3 i^2 x^3 + 3 B^2 a b^2 c d g^3 i^2 x^4/2 + 3 B^2 a b^2 d^2 g^3 i^2 x^5/5 + B^3 c^2 g^3 i^2 x^4/4 \\
& + 2 B^3 c d g^3 i^2 x^5/5 + B^3 d^2 g^3 i^2 x^6/6) \log(e^*(a + b x)/(c + d x))
\end{aligned}$$

$$3.11 \quad \int (ag + bgx)^2 (ci + dix)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) dx$$

Optimal. Leaf size=337

$$\frac{b^2 g^2 i^2 (c + dx)^5 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{5d^3} + \frac{g^2 i^2 (c + dx)^3 (bc - ad)^2 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{3d^3} - \frac{bg^2 i^2 (c + dx)^4 (bc - ad) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{2d^3}$$

[Out] $-1/30*B*(-a*d+b*c)^4*g^2*i^2*x/b^2/d^2-1/60*B*(-a*d+b*c)^3*g^2*i^2*(d*x+c)^2/b/d^3+1/10*B*(-a*d+b*c)^2*g^2*i^2*(d*x+c)^3/d^3-1/20*b*B*(-a*d+b*c)*g^2*i^2*(d*x+c)^4/d^3-1/30*B*(-a*d+b*c)^5*g^2*i^2*\ln((b*x+a)/(d*x+c))/b^3/d^3+1/3*(-a*d+b*c)^2*g^2*i^2*(d*x+c)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))/d^3-1/2*b*(-a*d+b*c)*g^2*i^2*(d*x+c)^4*(A+B*\ln(e*(b*x+a)/(d*x+c)))/d^3+1/5*b^2*g^2*i^2*(d*x+c)^5*(A+B*\ln(e*(b*x+a)/(d*x+c)))/d^3-1/30*B*(-a*d+b*c)^5*g^2*i^2*\ln(d*x+c)/b^3/d^3$

Rubi [A] time = 0.51, antiderivative size = 296, normalized size of antiderivative = 0.88, number of steps used = 14, number of rules used = 4, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.100$, Rules used = {2528, 2525, 12, 43}

$$\frac{d^2 g^2 i^2 (a + bx)^5 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{5b^3} + \frac{g^2 i^2 (a + bx)^3 (bc - ad)^2 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{3b^3} + \frac{dg^2 i^2 (a + bx)^4 (bc - ad) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{2b^3}$$

Antiderivative was successfully verified.

[In] Int[(a*g + b*g*x)^2*(c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]),x]

[Out] $(B*(b*c - a*d)^4*g^2*i^2*x)/(30*b^2*d^2) - (B*(b*c - a*d)^3*g^2*i^2*(a + b*x)^2)/(60*b^3*d) - (B*(b*c - a*d)^2*g^2*i^2*(a + b*x)^3)/(10*b^3) - (B*d*(b*c - a*d)*g^2*i^2*(a + b*x)^4)/(20*b^3) + ((b*c - a*d)^2*g^2*i^2*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(3*b^3) + (d*(b*c - a*d)*g^2*i^2*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(2*b^3) + (d^2*g^2*i^2*(a + b*x)^5*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(5*b^3) - (B*(b*c - a*d)^5*g^2*i^2*Log[c + d*x])/(30*b^3*d^3)$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 43

Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && (!IntegerQ[n] || (EqQ[c, 0] && Le

Q[7*m + 4*n + 4, 0] || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_.))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFX^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFX^p])^(n - 1)*D[RFX, x])/RFX, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFX, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFX^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFX, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned} \int (11c + 11dx)^2 (ag + bgx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) dx &= \int \left(\frac{(-bc + ad)^2 g^2 (11c + 11dx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{d^2} \right) dx \\ &= \frac{(b^2 g^2) \int (11c + 11dx)^4 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) dx}{121d^2} \quad (2) \\ &= \frac{121(bc - ad)^2 g^2 (c + dx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{3d^3} - \frac{121}{3d^3} \\ &= \frac{121(bc - ad)^2 g^2 (c + dx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{3d^3} - \frac{121}{3d^3} \\ &= \frac{121(bc - ad)^2 g^2 (c + dx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{3d^3} - \frac{121}{3d^3} \\ &= -\frac{121B(bc - ad)^4 g^2 x}{30b^2 d^2} - \frac{121B(bc - ad)^3 g^2 (c + dx)^2}{60bd^3} + \end{aligned}$$

Mathematica [A] time = 0.25, size = 362, normalized size = 1.07

$$g^2 i^2 \left(12d^5 (a + bx)^5 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right) + 30d^4 (a + bx)^4 (bc - ad) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right) + 20d^3 (a + bx)^3 (bc - ad) \right)$$

Antiderivative was successfully verified.

[In] Integrate[(a*g + b*g*x)^2*(c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]),x]

[Out] (g^2*i^2*(20*d^3*(b*c - a*d)^2*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 30*d^4*(b*c - a*d)*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 12*d^5*(a + b*x)^5*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 10*B*(b*c - a*d)^3*(2*b*d*(b*c - a*d)*x - d^2*(a + b*x)^2 - 2*(b*c - a*d)^2*Log[c + d*x]) - 5*B*(b*c - a*d)^2*(6*b*d*(b*c - a*d)^2*x + 3*d^2*(-(b*c) + a*d)*(a + b*x)^2 + 2*d^3*(a + b*x)^3 - 6*(b*c - a*d)^3*Log[c + d*x]) + B*(b*c - a*d)*(12*b*d*(b*c - a*d)^3*x - 6*d^2*(b*c - a*d)^2*(a + b*x)^2 + 4*d^3*(b*c - a*d)*(a + b*x)^3 - 3*d^4*(a + b*x)^4 - 12*(b*c - a*d)^4*Log[c + d*x]))/(60*b^3*d^3)

fricas [A] time = 1.07, size = 534, normalized size = 1.58

$$12 Ab^5 d^5 g^2 i^2 x^5 + 3 \left((10 A - B) b^5 c d^4 + (10 A + B) a b^4 d^5 \right) g^2 i^2 x^4 + 2 \left((10 A - 3 B) b^5 c^2 d^3 + 40 A a b^4 c d^4 + (10 A + 3 B) a^2 b^3 d^5 \right) g^2 i^2 x^3 - (B b^5 c^3 d^2 - 15 (4 A - B) a b^4 c^2 d^3 - 15 (4 A + B) a^2 b^3 c d^4 - B a^3 b^2 d^5) g^2 i^2 x^2 + 2 (B b^5 c^4 d - 5 B a b^4 c^3 d^2 + 30 A a^2 b^3 c^2 d^3 + 5 B a^3 b^2 c d^4 - B a^4 b d^5) g^2 i^2 x + 2 (10 B a^3 b^2 c^2 d^3 - 5 B a^4 b c d^4 + B a^5 d^5) g^2 i^2 \log(b x + a) - 2 (B b^5 c^5 - 5 B a b^4 c^4 d + 10 B a^2 b^3 c^3 d^2) g^2 i^2 \log(d x + c) + 2 (6 B b^5 d^5 g^2 i^2 x^5 + 30 B a^2 b^3 c^2 d^3 g^2 i^2 x^4 + 15 (B b^5 c d^4 + B a b^4 d^5) g^2 i^2 x^3 + 10 (B b^5 c^2 d^3 + 4 B a b^4 c d^4 + B a^2 b^3 d^5) g^2 i^2 x^2 + 30 (B a b^4 c^2 d^3 + B a^2 b^3 c d^4) g^2 i^2 x) \log((b e x + a e)/(d x + c)) / (b^3 d^3)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorith="fricas")

[Out] 1/60*(12*A*b^5*d^5*g^2*i^2*x^5 + 3*((10*A - B)*b^5*c*d^4 + (10*A + B)*a*b^4*d^5)*g^2*i^2*x^4 + 2*((10*A - 3*B)*b^5*c^2*d^3 + 40*A*a*b^4*c*d^4 + (10*A + 3*B)*a^2*b^3*d^5)*g^2*i^2*x^3 - (B*b^5*c^3*d^2 - 15*(4*A - B)*a*b^4*c^2*d^3 - 15*(4*A + B)*a^2*b^3*c*d^4 - B*a^3*b^2*d^5)*g^2*i^2*x^2 + 2*(B*b^5*c^4*d - 5*B*a*b^4*c^3*d^2 + 30*A*a^2*b^3*c^2*d^3 + 5*B*a^3*b^2*c*d^4 - B*a^4*b*d^5)*g^2*i^2*x + 2*(10*B*a^3*b^2*c^2*d^3 - 5*B*a^4*b*c*d^4 + B*a^5*d^5)*g^2*i^2*log(b*x + a) - 2*(B*b^5*c^5 - 5*B*a*b^4*c^4*d + 10*B*a^2*b^3*c^3*d^2)*g^2*i^2*log(d*x + c) + 2*(6*B*b^5*d^5*g^2*i^2*x^5 + 30*B*a^2*b^3*c^2*d^3*g^2*i^2*x^4 + 15*(B*b^5*c*d^4 + B*a*b^4*d^5)*g^2*i^2*x^3 + 10*(B*b^5*c^2*d^3 + 4*B*a*b^4*c*d^4 + B*a^2*b^3*d^5)*g^2*i^2*x^2 + 30*(B*a*b^4*c^2*d^3 + B*a^2*b^3*c*d^4)*g^2*i^2*x)*log((b*e*x + a*e)/(d*x + c))/(b^3*d^3)

giac [B] time = 1.36, size = 5571, normalized size = 16.53

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorith="giac")

[Out]
$$-1/60*(2*B*b^{11}*c^6*g^2*e^6*\log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 12*B*a*b^{10}*c^5*d*g^2*e^6*\log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 30*B*a^2*b^9*c^4*d^2*g^2*e^6*\log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 40*B*a^3*b^8*c^3*d^3*g^2*e^6*\log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 30*B*a^4*b^7*c^2*d^4*g^2*e^6*\log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 12*B*a^5*b^6*c*d^5*g^2*e^6*\log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 2*B*a^6*b^5*d^6*g^2*e^6*\log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 10*(b*x*e + a*e)*B*b^{10}*c^6*d*g^2*e^5*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 60*(b*x*e + a*e)*B*a*b^9*c^5*d^2*g^2*e^5*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) - 150*(b*x*e + a*e)*B*a^2*b^8*c^4*d^3*g^2*e^5*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 200*(b*x*e + a*e)*B*a^3*b^7*c^3*d^4*g^2*e^5*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) - 150*(b*x*e + a*e)*B*a^4*b^6*c^2*d^5*g^2*e^5*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 60*(b*x*e + a*e)*B*a^5*b^5*c*d^6*g^2*e^5*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) - 10*(b*x*e + a*e)*B*a^6*b^4*d^7*g^2*e^5*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 20*(b*x*e + a*e)^2*B*b^9*c^6*d^2*g^2*e^4*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 120*(b*x*e + a*e)^2*B*a*b^8*c^5*d^3*g^2*e^4*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 + 300*(b*x*e + a*e)^2*B*a^2*b^7*c^4*d^4*g^2*e^4*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 400*(b*x*e + a*e)^2*B*a^3*b^6*c^3*d^5*g^2*e^4*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 + 300*(b*x*e + a*e)^2*B*a^4*b^5*c^2*d^6*g^2*e^4*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 120*(b*x*e + a*e)^2*B*a^5*b^4*c*d^7*g^2*e^4*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 + 20*(b*x*e + a*e)^2*B*a^6*b^3*d^8*g^2*e^4*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 20*(b*x*e + a*e)^3*B*b^8*c^6*d^3*g^2*e^3*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 + 120*(b*x*e + a*e)^3*B*a*b^7*c^5*d^4*g^2*e^3*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 - 300*(b*x*e + a*e)^3*B*a^2*b^6*c^4*d^5*g^2*e^3*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 + 400*(b*x*e + a*e)^3*B*a^3*b^5*c^3*d^6*g^2*e^3*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 - 300*(b*x*e + a*e)^3*B*a^4*b^4*c^2*d^7*g^2*e^3*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 + 120*(b*x*e + a*e)^3*B*a^5*b^3*c*d^8*g^2*e^3*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 - 20*(b*x*e + a*e)^3*B*a^6*b^2*d^9*g^2*e^3*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 + 10*(b*x*e + a*e)^4*B*b^7*c^6*d^4*g^2*e^2*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 - 60*(b*x*e + a*e)^4*B*a*b^6*c^5*d^5*g^2*e^2*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 + 150*(b*x*e + a*e)^4*B*a^2*b^5*c^4*d^6*g^2*e^2*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 - 200*(b*x*e + a*e)^4*B*a^3*b^4*c^3*d^7*g^2*e^2*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 + 150*(b*x*e + a*e)^4*B*a^4*b^3*c^2*d^8*g^2*e^2*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 - 60*(b*x*e + a*e)^4*B*a^5*b^2*c*d^9*g^2*e^2*\log(-b*e + (b*x*e$$

$$\begin{aligned}
& + a*e)*d/(d*x + c))/(d*x + c)^4 + 10*(b*x*e + a*e)^4*B*a^6*b*d^10*g^2*e^2*1 \\
& \log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 - 2*(b*x*e + a*e)^5*B*b^6* \\
& c^6*d^5*g^2*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^5 + 12*(b*x*e \\
& + a*e)^5*B*a*b^5*c^5*d^6*g^2*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x \\
& + c)^5 - 30*(b*x*e + a*e)^5*B*a^2*b^4*c^4*d^7*g^2*e*log(-b*e + (b*x*e + a*e) \\
&)*d/(d*x + c))/(d*x + c)^5 + 40*(b*x*e + a*e)^5*B*a^3*b^3*c^3*d^8*g^2*e*log \\
& (-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^5 - 30*(b*x*e + a*e)^5*B*a^4*b \\
& ^2*c^2*d^9*g^2*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^5 + 12*(b* \\
& x*e + a*e)^5*B*a^5*b*c*d^10*g^2*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d* \\
& x + c)^5 - 2*(b*x*e + a*e)^5*B*a^6*d^11*g^2*e*log(-b*e + (b*x*e + a*e)*d/(d \\
& *x + c))/(d*x + c)^5 + 20*(b*x*e + a*e)^3*B*b^8*c^6*d^3*g^2*e^3*log((b*x*e \\
& + a*e)/(d*x + c))/(d*x + c)^3 - 120*(b*x*e + a*e)^3*B*a*b^7*c^5*d^4*g^2*e^3 \\
& *log((b*x*e + a*e)/(d*x + c))/(d*x + c)^3 + 300*(b*x*e + a*e)^3*B*a^2*b^6*c \\
& ^4*d^5*g^2*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^3 - 400*(b*x*e + a*e) \\
& ^3*B*a^3*b^5*c^3*d^6*g^2*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^3 + 300 \\
& *(b*x*e + a*e)^3*B*a^4*b^4*c^2*d^7*g^2*e^3*log((b*x*e + a*e)/(d*x + c))/(d* \\
& x + c)^3 - 120*(b*x*e + a*e)^3*B*a^5*b^3*c*d^8*g^2*e^3*log((b*x*e + a*e)/(d \\
& *x + c))/(d*x + c)^3 + 20*(b*x*e + a*e)^3*B*a^6*b^2*d^9*g^2*e^3*log((b*x*e \\
& + a*e)/(d*x + c))/(d*x + c)^3 - 10*(b*x*e + a*e)^4*B*b^7*c^6*d^4*g^2*e^2*lo \\
& g((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 + 60*(b*x*e + a*e)^4*B*a*b^6*c^5*d^5 \\
& *g^2*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 - 150*(b*x*e + a*e)^4*B*a \\
& ^2*b^5*c^4*d^6*g^2*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 + 200*(b*x* \\
& e + a*e)^4*B*a^3*b^4*c^3*d^7*g^2*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c) \\
& ^4 - 150*(b*x*e + a*e)^4*B*a^4*b^3*c^2*d^8*g^2*e^2*log((b*x*e + a*e)/(d*x + \\
& c))/(d*x + c)^4 + 60*(b*x*e + a*e)^4*B*a^5*b^2*c*d^9*g^2*e^2*log((b*x*e + \\
& a*e)/(d*x + c))/(d*x + c)^4 - 10*(b*x*e + a*e)^4*B*a^6*b*d^10*g^2*e^2*log((\\
& b*x*e + a*e)/(d*x + c))/(d*x + c)^4 + 2*(b*x*e + a*e)^5*B*b^6*c^6*d^5*g^2*e \\
& *log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 - 12*(b*x*e + a*e)^5*B*a*b^5*c^5* \\
& d^6*g^2*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 + 30*(b*x*e + a*e)^5*B*a \\
& ^2*b^4*c^4*d^7*g^2*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 - 40*(b*x*e + \\
& a*e)^5*B*a^3*b^3*c^3*d^8*g^2*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 + \\
& 30*(b*x*e + a*e)^5*B*a^4*b^2*c^2*d^9*g^2*e*log((b*x*e + a*e)/(d*x + c))/(d* \\
& x + c)^5 - 12*(b*x*e + a*e)^5*B*a^5*b*c*d^10*g^2*e*log((b*x*e + a*e)/(d*x + \\
& c))/(d*x + c)^5 + 2*(b*x*e + a*e)^5*B*a^6*d^11*g^2*e*log((b*x*e + a*e)/(d* \\
& x + c))/(d*x + c)^5 + 2*A*b^11*c^6*g^2*e^6 - 12*A*a*b^10*c^5*d*g^2*e^6 + 30 \\
& *A*a^2*b^9*c^4*d^2*g^2*e^6 - 40*A*a^3*b^8*c^3*d^3*g^2*e^6 + 30*A*a^4*b^7*c^ \\
& 2*d^4*g^2*e^6 - 12*A*a^5*b^6*c*d^5*g^2*e^6 + 2*A*a^6*b^5*d^6*g^2*e^6 - 10*(\\
& b*x*e + a*e)*A*b^10*c^6*d*g^2*e^5/(d*x + c) + 2*(b*x*e + a*e)*B*b^10*c^6*d* \\
& g^2*e^5/(d*x + c) + 60*(b*x*e + a*e)*A*a*b^9*c^5*d^2*g^2*e^5/(d*x + c) - 12 \\
& *(b*x*e + a*e)*B*a*b^9*c^5*d^2*g^2*e^5/(d*x + c) - 150*(b*x*e + a*e)*A*a^2* \\
& b^8*c^4*d^3*g^2*e^5/(d*x + c) + 30*(b*x*e + a*e)*B*a^2*b^8*c^4*d^3*g^2*e^5/ \\
& (d*x + c) + 200*(b*x*e + a*e)*A*a^3*b^7*c^3*d^4*g^2*e^5/(d*x + c) - 40*(b*x \\
& *e + a*e)*B*a^3*b^7*c^3*d^4*g^2*e^5/(d*x + c) - 150*(b*x*e + a*e)*A*a^4*b^6 \\
& *c^2*d^5*g^2*e^5/(d*x + c) + 30*(b*x*e + a*e)*B*a^4*b^6*c^2*d^5*g^2*e^5/(d* \\
& x + c) + 60*(b*x*e + a*e)*A*a^5*b^5*c*d^6*g^2*e^5/(d*x + c) - 12*(b*x*e + a
\end{aligned}$$

$$\begin{aligned}
& e) * B * a^5 * b^5 * c * d^6 * g^2 * e^5 / (d * x + c) - 10 * (b * x * e + a * e) * A * a^6 * b^4 * d^7 * g^2 * \\
& e^5 / (d * x + c) + 2 * (b * x * e + a * e) * B * a^6 * b^4 * d^7 * g^2 * e^5 / (d * x + c) + 20 * (b * x * e \\
& + a * e)^2 * A * b^9 * c^6 * d^2 * g^2 * e^4 / (d * x + c)^2 - 9 * (b * x * e + a * e)^2 * B * b^9 * c^6 * d \\
& ^2 * g^2 * e^4 / (d * x + c)^2 - 120 * (b * x * e + a * e)^2 * A * a * b^8 * c^5 * d^3 * g^2 * e^4 / (d * x + \\
& c)^2 + 54 * (b * x * e + a * e)^2 * B * a * b^8 * c^5 * d^3 * g^2 * e^4 / (d * x + c)^2 + 300 * (b * x * e \\
& + a * e)^2 * A * a^2 * b^7 * c^4 * d^4 * g^2 * e^4 / (d * x + c)^2 - 135 * (b * x * e + a * e)^2 * B * a^2 \\
& * b^7 * c^4 * d^4 * g^2 * e^4 / (d * x + c)^2 - 400 * (b * x * e + a * e)^2 * A * a^3 * b^6 * c^3 * d^5 * g^2 * e^4 / \\
& (d * x + c)^2 + 180 * (b * x * e + a * e)^2 * B * a^3 * b^6 * c^3 * d^5 * g^2 * e^4 / (d * x + c)^2 + 300 * (b * x * e \\
& + a * e)^2 * A * a^4 * b^5 * c^2 * d^6 * g^2 * e^4 / (d * x + c)^2 - 135 * (b * x * e \\
& + a * e)^2 * B * a^4 * b^5 * c^2 * d^6 * g^2 * e^4 / (d * x + c)^2 - 120 * (b * x * e + a * e)^2 * A * a^5 \\
& * b^4 * c * d^7 * g^2 * e^4 / (d * x + c)^2 + 54 * (b * x * e + a * e)^2 * B * a^5 * b^4 * c * d^7 * g^2 * e^4 \\
& / (d * x + c)^2 + 20 * (b * x * e + a * e)^2 * A * a^6 * b^3 * d^8 * g^2 * e^4 / (d * x + c)^2 - 9 * (b * \\
& x * e + a * e)^2 * B * a^6 * b^3 * d^8 * g^2 * e^4 / (d * x + c)^2 + 9 * (b * x * e + a * e)^3 * B * b^8 * c^6 * \\
& d^3 * g^2 * e^3 / (d * x + c)^3 - 54 * (b * x * e + a * e)^3 * B * a * b^7 * c^5 * d^4 * g^2 * e^3 / (d * x \\
& + c)^3 + 135 * (b * x * e + a * e)^3 * B * a^2 * b^6 * c^4 * d^5 * g^2 * e^3 / (d * x + c)^3 - 180 * (\\
& b * x * e + a * e)^3 * B * a^3 * b^5 * c^3 * d^6 * g^2 * e^3 / (d * x + c)^3 + 135 * (b * x * e + a * e)^3 * \\
& B * a^4 * b^4 * c^2 * d^7 * g^2 * e^3 / (d * x + c)^3 - 54 * (b * x * e + a * e)^3 * B * a^5 * b^3 * c * d^8 * \\
& g^2 * e^3 / (d * x + c)^3 + 9 * (b * x * e + a * e)^3 * B * a^6 * b^2 * d^9 * g^2 * e^3 / (d * x + c)^3 - \\
& 2 * (b * x * e + a * e)^4 * B * b^7 * c^6 * d^4 * g^2 * e^2 / (d * x + c)^4 + 12 * (b * x * e + a * e)^4 * B \\
& * a * b^6 * c^5 * d^5 * g^2 * e^2 / (d * x + c)^4 - 30 * (b * x * e + a * e)^4 * B * a^2 * b^5 * c^4 * d^6 * g^2 * \\
& e^2 / (d * x + c)^4 + 40 * (b * x * e + a * e)^4 * B * a^3 * b^4 * c^3 * d^7 * g^2 * e^2 / (d * x + c)^4 \\
& - 30 * (b * x * e + a * e)^4 * B * a^4 * b^3 * c^2 * d^8 * g^2 * e^2 / (d * x + c)^4 + 12 * (b * x * e + \\
& a * e)^4 * B * a^5 * b^2 * c * d^9 * g^2 * e^2 / (d * x + c)^4 - 2 * (b * x * e + a * e)^4 * B * a^6 * b * d^1 \\
& 0 * g^2 * e^2 / (d * x + c)^4 * (b * c / ((b * c * e - a * d * e) * (b * c - a * d)) - a * d / ((b * c * e - a \\
& * d * e) * (b * c - a * d))) / (b^8 * d^3 * e^5 - 5 * (b * x * e + a * e) * b^7 * d^4 * e^4 / (d * x + c) + \\
& 10 * (b * x * e + a * e)^2 * b^6 * d^5 * e^3 / (d * x + c)^2 - 10 * (b * x * e + a * e)^3 * b^5 * d^6 * e^2 \\
& / (d * x + c)^3 + 5 * (b * x * e + a * e)^4 * b^4 * d^7 * e / (d * x + c)^4 - (b * x * e + a * e)^5 * b^3 \\
& * d^8 / (d * x + c)^5)
\end{aligned}$$

maple [B] time = 0.17, size = 6116, normalized size = 18.15

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)^2*(d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A),x)

[Out] result too large to display

maxima [B] time = 1.47, size = 1200, normalized size = 3.56

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorithm="maxima")

```
[Out] 1/5*A*b^2*d^2*g^2*i^2*x^5 + 1/2*A*b^2*c*d*g^2*i^2*x^4 + 1/2*A*a*b*d^2*g^2*i^2*x^4 + 1/3*A*b^2*c^2*g^2*i^2*x^3 + 4/3*A*a*b*c*d*g^2*i^2*x^3 + 1/3*A*a^2*d^2*g^2*i^2*x^3 + A*a*b*c^2*g^2*i^2*x^2 + A*a^2*c*d*g^2*i^2*x^2 + (x*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + a*log(b*x + a)/b - c*log(d*x + c)/d)*B*a^2*c^2*g^2*i^2 + (x^2*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - a^2*log(b*x + a)/b^2 + c^2*log(d*x + c)/d^2 - (b*c - a*d)*x/(b*d))*B*a*b*c^2*g^2*i^2 + 1/6*(2*x^3*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*B*b^2*c^2*g^2*i^2 + (x^2*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - a^2*log(b*x + a)/b^2 + c^2*log(d*x + c)/d^2 - (b*c - a*d)*x/(b*d))*B*a^2*c*d*g^2*i^2 + 2/3*(2*x^3*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*B*a*b*c*d*g^2*i^2 + 1/12*(6*x^4*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 6*a^4*log(b*x + a)/b^4 + 6*c^4*log(d*x + c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*B*b^2*c*d*g^2*i^2 + 1/6*(2*x^3*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*B*a^2*d^2*g^2*i^2 + 1/12*(6*x^4*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 6*a^4*log(b*x + a)/b^4 + 6*c^4*log(d*x + c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*B*a*b*d^2*g^2*i^2 + 1/60*(12*x^5*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 12*a^5*log(b*x + a)/b^5 - 12*c^5*log(d*x + c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4*c^2*d^2 - a^2*b^2*d^4)*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 - a^4*d^4)*x)/(b^4*d^4))*B*b^2*d^2*g^2*i^2 + A*a^2*c^2*g^2*i^2*x
```

mupad [B] time = 5.34, size = 1287, normalized size = 3.82

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)^2*(c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x))),x)
```

```
[Out] log((e*(a + b*x))/(c + d*x))*((B*g^2*i^2*x^3*(a^2*d^2 + b^2*c^2 + 4*a*b*c*d))/3 + B*a^2*c^2*g^2*i^2*x + (B*b^2*d^2*g^2*i^2*x^5)/5 + B*a*c*g^2*i^2*x^2*(a*d + b*c) + (B*b*d*g^2*i^2*x^4*(a*d + b*c))/2) - x^3*(((30*a*d + 30*b*c)*((b*d*g^2*i^2*(15*A*a*d + 15*A*b*c + B*a*d - B*b*c))/5 - (A*b*d*g^2*i^2*(30*a*d + 30*b*c))/30))/(90*b*d) - (g^2*i^2*(6*A*a^2*d^2 + 6*A*b^2*c^2 + B*a^2*d^2 - B*b^2*c^2 + 18*A*a*b*c*d))/6 + (A*a*b*c*d*g^2*i^2)/3) + x*((a*c*(((30*a*d + 30*b*c)*((b*d*g^2*i^2*(15*A*a*d + 15*A*b*c + B*a*d - B*b*c))/5 - (A*b*d*g^2*i^2*(30*a*d + 30*b*c))/30))/(30*b*d) - (g^2*i^2*(6*A*a^2*d^2 + 6*A*b^2*c^2 + B*a^2*d^2 - B*b^2*c^2 + 18*A*a*b*c*d))/2 + A*a*b*c*d*g^2*i^2))/(b*d) - ((30*a*d + 30*b*c)*(((30*a*d + 30*b*c)*((b*d*g^2*i^2*(15*A*a*d + 15*A*b*c + B*a*d - B*b*c))/5 - (A*b*d*g^2*i^2*(30*a*d + 30*b*c))/30))/(30*b*d) - (g^2*i^2*(6*A*a^2*d^2 + 6*A*b^2*c^2 + B*a^2*d^2 - B
```


$$\begin{aligned} & b^2c^2 + 18Aab^2cd)/2 + Aab^2cdg^2i^2)/(30bd) + (g^2i^2(3Aa^3d^3 + 3Ab^3c^3 + Ba^3d^3 - Bb^3c^3 + 27Aab^2c^2d + 27Aa^2b^2c^2d^2 - 3Bab^2c^2d + 3Ba^2b^2cd^2))/(3bd) - (ac((bdg^2i^2(15Aad + 15Ab^2c + B^2ad - B^2bc))/5 - (Ab^2d^2g^2i^2(30ad + 30bc))/30))/(bd))/(30bd) + (acg^2i^2(3Aa^2d^2 + 3Ab^2c^2 + Ba^2d^2 - Bb^2c^2 + 9Aab^2cd))/(bd) + x^2(((30ad + 30bc)((30ad + 30bc)(bdg^2i^2(15Aad + 15Ab^2c + B^2ad - B^2bc))/5 - (Ab^2d^2g^2i^2(30ad + 30bc))/30))/(30bd) - (g^2i^2(6Aa^2d^2 + 6Ab^2c^2 + Ba^2d^2 - Bb^2c^2 + 18Aab^2cd))/2 + Aab^2cdg^2i^2)/(60bd) + (g^2i^2(3Aa^3d^3 + 3Ab^3c^3 + Ba^3d^3 - Bb^3c^3 + 27Aab^2c^2d + 27Aa^2b^2c^2d^2 - 3Bab^2c^2d + 3Ba^2b^2cd^2))/(6bd) - (ac((bdg^2i^2(15Aad + 15Ab^2c + B^2ad - B^2bc))/5 - (Ab^2d^2g^2i^2(30ad + 30bc))/30))/(2bd) + x^4((bdg^2i^2(15Aad + 15Ab^2c + B^2ad - B^2bc))/20 - (Ab^2d^2g^2i^2(30ad + 30bc))/120) + (log(a + bx)(Ba^5d^2g^2i^2 + 10Ba^3b^2c^2g^2i^2 - 5Ba^4b^2cdg^2i^2))/(30b^3) - (log(c + dx)(Bb^2c^5g^2i^2 + 10Ba^2c^3d^2g^2i^2 - 5Ba^2b^2cd^2g^2i^2))/(30d^3) + (Ab^2d^2g^2i^2x^5)/5 \end{aligned}$$

sympy [B] time = 7.81, size = 1266, normalized size = 3.76

$$\frac{Ab^2d^2g^2i^2x^5}{5} + \frac{Ba^3g^2i^2(a^2d^2 - 5abcd + 10b^2c^2) \log\left(x + \frac{Ba^5cd^4g^2i^2 - 5Ba^4bc^2d^3g^2i^2 + \frac{Ba^4d^3g^2i^2(a^2d^2 - 5abcd + 10b^2c^2)}{b} + 20Ba^3b^2c^3d^2g^2i^2}{Ba^5d^5g^2i^2 - 5Ba^4bcd^4g^2i^2 + 10Ba^3b^2c^2d^3g^2i^2 + 10Ba^2b^2cd^2g^2i^2 - 5Ba^3b^2c^2d^2g^2i^2}\right)}{30b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)**2*(d*i*x+c*i)**2*(A+B*ln(e*(b*x+a)/(d*x+c))),x)

[Out] A*b**2*d**2*g**2*i**2*x**5/5 + B*a**3*g**2*i**2*(a**2*d**2 - 5*a*b*c*d + 10*b**2*c**2)*log(x + (B*a**5*c*d**4*g**2*i**2 - 5*B*a**4*b*c**2*d**3*g**2*i**2 + B*a**4*d**3*g**2*i**2*(a**2*d**2 - 5*a*b*c*d + 10*b**2*c**2)/b + 20*B*a**3*b**2*c**3*d**2*g**2*i**2 - B*a**3*c*d**2*g**2*i**2*(a**2*d**2 - 5*a*b*c*d + 10*b**2*c**2) - 5*B*a**2*b**3*c**4*d*g**2*i**2 + B*a*b**4*c**5*g**2*i**2)/(B*a**5*d**5*g**2*i**2 - 5*B*a**4*b*c*d**4*g**2*i**2 + 10*B*a**3*b**2*c**2*d**3*g**2*i**2 + 10*B*a**2*b**3*c**3*d**2*g**2*i**2 - 5*B*a*b**4*c**4*d*g**2*i**2 + B*b**5*c**5*g**2*i**2))/(30*b**3) - B*c**3*g**2*i**2*(10*a**2*d**2 - 5*a*b*c*d + b**2*c**2)*log(x + (B*a**5*c*d**4*g**2*i**2 - 5*B*a**4*b*c**2*d**3*g**2*i**2 + 20*B*a**3*b**2*c**3*d**2*g**2*i**2 - 5*B*a**2*b**3*c**4*d*g**2*i**2 + B*a*b**4*c**5*g**2*i**2 - B*a*b**2*c**3*g**2*i**2*(10*a**2*d**2 - 5*a*b*c*d + b**2*c**2) + B*b**3*c**4*g**2*i**2*(10*a**2*d**2 - 5*a*b*c*d + b**2*c**2)/d)/(B*a**5*d**5*g**2*i**2 - 5*B*a**4*b*c*d**4*g**2*i**2 + 10*B*a**3*b**2*c**2*d**3*g**2*i**2 + 10*B*a**2*b**3*c**3*d**2*g**2*i**2 - 5*B*a*b**4*c**4*d*g**2*i**2 + B*b**5*c**5*g**2*i**2))/(30*d**3) + x**4*(A*a*b*d**2*g**2*i**2/2 + A*b**2*c*d*g**2*i**2/2 + B*a*b*d**2*g**2*i**2/20 - B*b**2*c*d*g**2*i**2/20) + x**3*(A*a**2*d**2*g**2*i**2/3 + 4*A*a*b*c*d*g**2

$$\begin{aligned}
& 2i^{2/3} + A b^2 c^2 g^2 i^{2/3} + B a^2 d^2 g^2 i^{2/10} - B b^2 c^2 \\
& g^2 i^{2/10} + x^2 (A a^2 c d g^2 i^2 + A a b c^2 g^2 i^2 + B a^3 \\
& d^2 g^2 i^2 / (60 b) + B a^2 c d g^2 i^2 / 4 - B a b c^2 g^2 i^2 / 4 - \\
& B b^2 c^3 g^2 i^2 / (60 d)) + x (A a^2 c^2 g^2 i^2 - B a^4 d^2 g^2 \\
& i^2 / (30 b^2) + B a^3 c d g^2 i^2 / (6 b) - B a b c^3 g^2 i^2 / (6 d) + \\
& B b^2 c^4 g^2 i^2 / (30 d^2)) + (B a^2 c^2 g^2 i^2 x + B a^2 c d g \\
& ^2 i^2 x^2 + B a^2 d^2 g^2 i^2 x^3 / 3 + B a b c^2 g^2 i^2 x^2 + \\
& 4 B a b c d g^2 i^2 x^3 / 3 + B a b d^2 g^2 i^2 x^4 / 2 + B b^2 c^2 g^2 \\
& i^2 x^3 / 3 + B b^2 c d g^2 i^2 x^4 / 2 + B b^2 d^2 g^2 i^2 x^5 / 5 \\
&) \log(e(a + b x) / (c + d x))
\end{aligned}$$

$$3.12 \quad \int (ag + bgx)(ci + dix)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) dx$$

Optimal. Leaf size=239

$$\frac{gi^2(c+dx)^3(bc-ad) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{3d^2} + \frac{bgi^2(c+dx)^4 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{4d^2} + \frac{Bgi^2(bc-ad)^4 \log \left(\frac{a+bx}{c+dx} \right)}{12b^3d^2} + B$$

[Out] $1/12*B*(-a*d+b*c)^3*g*i^2*x/b^2/d+1/24*B*(-a*d+b*c)^2*g*i^2*(d*x+c)^2/b/d^2$
 $-1/12*B*(-a*d+b*c)*g*i^2*(d*x+c)^3/d^2+1/12*B*(-a*d+b*c)^4*g*i^2*\ln((b*x+a)/(d*x+c))/b^3/d^2-1/3*(-a*d+b*c)*g*i^2*(d*x+c)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))/d^2+1/4*b*g*i^2*(d*x+c)^4*(A+B*\ln(e*(b*x+a)/(d*x+c)))/d^2+1/12*B*(-a*d+b*c)^4*g*i^2*\ln(d*x+c)/b^3/d^2$

Rubi [A] time = 0.34, antiderivative size = 200, normalized size of antiderivative = 0.84, number of steps used = 10, number of rules used = 4, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$, Rules used = {2528, 2525, 12, 43}

$$\frac{gi^2(c+dx)^3(bc-ad) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{3d^2} + \frac{bgi^2(c+dx)^4 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{4d^2} + \frac{Bgi^2(bc-ad)^4 \log(a+bx)}{12b^3d^2} + B$$

Antiderivative was successfully verified.

[In] $\text{Int}[(a*g + b*g*x)*(c*i + d*i*x)^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]),x]$

[Out] $(B*(b*c - a*d)^3*g*i^2*x)/(12*b^2*d) + (B*(b*c - a*d)^2*g*i^2*(c + d*x)^2)/(24*b*d^2) - (B*(b*c - a*d)*g*i^2*(c + d*x)^3)/(12*d^2) + (B*(b*c - a*d)^4*g*i^2*\text{Log}[a + b*x])/(12*b^3*d^2) - ((b*c - a*d)*g*i^2*(c + d*x)^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(3*d^2) + (b*g*i^2*(c + d*x)^4*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(4*d^2)$

Rule 12

$\text{Int}[(a_*)(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] /;$ FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 43

$\text{Int}[(a_.) + (b_.)*(x_.)]^{(m_.)*((c_.) + (d_.)*(x_.))^{(n_.)}, x_Symbol] \rightarrow \text{Int}[\text{ExpandIntegrand}[(a + b*x)^m*(c + d*x)^n, x], x] /;$ FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && (!IntegerQ[n] || (EqQ[c, 0] && LeQ[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_.))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFX^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFX^p])^(n - 1)*D[RFX, x])/RFX, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFX, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFX^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFX, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
 \int (12c + 12dx)^2 (ag + bgx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) dx &= \int \left(\frac{(-bc + ad)g(12c + 12dx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{d} + \dots \right) dx \\
 &= \frac{(bg) \int (12c + 12dx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) dx}{12d} + \frac{((-bc + ad)g(12c + 12dx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right))}{d} \\
 &= -\frac{48(bc - ad)g(c + dx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{d^2} + \frac{36bg(c + dx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{d} \\
 &= -\frac{48(bc - ad)g(c + dx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{d^2} + \frac{36bg(c + dx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{d} \\
 &= -\frac{48(bc - ad)g(c + dx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{d^2} + \frac{36bg(c + dx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{d} \\
 &= \frac{12B(bc - ad)^3 gx}{b^2 d} + \frac{6B(bc - ad)^2 g(c + dx)^2}{bd^2} - \frac{12B(bc - ad)g(c + dx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{d^2}
 \end{aligned}$$

Mathematica [A] time = 0.18, size = 216, normalized size = 0.90

$$\frac{gi^2 \left(6b(c + dx)^4 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right) - 8(c + dx)^3 (bc - ad) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right) + \frac{4B(bc - ad)^2 (2bdx(bc - ad) + 2(bc - ad)^2) \log \left(\frac{e(a+bx)}{c+dx} \right)}{b^3} \right)}{24d^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)*(c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x])
),x]
```

```
[Out] (g*i^2*((4*B*(b*c - a*d)^2*(2*b*d*(b*c - a*d)*x + b^2*(c + d*x)^2 + 2*(b*c
- a*d)^2*Log[a + b*x]))/b^3 - (B*(b*c - a*d)*(6*b*d*(b*c - a*d)^2*x + 3*b^2
*(b*c - a*d)*(c + d*x)^2 + 2*b^3*(c + d*x)^3 + 6*(b*c - a*d)^3*Log[a + b*x]
))/b^3 - 8*(b*c - a*d)*(c + d*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 6
*b*(c + d*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)])))/(24*d^2)
```

fricas [A] time = 1.00, size = 367, normalized size = 1.54

$$6Ab^4d^4gi^2x^4 + 2\left((8A - B)b^4cd^3 + (4A + B)ab^3d^4\right)gi^2x^3 + \left((12A - 5B)b^4c^2d^2 + 4(6A + B)ab^3cd^3 + Ba^2b^2d^4\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorit
hm="fricas")
```

```
[Out] 1/24*(6*A*b^4*d^4*g*i^2*x^4 + 2*((8*A - B)*b^4*c*d^3 + (4*A + B)*a*b^3*d^4)
*g*i^2*x^3 + ((12*A - 5*B)*b^4*c^2*d^2 + 4*(6*A + B)*a*b^3*c*d^3 + B*a^2*b^
2*d^4)*g*i^2*x^2 - 2*(B*b^4*c^3*d - 2*(6*A - B)*a*b^3*c^2*d^2 - 4*B*a^2*b^2
*c*d^3 + B*a^3*b*d^4)*g*i^2*x + 2*(6*B*a^2*b^2*c^2*d^2 - 4*B*a^3*b*c*d^3 +
B*a^4*d^4)*g*i^2*log(b*x + a) + 2*(B*b^4*c^4 - 4*B*a*b^3*c^3*d)*g*i^2*log(d
*x + c) + 2*(3*B*b^4*d^4*g*i^2*x^4 + 12*B*a*b^3*c^2*d^2*g*i^2*x + 4*(2*B*b^
4*c*d^3 + B*a*b^3*d^4)*g*i^2*x^3 + 6*(B*b^4*c^2*d^2 + 2*B*a*b^3*c*d^3)*g*i^
2*x^2)*log((b*e*x + a*e)/(d*x + c)))/(b^3*d^2)
```

giac [B] time = 1.06, size = 3856, normalized size = 16.13

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorit
hm="giac")
```

```
[Out] 1/24*(2*B*b^9*c^5*g*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 10*B*a*b^8*
c^4*d*g*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 20*B*a^2*b^7*c^3*d^2*g*
e^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 20*B*a^3*b^6*c^2*d^3*g*e^5*log(
-b*e + (b*x*e + a*e)*d/(d*x + c)) + 10*B*a^4*b^5*c*d^4*g*e^5*log(-b*e + (b*
x*e + a*e)*d/(d*x + c)) - 2*B*a^5*b^4*d^5*g*e^5*log(-b*e + (b*x*e + a*e)*d/
(d*x + c)) - 8*(b*x*e + a*e)*B*b^8*c^5*d*g*e^4*log(-b*e + (b*x*e + a*e)*d/(
d*x + c))/(d*x + c) + 40*(b*x*e + a*e)*B*a*b^7*c^4*d^2*g*e^4*log(-b*e + (b*
x*e + a*e)*d/(d*x + c))/(d*x + c) - 80*(b*x*e + a*e)*B*a^2*b^6*c^3*d^3*g*e^
4*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 80*(b*x*e + a*e)*B*a^3*
```

$$\begin{aligned}
& b^5c^2d^4g^4e^4 \log(-b^*e + (b^*x^*e + a^*e)*d/(d^*x + c))/(d^*x + c) - 40*(b^*x^*e + a^*e)*B^*a^4b^4c^d^5g^4e^4 \log(-b^*e + (b^*x^*e + a^*e)*d/(d^*x + c))/(d^*x + c) \\
& + 8*(b^*x^*e + a^*e)*B^*a^5b^3d^6g^4e^4 \log(-b^*e + (b^*x^*e + a^*e)*d/(d^*x + c))/(d^*x + c) + 12*(b^*x^*e + a^*e)^2*B^*b^7c^5d^2g^3e^3 \log(-b^*e + (b^*x^*e + a^*e)*d/(d^*x + c))/(d^*x + c)^2 \\
& - 60*(b^*x^*e + a^*e)^2*B^*a^b^6c^4d^3g^3e^3 \log(-b^*e + (b^*x^*e + a^*e)*d/(d^*x + c))/(d^*x + c)^2 + 120*(b^*x^*e + a^*e)^2*B^*a^2b^5c^3d^4g^3e^3 \log(-b^*e + (b^*x^*e + a^*e)*d/(d^*x + c))/(d^*x + c)^2 \\
& - 120*(b^*x^*e + a^*e)^2*B^*a^3b^4c^2d^5g^3e^3 \log(-b^*e + (b^*x^*e + a^*e)*d/(d^*x + c))/(d^*x + c)^2 + 60*(b^*x^*e + a^*e)^2*B^*a^4b^3c^d^6g^3e^3 \log(-b^*e + (b^*x^*e + a^*e)*d/(d^*x + c))/(d^*x + c)^2 \\
& - 12*(b^*x^*e + a^*e)^2*B^*a^5b^2d^7g^3e^3 \log(-b^*e + (b^*x^*e + a^*e)*d/(d^*x + c))/(d^*x + c)^2 - 8*(b^*x^*e + a^*e)^3*B^*b^6c^5d^3g^2e^2 \log(-b^*e + (b^*x^*e + a^*e)*d/(d^*x + c))/(d^*x + c)^3 \\
& + 40*(b^*x^*e + a^*e)^3*B^*a^b^5c^4d^4g^2e^2 \log(-b^*e + (b^*x^*e + a^*e)*d/(d^*x + c))/(d^*x + c)^3 - 80*(b^*x^*e + a^*e)^3*B^*a^2b^4c^3d^5g^2e^2 \log(-b^*e + (b^*x^*e + a^*e)*d/(d^*x + c))/(d^*x + c)^3 \\
& + 80*(b^*x^*e + a^*e)^3*B^*a^3b^3c^2d^6g^2e^2 \log(-b^*e + (b^*x^*e + a^*e)*d/(d^*x + c))/(d^*x + c)^3 - 40*(b^*x^*e + a^*e)^3*B^*a^4b^2c^d^7g^2e^2 \log(-b^*e + (b^*x^*e + a^*e)*d/(d^*x + c))/(d^*x + c)^3 \\
& + 8*(b^*x^*e + a^*e)^3*B^*a^5b^d^8g^2e^2 \log(-b^*e + (b^*x^*e + a^*e)*d/(d^*x + c))/(d^*x + c)^3 + 2*(b^*x^*e + a^*e)^4*B^*b^5c^5d^4g^e \log(-b^*e + (b^*x^*e + a^*e)*d/(d^*x + c))/(d^*x + c)^4 \\
& - 10*(b^*x^*e + a^*e)^4*B^*a^b^4c^4d^5g^e \log(-b^*e + (b^*x^*e + a^*e)*d/(d^*x + c))/(d^*x + c)^4 + 20*(b^*x^*e + a^*e)^4*B^*a^2b^3c^3d^6g^e \log(-b^*e + (b^*x^*e + a^*e)*d/(d^*x + c))/(d^*x + c)^4 \\
& - 20*(b^*x^*e + a^*e)^4*B^*a^3b^2c^2d^7g^e \log(-b^*e + (b^*x^*e + a^*e)*d/(d^*x + c))/(d^*x + c)^4 + 10*(b^*x^*e + a^*e)^4*B^*a^4b^c^d^8g^e \log(-b^*e + (b^*x^*e + a^*e)*d/(d^*x + c))/(d^*x + c)^4 \\
& - 2*(b^*x^*e + a^*e)^4*B^*a^5d^9g^e \log(-b^*e + (b^*x^*e + a^*e)*d/(d^*x + c))/(d^*x + c)^4 - 12*(b^*x^*e + a^*e)^2*B^*b^7c^5d^2g^3e^3 \log((b^*x^*e + a^*e)/(d^*x + c))/(d^*x + c)^2 \\
& + 60*(b^*x^*e + a^*e)^2*B^*a^b^6c^4d^3g^3e^3 \log((b^*x^*e + a^*e)/(d^*x + c))/(d^*x + c)^2 - 120*(b^*x^*e + a^*e)^2*B^*a^2b^5c^3d^4g^3e^3 \log((b^*x^*e + a^*e)/(d^*x + c))/(d^*x + c)^2 \\
& + 120*(b^*x^*e + a^*e)^2*B^*a^3b^4c^2d^5g^3e^3 \log((b^*x^*e + a^*e)/(d^*x + c))/(d^*x + c)^2 - 60*(b^*x^*e + a^*e)^2*B^*a^4b^3c^d^6g^3e^3 \log((b^*x^*e + a^*e)/(d^*x + c))/(d^*x + c)^2 \\
& + 12*(b^*x^*e + a^*e)^2*B^*a^5b^2d^7g^3e^3 \log((b^*x^*e + a^*e)/(d^*x + c))/(d^*x + c)^2 + 8*(b^*x^*e + a^*e)^3*B^*b^6c^5d^3g^2e^2 \log((b^*x^*e + a^*e)/(d^*x + c))/(d^*x + c)^3 \\
& - 40*(b^*x^*e + a^*e)^3*B^*a^b^5c^4d^4g^2e^2 \log((b^*x^*e + a^*e)/(d^*x + c))/(d^*x + c)^3 + 80*(b^*x^*e + a^*e)^3*B^*a^2b^4c^3d^5g^2e^2 \log((b^*x^*e + a^*e)/(d^*x + c))/(d^*x + c)^3 \\
& - 80*(b^*x^*e + a^*e)^3*B^*a^3b^3c^2d^6g^2e^2 \log((b^*x^*e + a^*e)/(d^*x + c))/(d^*x + c)^3 + 40*(b^*x^*e + a^*e)^3*B^*a^4b^2c^d^7g^2e^2 \log((b^*x^*e + a^*e)/(d^*x + c))/(d^*x + c)^3 \\
& - 8*(b^*x^*e + a^*e)^3*B^*a^5b^d^8g^2e^2 \log((b^*x^*e + a^*e)/(d^*x + c))/(d^*x + c)^3 - 2*(b^*x^*e + a^*e)^4*B^*b^5c^5d^4g^e \log((b^*x^*e + a^*e)/(d^*x + c))/(d^*x + c)^4 \\
& + 10*(b^*x^*e + a^*e)^4*B^*a^b^4c^4d^5g^e \log((b^*x^*e + a^*e)/(d^*x + c))/(d^*x + c)^4 - 20*(b^*x^*e + a^*e)^4*B^*a^2b^3c^3d^6g^e \log((b^*x^*e + a^*e)/(d^*x + c))/(d^*x + c)^4 \\
& + 20*(b^*x^*e + a^*e)^4*B^*a^3b^2c^2d^7g^e \log((b^*x^*e + a^*e)/(d^*x + c))/(d^*x + c)^4 - 10*(b^*x^*e + a^*e)^4*B^*a^4b^c^d^8g^e \log((b^*x^*e + a^*e)/(d^*x + c))/(d^*x + c)^4 \\
& + 2*(b^*x^*e + a^*e)^4*B^*a^5d^9g^e \log((b^*x^*e + a^*e)/(d^*x + c))/(d^*x + c)^4 + 2*(b^*x^*e + a^*e)^4*B^*a^5d^9g^e \log((b^*x^*e + a^*e)/(d^*x + c))/(d^*x + c)^4
\end{aligned}$$

$$\begin{aligned}
& /d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a^3*c+1/4*d^2*e^4*A*g*i^2*b/(1/(d*x+c)*a*d*e \\
& -1/(d*x+c)*b*c*e)^4*a^4+1/4/d^2*e^4*A*g*i^2*b^5/(1/(d*x+c)*a*d*e-1/(d*x+c)* \\
& b*c*e)^4*c^4+1/3/d^2*e^3*A*g*i^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*b^4*c^ \\
& 4-1/6*d*e^2*B*g*i^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^3*c-1/12/d^2*e*B* \\
& g*i^2*b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*c^4+1/24/d^2*e^2*B*g*i^2*b^3/(1 \\
& /d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*c^4+1/12/d^2*e^3*B*g*i^2/(1/(d*x+c)*a*d*e \\
& -1/(d*x+c)*b*c*e)^3*b^4*c^4-1/12*d^2*e*B*g*i^2/b^2/(1/(d*x+c)*a*d*e-1/(d*x+ \\
& c)*b*c*e)*a^4+3/2*e^4*A*g*i^2*b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^2*c \\
& ^2-35/2*d^2*e^4*B*g*i^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/ \\
& (d*x+c)*b*c*e)^4*a^4/(d*x+c)^4*c^4*b+35/3*d*e^3*B*g*i^2*ln(b/d*e+(a*d-b*c)/ \\
& (d*x+c)/d*e)*b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^3*c^4/(d*x+c)^3-7/3*d^ \\
& 4*e^3*B*g*i^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/b^2/(1/(d*x+c)*a*d*e-1/(d*x+c \\
&)*b*c*e)^3*a^6/(d*x+c)^3*c+7/3/d*e^3*B*g*i^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e \\
&)*b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a*c^6/(d*x+c)^3-4/3*d*e^3*A*g*i^2 \\
& /1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^3*b*c+1/4*d^2*e^4*B*g*i^2*b*ln(b/d*e \\
& +(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^4+1/4/d^2*e^4 \\
& *B*g*i^2*b^5*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c \\
& *e)^4*c^4+1/3/d^2*e^3*B*g*i^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^4/(1/(d*x+c \\
&)*a*d*e-1/(d*x+c)*b*c*e)^3*c^4+3/2*e^4*B*g*i^2*b^3*ln(b/d*e+(a*d-b*c)/(d*x+ \\
& c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^2*c^2+2*e^3*B*g*i^2*ln(b/d*e+ \\
& (a*d-b*c)/(d*x+c)/d*e)*b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^2*c^2-1/12 \\
& /d^2*B*g*i^2*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c^4*b-1/12*d^2*B*g*i^ \\
& 2/b^3*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a^4-1/2*e*B*g*i^2/(1/(d*x+c) \\
& *a*d*e-1/(d*x+c)*b*c*e)*a^2*c^2+1/3*d^2*e^3*A*g*i^2/(1/(d*x+c)*a*d*e-1/(d*x \\
& +c)*b*c*e)^3*a^4+1/12*d^2*e^3*B*g*i^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a \\
& ^4-1/2*B*g*i^2/b*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a^2*c^2+1/3/d*B*g \\
& *i^2*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c^3*a-7*e^3*B*g*i^2*ln(b/d*e+ \\
& (a*d-b*c)/(d*x+c)/d*e)*b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^2*c^5/(d*x \\
& +c)^3-1/d*e^4*B*g*i^2*b^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e- \\
& 1/(d*x+c)*b*c*e)^4*a*c^3+1/3*d^5*e^3*B*g*i^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e \\
&)/b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^7/(d*x+c)^3-7*e^4*B*g*i^2*b^3*ln \\
& (b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^2*c^6/ \\
& (d*x+c)^4-35/3*d^2*e^3*B*g*i^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a \\
& *d*e-1/(d*x+c)*b*c*e)^3*a^4/(d*x+c)^3*c^3+14*d^3*e^4*B*g*i^2*ln(b/d*e+(a*d- \\
& b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^5/(d*x+c)^4*c^3-d*e \\
& ^4*B*g*i^2*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b \\
& *c*e)^4*a^3*c-4/3*d*e^3*B*g*i^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b/(1/(d*x+c \\
&)*a*d*e-1/(d*x+c)*b*c*e)^3*a^3*c-4/3/d*e^3*B*g*i^2*ln(b/d*e+(a*d-b*c)/(d*x+ \\
& c)/d*e)*b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*c^3*a-1/4/d^2*e^4*B*g*i^2*ln \\
& (b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*c^8/(d*x \\
& +c)^4*b^5-1/3/d^2*e^3*B*g*i^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a* \\
& d*e-1/(d*x+c)*b*c*e)^3*c^7/(d*x+c)^3*b^4-1/4*d^6*e^4*B*g*i^2/b^3*ln(b/d*e+(\\
& a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^8/(d*x+c)^4-1/3 \\
& *d*e^3*B*g*i^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^3*b*c-4/3/d*e^3*A*g*i^ \\
& 2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*b^3*c^3*a-d*e^4*A*g*i^2*b^2/(1/(d*x+c)
\end{aligned}$$

) * a * d * e - 1 / (d * x + c) * b * c * e) ^ 4 * a ^ 3 * c - 1 / d * e ^ 4 * A * g * i ^ 2 * b ^ 4 / (1 / (d * x + c) * a * d * e - 1 / (d * x + c) * b * c * e) ^ 4 * c ^ 3 * a - 1 / 3 / d * e ^ 3 * B * g * i ^ 2 / (1 / (d * x + c) * a * d * e - 1 / (d * x + c) * b * c * e) ^ 3 * b ^ 3 * c ^ 3 * a - 1 / 6 / d * e ^ 2 * B * g * i ^ 2 * b ^ 2 / (1 / (d * x + c) * a * d * e - 1 / (d * x + c) * b * c * e) ^ 2 * c ^ 3 * a + 1 / 3 * d * e * B * g * i ^ 2 / b / (1 / (d * x + c) * a * d * e - 1 / (d * x + c) * b * c * e) * a ^ 3 * c + 1 / 3 / d * e * B * g * i ^ 2 / (1 / (d * x + c) * a * d * e - 1 / (d * x + c) * b * c * e) * a * c ^ 3 * b

maxima [B] time = 1.25, size = 671, normalized size = 2.81

$$\frac{1}{4} A b d^2 g i^2 x^4 + \frac{2}{3} A b c d g i^2 x^3 + \frac{1}{3} A a d^2 g i^2 x^3 + \frac{1}{2} A b c^2 g i^2 x^2 + A a c d g i^2 x^2 + \left(x \log \left(\frac{b e x}{d x + c} + \frac{a e}{d x + c} \right) + \frac{a \log (b x + a)}{b} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorithm="maxima")

[Out] 1/4*A*b*d^2*g*i^2*x^4 + 2/3*A*b*c*d*g*i^2*x^3 + 1/3*A*a*d^2*g*i^2*x^3 + 1/2*A*b*c^2*g*i^2*x^2 + A*a*c*d*g*i^2*x^2 + (x*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + a*log(b*x + a)/b - c*log(d*x + c)/d)*B*a*c^2*g*i^2 + 1/2*(x^2*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - a^2*log(b*x + a)/b^2 + c^2*log(d*x + c)/d^2 - (b*c - a*d)*x/(b*d))*B*b*c^2*g*i^2 + (x^2*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - a^2*log(b*x + a)/b^2 + c^2*log(d*x + c)/d^2 - (b*c - a*d)*x/(b*d))*B*a*c*d*g*i^2 + 1/3*(2*x^3*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*B*b*c*d*g*i^2 + 1/6*(2*x^3*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*B*a*d^2*g*i^2 + 1/24*(6*x^4*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 6*a^4*log(b*x + a)/b^4 + 6*c^4*log(d*x + c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*B*b*d^2*g*i^2 + A*a*c^2*g*i^2*x

mupad [B] time = 5.00, size = 636, normalized size = 2.66

$$x^3 \left(\frac{d g i^2 (8 A a d + 12 A b c + B a d - B b c)}{12} - \frac{A d g i^2 (12 a d + 12 b c)}{36} \right) - x^2 \left(\frac{\left(\frac{d g i^2 (8 A a d + 12 A b c + B a d - B b c)}{4} - \frac{A d}{24 b} \right)}{24 b} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a*g + b*g*x)*(c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x))),x)

```
[Out] x^3*((d*g*i^2*(8*A*a*d + 12*A*b*c + B*a*d - B*b*c))/12 - (A*d*g*i^2*(12*a*d
+ 12*b*c))/36) - x^2*( (((d*g*i^2*(8*A*a*d + 12*A*b*c + B*a*d - B*b*c))/4 -
(A*d*g*i^2*(12*a*d + 12*b*c))/12)*(12*a*d + 12*b*c))/(24*b*d) - (g*i^2*(3*
A*a^2*d^2 + 9*A*b^2*c^2 + B*a^2*d^2 - 2*B*b^2*c^2 + 18*A*a*b*c*d + B*a*b*c*
d))/(6*b) + (A*a*c*d*g*i^2)/2) + log((e*(a + b*x))/(c + d*x))*(B*a*c^2*g*i^
2*x + (B*c*g*i^2*x^2*(2*a*d + b*c))/2 + (B*d*g*i^2*x^3*(a*d + 2*b*c))/3 + (
B*b*d^2*g*i^2*x^4)/4) + x*( ((12*a*d + 12*b*c)*(((d*g*i^2*(8*A*a*d + 12*A*b
*c + B*a*d - B*b*c))/4 - (A*d*g*i^2*(12*a*d + 12*b*c))/12)*(12*a*d + 12*b*c
)))/(12*b*d) - (g*i^2*(3*A*a^2*d^2 + 9*A*b^2*c^2 + B*a^2*d^2 - 2*B*b^2*c^2 +
18*A*a*b*c*d + B*a*b*c*d))/(3*b) + A*a*c*d*g*i^2))/(12*b*d) - (a*c*((d*g*i
^2*(8*A*a*d + 12*A*b*c + B*a*d - B*b*c))/4 - (A*d*g*i^2*(12*a*d + 12*b*c))/
12))/(b*d) + (c*g*i^2*(6*A*a^2*d^2 + 2*A*b^2*c^2 + 2*B*a^2*d^2 - B*b^2*c^2
+ 12*A*a*b*c*d - B*a*b*c*d))/(2*b*d)) + (log(a + b*x)*(B*a^4*d^2*g*i^2 + 6*
B*a^2*b^2*c^2*g*i^2 - 4*B*a^3*b*c*d*g*i^2))/(12*b^3) + (log(c + d*x)*(B*b*c
^4*g*i^2 - 4*B*a*c^3*d*g*i^2))/(12*d^2) + (A*b*d^2*g*i^2*x^4)/4
```

sympy [B] time = 5.07, size = 850, normalized size = 3.56

$$\frac{Abd^2gi^2x^4}{4} + \frac{Ba^2gi^2(a^2d^2 - 4abcd + 6b^2c^2) \log\left(x + \frac{Ba^4cd^3gi^2 - 4Ba^3bc^2d^2gi^2 + \frac{Ba^3d^2gi^2(a^2d^2 - 4abcd + 6b^2c^2)}{b} + 10Ba^2b^2c^3dgi^2 - Ba^2cdgi^2}{Ba^4d^4gi^2 - 4Ba^3bcd^3gi^2 + 6Ba^2b^2c^2d^2gi^2 + 4Bab^3c^3dgi^2 - Bb^4c^4gi^2}\right)}{12b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)**2*(A+B*ln(e*(b*x+a)/(d*x+c))), x)
```

```
[Out] A*b*d**2*g*i**2*x**4/4 + B*a**2*g*i**2*(a**2*d**2 - 4*a*b*c*d + 6*b**2*c**2
)*log(x + (B*a**4*c*d**3*g*i**2 - 4*B*a**3*b*c**2*d**2*g*i**2 + B*a**3*d**2
*g*i**2*(a**2*d**2 - 4*a*b*c*d + 6*b**2*c**2)/b + 10*B*a**2*b**2*c**3*d*g*i
**2 - B*a**2*c*d*g*i**2*(a**2*d**2 - 4*a*b*c*d + 6*b**2*c**2) - B*a*b**3*c*
**4*g*i**2)/(B*a**4*d**4*g*i**2 - 4*B*a**3*b*c*d**3*g*i**2 + 6*B*a**2*b**2*c
**2*d**2*g*i**2 + 4*B*a*b**3*c**3*d*g*i**2 - B*b**4*c**4*g*i**2))/(12*b**3)
- B*c**3*g*i**2*(4*a*d - b*c)*log(x + (B*a**4*c*d**3*g*i**2 - 4*B*a**3*b*c
**2*d**2*g*i**2 + 10*B*a**2*b**2*c**3*d*g*i**2 - B*a*b**3*c**4*g*i**2 - B*a
*b**2*c**3*g*i**2*(4*a*d - b*c) + B*b**3*c**4*g*i**2*(4*a*d - b*c)/d)/(B*a
**4*d**4*g*i**2 - 4*B*a**3*b*c*d**3*g*i**2 + 6*B*a**2*b**2*c**2*d**2*g*i**2
+ 4*B*a*b**3*c**3*d*g*i**2 - B*b**4*c**4*g*i**2))/(12*d**2) + x**3*(A*a*d**
2*g*i**2/3 + 2*A*b*c*d*g*i**2/3 + B*a*d**2*g*i**2/12 - B*b*c*d*g*i**2/12) +
x**2*(A*a*c*d*g*i**2 + A*b*c**2*g*i**2/2 + B*a**2*d**2*g*i**2/(24*b) + B*a
*c*d*g*i**2/6 - 5*B*b*c**2*g*i**2/24) + x*(A*a*c**2*g*i**2 - B*a**3*d**2*g*
i**2/(12*b**2) + B*a**2*c*d*g*i**2/(3*b) - B*a*c**2*g*i**2/6 - B*b*c**3*g*i
**2/(12*d)) + (B*a*c**2*g*i**2*x + B*a*c*d*g*i**2*x**2 + B*a*d**2*g*i**2*x*
**3/3 + B*b*c**2*g*i**2*x**2/2 + 2*B*b*c*d*g*i**2*x**3/3 + B*b*d**2*g*i**2*x
**4/4)*log(e*(a + b*x)/(c + d*x))
```

$$3.13 \quad \int (ci + dix)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) dx$$

Optimal. Leaf size=118

$$\frac{i^2(c+dx)^3 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{3d} - \frac{Bi^2(bc-ad)^3 \log(a+bx)}{3b^3d} - \frac{Bi^2x(bc-ad)^2}{3b^2} - \frac{Bi^2(c+dx)^2(bc-ad)}{6bd}$$

[Out] $-1/3*B*(-a*d+b*c)^2*i^2*x/b^2-1/6*B*(-a*d+b*c)*i^2*(d*x+c)^2/b/d-1/3*B*(-a*d+b*c)^3*i^2*\ln(b*x+a)/b^3/d+1/3*i^2*(d*x+c)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))/d$

Rubi [A] time = 0.07, antiderivative size = 118, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.100$, Rules used = {2525, 12, 43}

$$\frac{i^2(c+dx)^3 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{3d} - \frac{Bi^2x(bc-ad)^2}{3b^2} - \frac{Bi^2(bc-ad)^3 \log(a+bx)}{3b^3d} - \frac{Bi^2(c+dx)^2(bc-ad)}{6bd}$$

Antiderivative was successfully verified.

[In] `Int[(c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]),x]`

[Out] $-(B*(b*c - a*d)^2*i^2*x)/(3*b^2) - (B*(b*c - a*d)*i^2*(c + d*x)^2)/(6*b*d) - (B*(b*c - a*d)^3*i^2*\text{Log}[a + b*x])/(3*b^3*d) + (i^2*(c + d*x)^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(3*d)$

Rule 12

`Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]`

Rule 43

`Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && (!IntegerQ[n] || (EqQ[c, 0] && LeQ[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])`

Rule 2525

`Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d`

, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]

Rubi steps

$$\begin{aligned} \int (13c + 13dx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) dx &= \frac{169(c+dx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{3d} - \frac{B \int \frac{2197(bc-ad)(c+dx)^2}{a+bx} dx}{39d} \\ &= \frac{169(c+dx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{3d} - \frac{(169B(bc-ad)) \int \frac{(c+dx)^2}{a+bx} dx}{3d} \\ &= \frac{169(c+dx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{3d} - \frac{(169B(bc-ad)) \int \left(\frac{d(bc-ad)}{b^2} + \right)}{3d} \\ &= -\frac{169B(bc-ad)^2 x}{3b^2} - \frac{169B(bc-ad)(c+dx)^2}{6bd} - \frac{169B(bc-ad)^3 \log}{3b^3 d} \end{aligned}$$

Mathematica [A] time = 0.04, size = 97, normalized size = 0.82

$$\frac{i^2 \left((c+dx)^3 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right) - \frac{B(bc-ad)(2bdx(bc-ad)+2(bc-ad)^2 \log(a+bx)+b^2(c+dx)^2)}{2b^3} \right)}{3d}$$

Antiderivative was successfully verified.

[In] Integrate[(c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]),x]

[Out] (i^2*(-1/2*(B*(b*c - a*d)*(2*b*d*(b*c - a*d)*x + b^2*(c + d*x)^2 + 2*(b*c - a*d)^2*Log[a + b*x]))/b^3 + (c + d*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])))/(3*d)

fricas [B] time = 0.95, size = 223, normalized size = 1.89

$$2 Ab^3 d^3 i^2 x^3 - 2 B b^3 c^3 i^2 \log(dx + c) + ((6A - B)b^3 c d^2 + B a b^2 d^3) i^2 x^2 + 2((3A - 2B)b^3 c^2 d + 3 B a b^2 c d^2 - B a^2 b d^3)$$

6

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorithm="fricas")

[Out] 1/6*(2*A*b^3*d^3*i^2*x^3 - 2*B*b^3*c^3*i^2*log(d*x + c) + ((6*A - B)*b^3*c*d^2 + B*a*b^2*d^3)*i^2*x^2 + 2*((3*A - 2*B)*b^3*c^2*d + 3*B*a*b^2*c*d^2 - B

$$*a^2*b*d^3)*i^2*x + 2*(3*B*a*b^2*c^2*d - 3*B*a^2*b*c*d^2 + B*a^3*d^3)*i^2*\log(b*x + a) + 2*(B*b^3*d^3*i^2*x^3 + 3*B*b^3*c*d^2*i^2*x^2 + 3*B*b^3*c^2*d*i^2*x)*\log((b*e*x + a*e)/(d*x + c)))/(b^3*d)$$

giac [B] time = 0.83, size = 2475, normalized size = 20.97

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorithm="giac")
[Out] -1/6*(2*B*b^7*c^4*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 8*B*a*b^6*c^3*d*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 12*B*a^2*b^5*c^2*d^2*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 8*B*a^3*b^4*c*d^3*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 2*B*a^4*b^3*d^4*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 6*(b*x*e + a*e)*B*b^6*c^4*d*e^3*log(-b*e + (b*x*e + a*e)*d/(d*x + c)))/(d*x + c) + 24*(b*x*e + a*e)*B*a*b^5*c^3*d^2*e^3*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) - 36*(b*x*e + a*e)*B*a^2*b^4*c^2*d^3*e^3*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 24*(b*x*e + a*e)*B*a^3*b^3*c*d^4*e^3*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) - 6*(b*x*e + a*e)*B*a^4*b^2*d^5*e^3*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 6*(b*x*e + a*e)^2*B*b^5*c^4*d^2*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 24*(b*x*e + a*e)^2*B*a*b^4*c^3*d^3*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 + 36*(b*x*e + a*e)^2*B*a^2*b^3*c^2*d^4*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 24*(b*x*e + a*e)^2*B*a^3*b^2*c*d^5*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 + 6*(b*x*e + a*e)^2*B*a^4*b*d^6*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 2*(b*x*e + a*e)^3*B*b^4*c^4*d^3*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 + 8*(b*x*e + a*e)^3*B*a*b^3*c^3*d^4*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 - 12*(b*x*e + a*e)^3*B*a^2*b^2*c^2*d^5*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 + 8*(b*x*e + a*e)^3*B*a^3*b*c*d^6*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 - 2*(b*x*e + a*e)^3*B*a^4*d^7*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 + 6*(b*x*e + a*e)*B*b^6*c^4*d*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c) - 24*(b*x*e + a*e)*B*a*b^5*c^3*d^2*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c) + 36*(b*x*e + a*e)*B*a^2*b^4*c^2*d^3*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c) - 24*(b*x*e + a*e)*B*a^3*b^3*c*d^4*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c) + 6*(b*x*e + a*e)*B*a^4*b^2*d^5*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c) - 6*(b*x*e + a*e)^2*B*b^5*c^4*d^2*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 + 24*(b*x*e + a*e)^2*B*a*b^4*c^3*d^3*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 - 36*(b*x*e + a*e)^2*B*a^2*b^3*c^2*d^4*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 + 24*(b*x*e + a*e)^2*B*a^3*b^2*c*d^5*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 - 6*(b*x*e + a*e)^2*B*a^4*b*d^6*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 + 2*(b*x*e + a*e)^3*B*b^4*c^4*d^3*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^3 - 8*(b*x*e + a*e)^3*B*a*b^3*c^3*d^4*e*log((b*x*e + a*e)/(d*x + c)))/
```

$$\begin{aligned}
& (d*x + c)^3 + 12*(b*x*e + a*e)^3*B*a^2*b^2*c^2*d^5*e*\log((b*x*e + a*e)/(d*x \\
& + c))/(d*x + c)^3 - 8*(b*x*e + a*e)^3*B*a^3*b*c*d^6*e*\log((b*x*e + a*e)/(d \\
& *x + c))/(d*x + c)^3 + 2*(b*x*e + a*e)^3*B*a^4*d^7*e*\log((b*x*e + a*e)/(d*x \\
& + c))/(d*x + c)^3 + 2*A*b^7*c^4*e^4 - 3*B*b^7*c^4*e^4 - 8*A*a*b^6*c^3*d*e^ \\
& 4 + 12*B*a*b^6*c^3*d*e^4 + 12*A*a^2*b^5*c^2*d^2*e^4 - 18*B*a^2*b^5*c^2*d^2* \\
& e^4 - 8*A*a^3*b^4*c*d^3*e^4 + 12*B*a^3*b^4*c*d^3*e^4 + 2*A*a^4*b^3*d^4*e^4 \\
& - 3*B*a^4*b^3*d^4*e^4 + 5*(b*x*e + a*e)*B*b^6*c^4*d*e^3/(d*x + c) - 20*(b*x \\
& *e + a*e)*B*a*b^5*c^3*d^2*e^3/(d*x + c) + 30*(b*x*e + a*e)*B*a^2*b^4*c^2*d^ \\
& 3*e^3/(d*x + c) - 20*(b*x*e + a*e)*B*a^3*b^3*c*d^4*e^3/(d*x + c) + 5*(b*x*e \\
& + a*e)*B*a^4*b^2*d^5*e^3/(d*x + c) - 2*(b*x*e + a*e)^2*B*b^5*c^4*d^2*e^2/(\\
& d*x + c)^2 + 8*(b*x*e + a*e)^2*B*a*b^4*c^3*d^3*e^2/(d*x + c)^2 - 12*(b*x*e \\
& + a*e)^2*B*a^2*b^3*c^2*d^4*e^2/(d*x + c)^2 + 8*(b*x*e + a*e)^2*B*a^3*b^2*c* \\
& d^5*e^2/(d*x + c)^2 - 2*(b*x*e + a*e)^2*B*a^4*b*d^6*e^2/(d*x + c)^2*(b*c/(\\
& (b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))/(b^6*d*e^ \\
& 3 - 3*(b*x*e + a*e)*b^5*d^2*e^2/(d*x + c) + 3*(b*x*e + a*e)^2*b^4*d^3*e/(d* \\
& x + c)^2 - (b*x*e + a*e)^3*b^3*d^4/(d*x + c)^3)
\end{aligned}$$

maple [B] time = 0.13, size = 1522, normalized size = 12.90

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A), x)`

[Out]
$$\begin{aligned}
& -1/3/d*e^3*B*i^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^3/(1/(d*x+c)*a*d*e-1/(d* \\
& x+c)*b*c*e)^3*c^3+e^3*A*i^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a*b^2*c^2+d \\
& *B*i^2/b^2*\ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a^2*c+1/2*e^2*B*i^2/(1/ \\
& (d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a*c^2+b+1/3/d*B*i^2*\ln(-b*e+(b/d*e+(a*d-b* \\
& c)/(d*x+c)/d*e)*d)*c^3+d*e*B*i^2/b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^2*c- \\
& B*i^2/b*\ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a*c^2-1/3*d^2*B*i^2/b^3*\ln \\
& (-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a^3+1/6*d^2*e^2*B*i^2/b/(1/(d*x+c)*a \\
& *d*e-1/(d*x+c)*b*c*e)^2*a^3-1/6/d*e^2*B*i^2*b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)* \\
& b*c*e)^2*c^3+1/3/d*e*B*i^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*c^3*b-e*B*i^2/ \\
& (1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*c^2*a+1/3*d^2*e^3*A*i^2/(1/(d*x+c)*a*d*e- \\
& 1/(d*x+c)*b*c*e)^3*a^3+e^3*B*i^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2/(1/(d* \\
& x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*c^2*a-d*e^3*A*i^2/(1/(d*x+c)*a*d*e-1/(d*x+c)* \\
& b*c*e)^3*a^2*b*c-1/2*d*e^2*B*i^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^2*c- \\
& 1/3*d^2*e*B*i^2/b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^3+1/3*d^2*e^3*B*i^2 \\
& *\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^3-1/ \\
& 3/d*e^3*A*i^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*b^3*c^3+5*d^3*e^3*B*i^2*\ln \\
& (b/d*e+(a*d-b*c)/(d*x+c)/d*e)/b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^4/(d \\
& *x+c)^3*c^2+5*d*e^3*B*i^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b/(1/(d*x+c)*a*d* \\
& e-1/(d*x+c)*b*c*e)^3*a^2*c^4/(d*x+c)^3-2*d^4*e^3*B*i^2*\ln(b/d*e+(a*d-b*c)/(\\
& d*x+c)/d*e)/b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^5/(d*x+c)^3*c-d*e^3*B \\
& *i^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^
\end{aligned}$$

$2*b*c+1/3*d^5*e^3*B*i^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^6/(d*x+c)^3-2*e^3*B*i^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a*c^5/(d*x+c)^3+1/3/d*e^3*B*i^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*c^6/(d*x+c)^3-20/3*d^2*e^3*B*i^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^3/(d*x+c)^3*c^3$

maxima [B] time = 1.10, size = 280, normalized size = 2.37

$$\frac{1}{3} Ad^2 i^2 x^3 + Acd i^2 x^2 + \left(x \log\left(\frac{bex}{dx+c} + \frac{ae}{dx+c}\right) + \frac{a \log(bx+a)}{b} - \frac{c \log(dx+c)}{d} \right) Bc^2 i^2 + \left(x^2 \log\left(\frac{bex}{dx+c} + \frac{ae}{dx+c}\right) \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorithm="maxima")

[Out] $\frac{1}{3}A*d^2*i^2*x^3 + A*c*d*i^2*x^2 + (x*\log(b*e*x/(d*x + c) + a*e/(d*x + c)) + a*\log(b*x + a)/b - c*\log(d*x + c)/d)*B*c^2*i^2 + (x^2*\log(b*e*x/(d*x + c) + a*e/(d*x + c)) - a^2*\log(b*x + a)/b^2 + c^2*\log(d*x + c)/d^2 - (b*c - a*d)*x/(b*d))*B*c*d*i^2 + 1/6*(2*x^3*\log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 2*a^3*\log(b*x + a)/b^3 - 2*c^3*\log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*B*d^2*i^2 + A*c^2*i^2*x$

mupad [B] time = 4.59, size = 290, normalized size = 2.46

$$x^2 \left(\frac{d^2 (3Aad + 9Abc + Bad - Bbc)}{6b} - \frac{Ad^2 (3ad + 3bc)}{6b} \right) - x \left(\frac{(3ad + 3bc) \left(\frac{d^2 (3Aad + 9Abc + Bad - Bbc)}{3b} \right)}{3bd} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x))),x)

[Out] $x^2*((d*i^2*(3*A*a*d + 9*A*b*c + B*a*d - B*b*c))/(6*b) - (A*d*i^2*(3*a*d + 3*b*c))/(6*b)) - x*((((3*a*d + 3*b*c)*((d*i^2*(3*A*a*d + 9*A*b*c + B*a*d - B*b*c))/(3*b) - (A*d*i^2*(3*a*d + 3*b*c))/(3*b)))/(3*b*d) - (c*i^2*(3*A*a*d + 3*A*b*c + B*a*d - B*b*c))/b + (A*a*c*d*i^2)/b) + \log((e*(a + b*x))/(c + d*x))*((B*d^2*i^2*x^3)/3 + B*c^2*i^2*x + B*c*d*i^2*x^2) + (\log(a + b*x)*(B*a^3*d^2*i^2 + 3*B*a*b^2*c^2*i^2 - 3*B*a^2*b*c*d*i^2))/(3*b^3) + (A*d^2*i^2*x^3)/3 - (B*c^3*i^2*\log(c + d*x))/(3*d)$

sympy [B] time = 2.99, size = 491, normalized size = 4.16

$$\frac{Ad^2 i^2 x^3}{3} + \frac{B a i^2 (a^2 d^2 - 3 a b c d + 3 b^2 c^2) \log\left(x + \frac{B a^3 c d^2 i^2 - 3 B a^2 b c^2 d i^2 + \frac{B a^2 d i^2 (a^2 d^2 - 3 a b c d + 3 b^2 c^2)}{b} + 4 B a b^2 c^3 i^2 - B a c i^2 (a^2 d^2 - 3 a b c d + 3 b^2 c^2)}{B a^3 d^3 i^2 - 3 B a^2 b c d^2 i^2 + 3 B a b^2 c^2 d i^2 + B b^3 c^3 i^2}\right)}{3 b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*(b*x+a)/(d*x+c))),x)

[Out] $A*d**2*i**2*x**3/3 + B*a*i**2*(a**2*d**2 - 3*a*b*c*d + 3*b**2*c**2)*\log(x + (B*a**3*c*d**2*i**2 - 3*B*a**2*b*c**2*d*i**2 + B*a**2*d*i**2*(a**2*d**2 - 3*a*b*c*d + 3*b**2*c**2))/b + 4*B*a*b**2*c**3*i**2 - B*a*c*i**2*(a**2*d**2 - 3*a*b*c*d + 3*b**2*c**2))/(B*a**3*d**3*i**2 - 3*B*a**2*b*c*d**2*i**2 + 3*B*a*b**2*c**2*d*i**2 + B*b**3*c**3*i**2))/(3*b**3) - B*c**3*i**2*\log(x + (B*a**3*c*d**2*i**2 - 3*B*a**2*b*c**2*d*i**2 + 3*B*a*b**2*c**3*i**2 + B*b**3*c**4*i**2/d)/(B*a**3*d**3*i**2 - 3*B*a**2*b*c*d**2*i**2 + 3*B*a*b**2*c**2*d*i**2 + B*b**3*c**3*i**2))/(3*d) + x**2*(A*c*d*i**2 + B*a*d**2*i**2/(6*b) - B*c*d*i**2/6) + x*(A*c**2*i**2 - B*a**2*d**2*i**2/(3*b**2) + B*a*c*d*i**2/b - 2*B*c**2*i**2/3) + (B*c**2*i**2*x + B*c*d*i**2*x**2 + B*d**2*i**2*x**3/3)*\log(e*(a + b*x)/(c + d*x))$

$$3.14 \quad \int \frac{(ci+dx)^2 \left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{ag+bgx} dx$$

Optimal. Leaf size=276

$$\frac{di^2(a+bx)(bc-ad) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{b^3g} - \frac{i^2(bc-ad)^2 \log\left(1 - \frac{b(c+dx)}{d(a+bx)}\right) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{b^3g} + \frac{i^2(c+dx)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{2b^3g}$$

[Out] $-1/2*B*d*(-a*d+b*c)*i^2*x/b^2/g-1/2*B*(-a*d+b*c)^2*i^2*\ln((b*x+a)/(d*x+c))/b^3/g+d*(-a*d+b*c)*i^2*(b*x+a)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^3/g+1/2*i^2*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b/g-3/2*B*(-a*d+b*c)^2*i^2*\ln(d*x+c)/b^3/g-(-a*d+b*c)^2*i^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))*\ln(1-b*(d*x+c)/d/(b*x+a))/b^3/g+B*(-a*d+b*c)^2*i^2*polylog(2,b*(d*x+c)/d/(b*x+a))/b^3/g$

Rubi [A] time = 0.49, antiderivative size = 354, normalized size of antiderivative = 1.28, number of steps used = 19, number of rules used = 13, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.325$, Rules used = {2528, 2486, 31, 2524, 12, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 43}

$$\frac{Bi^2(bc-ad)^2 \text{PolyLog}\left(2, -\frac{d(a+bx)}{bc-ad}\right)}{b^3g} + \frac{i^2(bc-ad)^2 \log(ag+bgx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{b^3g} + \frac{Adi^2x(bc-ad)}{b^2g} + \frac{i^2(c+dx)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{2b^3g}$$

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x])))/(a*g + b*g*x), x]

[Out] $(A*d*(b*c - a*d)*i^2*x)/(b^2*g) - (B*d*(b*c - a*d)*i^2*x)/(2*b^2*g) - (B*(b*c - a*d)^2*i^2*\text{Log}[a + b*x])/(2*b^3*g) - (B*(b*c - a*d)^2*i^2*\text{Log}[g*(a + b*x)]^2)/(2*b^3*g) + (B*d*(b*c - a*d)*i^2*(a + b*x)*\text{Log}[(e*(a + b*x))/(c + d*x)])/(b^3*g) + (i^2*(c + d*x)^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(2*b*g) - (B*(b*c - a*d)^2*i^2*\text{Log}[c + d*x])/(b^3*g) + ((b*c - a*d)^2*i^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)])*\text{Log}[a*g + b*g*x])/(b^3*g) + (B*(b*c - a*d)^2*i^2*\text{Log}[(b*(c + d*x))/(b*c - a*d)]*\text{Log}[a*g + b*g*x])/(b^3*g) + (B*(b*c - a*d)^2*i^2*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))])/(b^3*g)$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 31

Int[((a_) + (b_.)*(x_))^-1, x_Symbol] := Simp[Log[RemoveContent[a + b*x, x]]/b, x] /; FreeQ[{a, b}, x]

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] := Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q]^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(14c + 14dx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{ag + bgx} dx &= \int \left(\frac{196d(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g} + \frac{14d(14c + 14dx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{bg} \right) dx \\
&= \frac{(196(bc - ad)^2) \int \frac{A+B \log \left(\frac{e(a+bx)}{c+dx} \right)}{ag+bgx} dx}{b^2} + \frac{(14d) \int (14c + 14dx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) dx}{bg} \\
&= \frac{196Ad(bc - ad)x}{b^2g} + \frac{98(c + dx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{bg} + \frac{196(bc - ad)x}{bg} \\
&= \frac{196Ad(bc - ad)x}{b^2g} + \frac{196Bd(bc - ad)(a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{b^3g} + \frac{98(c + dx)^2 A}{bg} \\
&= \frac{196Ad(bc - ad)x}{b^2g} + \frac{196Bd(bc - ad)(a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{b^3g} + \frac{98(c + dx)^2 A}{bg} \\
&= \frac{196Ad(bc - ad)x}{b^2g} - \frac{98Bd(bc - ad)x}{b^2g} - \frac{98B(bc - ad)^2 \log(a + bx)}{b^3g} + \frac{196Ad(bc - ad)x}{b^2g} \\
&= \frac{196Ad(bc - ad)x}{b^2g} - \frac{98Bd(bc - ad)x}{b^2g} - \frac{98B(bc - ad)^2 \log(a + bx)}{b^3g} + \frac{196Ad(bc - ad)x}{b^2g} \\
&= \frac{196Ad(bc - ad)x}{b^2g} - \frac{98Bd(bc - ad)x}{b^2g} - \frac{98B(bc - ad)^2 \log(a + bx)}{b^3g} + \frac{196Ad(bc - ad)x}{b^2g} \\
&= \frac{196Ad(bc - ad)x}{b^2g} - \frac{98Bd(bc - ad)x}{b^2g} - \frac{98B(bc - ad)^2 \log(a + bx)}{b^3g} - \frac{98Bd(bc - ad)x}{b^2g}
\end{aligned}$$

Mathematica [A] time = 0.19, size = 252, normalized size = 0.91

$$\frac{i^2 \left(b^2(c + dx)^2 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right) + 2(bc - ad)^2 \log(g(a + bx)) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right) + 2Abdx(bc - ad) + 2Bd(a + bx)^2 \right)}{b^2g}$$

Antiderivative was successfully verified.

[In] Integrate[((c+i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a*g + b*g*x),x]

[Out] $(i^2*(2*A*b*d*(b*c - a*d)*x - B*(b*c - a*d)*(b*d*x + (b*c - a*d)*\text{Log}[a + b*x]) + 2*B*d*(b*c - a*d)*(a + b*x)*\text{Log}[(e*(a + b*x))/(c + d*x)] + b^2*(c + d*x)^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]) + 2*(b*c - a*d)^2*\text{Log}[g*(a + b*x)]*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]) - 2*B*(b*c - a*d)^2*\text{Log}[c + d*x] + B*(b*c - a*d)^2*(-(\text{Log}[g*(a + b*x)]*(\text{Log}[g*(a + b*x)] - 2*\text{Log}[(b*(c + d*x))/(b*c - a*d])) + 2*\text{PolyLog}[2, (d*(a + b*x))/(-(b*c) + a*d)])))/(2*b^3*g)$

fricas [F] time = 0.98, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{Ad^2i^2x^2 + 2Ac di^2x + Ac^2i^2 + (Bd^2i^2x^2 + 2Bcdi^2x + Bc^2i^2) \log\left(\frac{bex+ae}{dx+c}\right)}{bgx + ag}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g),x, algorithm="fricas")`

[Out] `integral((A*d^2*i^2*x^2 + 2*A*c*d*i^2*x + A*c^2*i^2 + (B*d^2*i^2*x^2 + 2*B*c*d*i^2*x + B*c^2*i^2)*log((b*e*x + a*e)/(d*x + c)))/(b*g*x + a*g), x)`

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci)^2 \left(B \log\left(\frac{(bx+a)e}{dx+c}\right) + A \right)}{bgx + ag} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g),x, algorithm="giac")`

[Out] `integrate((d*i*x + c*i)^2*(B*log((b*x + a)*e/(d*x + c)) + A)/(b*g*x + a*g), x)`

maple [B] time = 0.15, size = 2538, normalized size = 9.20

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g),x)`

[Out] `1/2*B*i^2/g*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/b*c^2+A*i^2/g/b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c^2+3/2*B*i^2/g/b*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e))*d*c^2-B*i^2/g/b*dilog(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*c^2-A*i^2/g/b*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c^2-e*A*i^2/g/(1/(d*x+c)*a*`

$$\begin{aligned}
& d^2e^{-1/(dx+c)} * b^2c^2 * e^{2Bx} / g / (1/(dx+c) * a^2d^2e^{-1/(dx+c)} * b^2c^2) * c^2 \\
& + 2 * d^3e^{2Bx} / g / b^2 * \ln(b/d * e + (a * d - b * c) / (dx+c) / d * e) / (1/(dx+c) * a^2d^2e^{-1/(dx+c)} * b^2c^2) \\
& + 2 * a^3 / (dx+c)^2 * c^2 * d^2e^{2Bx} / g / b^2 * \ln(b/d * e + (a * d - b * c) / (dx+c) / d * e) / (1/(dx+c) * a^2d^2e^{-1/(dx+c)} * b^2c^2) \\
& + 2 * a^2 / (dx+c)^2 * c^2 * d^2e^{2Bx} / g / b^2 * \ln(b/d * e + (a * d - b * c) / (dx+c) / d * e) / (1/(dx+c) * a^2d^2e^{-1/(dx+c)} * b^2c^2) \\
& + a^2 / (dx+c) * c^2 * d^3e^{2Bx} / g / b^3 * \ln(b/d * e + (a * d - b * c) / (dx+c) / d * e) / (1/(dx+c) * a^2d^2e^{-1/(dx+c)} * b^2c^2) \\
& + a^3 / (dx+c) * d^4e^{2Bx} / g / b^3 * \ln(b/d * e + (a * d - b * c) / (dx+c) / d * e) / (1/(dx+c) * a^2d^2e^{-1/(dx+c)} * b^2c^2) \\
& + a^4 / (dx+c)^2 * d^2e^{2Bx} / g / b^2 * \ln(b/d * e + (a * d - b * c) / (dx+c) / d * e) / (1/(dx+c) * a^2d^2e^{-1/(dx+c)} * b^2c^2) \\
& + c * a^2 * d^2e^{2Bx} / g * \ln(b/d * e + (a * d - b * c) / (dx+c) / d * e) / (1/(dx+c) * a^2d^2e^{-1/(dx+c)} * b^2c^2) \\
& + a^2 * a / (dx+c)^2 * c^3 + 2 * d^2e^{2Bx} / g / b / (1/(dx+c) * a^2d^2e^{-1/(dx+c)} * b^2c^2) * c * a + 1/2 * d^2e^{2Bx} / g / b^2 / (1/(dx+c) * a^2d^2e^{-1/(dx+c)} * b^2c^2) \\
& + a^2 + 1/2 * d^2e^{2Bx} / g / b^2 * \ln(b/d * e + (a * d - b * c) / (dx+c) / d * e) / (1/(dx+c) * a^2d^2e^{-1/(dx+c)} * b^2c^2) \\
& + a^2 * d^2e^{2Bx} / g / b / (1/(dx+c) * a^2d^2e^{-1/(dx+c)} * b^2c^2) * a^2 * d^2e^{2Bx} / g / b^3 * \ln(b/d * e + (a * d - b * c) / (dx+c) / d * e) \\
& + a^2 * d^2e^{2Bx} / g / b^2 * \ln(b/d * e + (a * d - b * c) / (dx+c) / d * e) / (1/(dx+c) * a^2d^2e^{-1/(dx+c)} * b^2c^2) * a^2 + 1/2 * d^2e^{2Bx} / g * \ln(b/d * e + (a * d - b * c) / (dx+c) / d * e) \\
& + a^2 * d^2e^{2Bx} / g / b^3 * \ln(-(-b * e + (b/d * e + (a * d - b * c) / (dx+c) / d * e) * d) / b / e) * c^2 * d^2e^{2Bx} / g / b^3 * \ln(-b * e + (b/d * e + (a * d - b * c) / (dx+c) / d * e) * d) \\
& + a^2 + 1/2 * e^{2Bx} / g / (1/(dx+c) * a^2d^2e^{-1/(dx+c)} * b^2c^2) * c^2 * b - e^{2Bx} / g * \ln(b/d * e + (a * d - b * c) / (dx+c) / d * e) / (1/(dx+c) * a^2d^2e^{-1/(dx+c)} * b^2c^2) \\
& + c^2 * d^2e^{2Bx} / g / b^3 * \operatorname{dilog}(-(-b * e + (b/d * e + (a * d - b * c) / (dx+c) / d * e) * d) / b / e) * a^2 + 3/2 * d^2e^{2Bx} / g / b^3 * \ln(-b * e + (b/d * e + (a * d - b * c) / (dx+c) / d * e) * d) \\
& + a^2 - 1/2 * e^{2Bx} / g * \ln(b/d * e + (a * d - b * c) / (dx+c) / d * e) / (1/(dx+c) * a^2d^2e^{-1/(dx+c)} * b^2c^2) * c^4 / (dx+c)^2 * b + 2 * d^2e^{2Bx} / g / b^2 * \ln(b/d * e + (a * d - b * c) / (dx+c) / d * e) \\
& + a^2 * \ln(-(-b * e + (b/d * e + (a * d - b * c) / (dx+c) / d * e) * d) / b / e) * a^2 * c - d^2e^{2Bx} / g * \ln(b/d * e + (a * d - b * c) / (dx+c) / d * e) / (1/(dx+c) * a^2d^2e^{-1/(dx+c)} * b^2c^2) \\
& + a^2 * c + 1/2 * d^2e^{2Bx} / g / b / (1/(dx+c) * a^2d^2e^{-1/(dx+c)} * b^2c^2) * a^2 * d^2e^{2Bx} / g * \ln(b/d * e + (a * d - b * c) / (dx+c) / d * e) \\
& + 2/b^2 * a^2 * c + 2 * d^2e^{2Bx} / g / b^2 * \ln(-b * e + (b/d * e + (a * d - b * c) / (dx+c) / d * e) * d) * c * a + 2 * d^2e^{2Bx} / g / b^2 * \operatorname{dilog}(-(-b * e + (b/d * e + (a * d - b * c) / (dx+c) / d * e) * d) / b / e) \\
& + c * a - d^2e^{2Bx} / g / b^2 / (1/(dx+c) * a^2d^2e^{-1/(dx+c)} * b^2c^2) * a^2 * d^2e^{2Bx} / g / b^3 * \ln(b/d * e + (a * d - b * c) / (dx+c) / d * e) * \ln(-(-b * e + (b/d * e + (a * d - b * c) / (dx+c) / d * e) * d) / b / e) \\
& + a^2 - 3 * d^2e^{2Bx} / g / b^2 * \ln(-b * e + (b/d * e + (a * d - b * c) / (dx+c) / d * e) * d) * a^2 * c - 2 * d^2e^{2Bx} / g / b^2 * \ln(b/d * e + (a * d - b * c) / (dx+c) / d * e) \\
& + c * a + 1/2 * e^{2Bx} / g * \ln(b/d * e + (a * d - b * c) / (dx+c) / d * e) / (1/(dx+c) * a^2d^2e^{-1/(dx+c)} * b^2c^2) * c^2 * b - d^2e^{2Bx} / g / (1/(dx+c) * a^2d^2e^{-1/(dx+c)} * b^2c^2) \\
& + c * a + e^{2Bx} / g * \ln(b/d * e + (a * d - b * c) / (dx+c) / d * e) / (1/(dx+c) * a^2d^2e^{-1/(dx+c)} * b^2c^2) * c^3 / (dx+c)
\end{aligned}$$

maxima [A] time = 1.80, size = 518, normalized size = 1.88

$$2 A c d i^2 \left(\frac{x}{b g} - \frac{a \log (b x + a)}{b^2 g} \right) + \frac{1}{2} A d^2 i^2 \left(\frac{2 a^2 \log (b x + a)}{b^3 g} + \frac{b x^2 - 2 a x}{b^2 g} \right) + \frac{A c^2 i^2 \log (b g x + a g)}{b g} - \frac{(3 b c^2 i^2 - 2 a c d i^2)}{2 b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g),x, algorithm="maxima")

[Out] $2*A*c*d*i^2*(x/(b*g) - a*\log(b*x + a)/(b^2*g)) + 1/2*A*d^2*i^2*(2*a^2*\log(b*x + a)/(b^3*g) + (b*x^2 - 2*a*x)/(b^2*g)) + A*c^2*i^2*\log(b*g*x + a*g)/(b*g) - 1/2*(3*b*c^2*i^2 - 2*a*c*d*i^2)*B*\log(d*x + c)/(b^2*g) + (b^2*c^2*i^2 - 2*a*b*c*d*i^2 + a^2*d^2*i^2)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + \operatorname{dilog}(-(b*d*x + a*d)/(b*c - a*d)))*B/(b^3*g) + 1/2*(B*b^2*d^2*i^2*x^2*\log(e) + (b^2*c^2*i^2 - 2*a*b*c*d*i^2 + a^2*d^2*i^2)*B*\log(b*x + a)^2 + ((4*i^2*\log(e) - i^2)*b^2*c*d - (2*i^2*\log(e) - i^2)*a*b*d^2)*B*x + (B*b^2*d^2*i^2*x^2 + 2*(2*b^2*c*d*i^2 - a*b*d^2*i^2)*B*x + (2*b^2*c^2*i^2*\log(e) - 4*(i^2*\log(e) - i^2)*a*b*c*d + (2*i^2*\log(e) - 3*i^2)*a^2*d^2)*B)*\log(b*x + a) - (B*b^2*d^2*i^2*x^2 + 2*(2*b^2*c*d*i^2 - a*b*d^2*i^2)*B*x + 2*(b^2*c^2*i^2 - 2*a*b*c*d*i^2 + a^2*d^2*i^2)*B*\log(b*x + a))*\log(d*x + c))/(b^3*g)$

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ci + dix)^2 \left(A + B \ln \left(\frac{e(a+bx)}{c+dx} \right) \right)}{ag + bgx} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x),x)

[Out] int(((c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x), x)

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$i^2 \left(\int \frac{Ac^2}{a+bx} dx + \int \frac{Ad^2x^2}{a+bx} dx + \int \frac{Bc^2 \log\left(\frac{ae}{c+dx} + \frac{bex}{c+dx}\right)}{a+bx} dx + \int \frac{2Ac dx}{a+bx} dx + \int \frac{Bd^2x^2 \log\left(\frac{ae}{c+dx} + \frac{bex}{c+dx}\right)}{a+bx} dx + \int \frac{2Bcdx \log\left(\frac{ae}{c+dx} + \frac{bex}{c+dx}\right)}{a+bx} dx \right)$$

g

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g),x)

[Out] $i^{**2}*(\operatorname{Integral}(A*c^{**2}/(a + b*x), x) + \operatorname{Integral}(A*d^{**2}*x^{**2}/(a + b*x), x) + \operatorname{Integral}(B*c^{**2}*\log(a*e/(c + d*x) + b*e*x/(c + d*x))/(a + b*x), x) + \operatorname{Integral}(2*A*c*d*x/(a + b*x), x) + \operatorname{Integral}(B*d^{**2}*x^{**2}*\log(a*e/(c + d*x) + b*e*x/(c + d*x))/(a + b*x), x) + \operatorname{Integral}(2*B*c*d*x*\log(a*e/(c + d*x) + b*e*x/(c + d*x))/(a + b*x), x))/g$

$$3.15 \quad \int \frac{(ci+dx)^2 \left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{(ag+bgx)^2} dx$$

Optimal. Leaf size=247

$$\frac{d^2 i^2 (a+bx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{b^3 g^2} - \frac{2 d i^2 (bc-ad) \log\left(1 - \frac{b(c+dx)}{d(a+bx)}\right) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{b^3 g^2} - \frac{i^2 (c+dx)(bc-ad) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{b^2 g^2 (a+bx)}$$

[Out] $-B*(-a*d+b*c)*i^2*(d*x+c)/b^2/g^2/(b*x+a)+d^2*i^2*(b*x+a)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^3/g^2-(-a*d+b*c)*i^2*(d*x+c)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^2/g^2/(b*x+a)-B*d*(-a*d+b*c)*i^2*\ln(d*x+c)/b^3/g^2-2*d*(-a*d+b*c)*i^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))*\ln(1-b*(d*x+c)/d/(b*x+a))/b^3/g^2+2*B*d*(-a*d+b*c)*i^2*\text{polylog}(2,b*(d*x+c)/d/(b*x+a))/b^3/g^2$

Rubi [A] time = 0.52, antiderivative size = 313, normalized size of antiderivative = 1.27, number of steps used = 18, number of rules used = 13, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.325$, Rules used = {2528, 2486, 31, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{2Bd i^2 (bc-ad) \text{PolyLog}\left(2, -\frac{d(a+bx)}{bc-ad}\right)}{b^3 g^2} + \frac{2d i^2 (bc-ad) \log(a+bx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{b^3 g^2} - \frac{i^2 (bc-ad)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{b^3 g^2 (a+bx)}$$

Antiderivative was successfully verified.

[In] $\text{Int}\left[\left(\frac{(c*i + d*i*x)^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)])}{(a*g + b*g*x)^2}, x\right)\right]$

[Out] $(A*d^2*i^2*x)/(b^2*g^2) - (B*(b*c - a*d)^2*i^2)/(b^3*g^2*(a + b*x)) - (B*d*(b*c - a*d)*i^2*\text{Log}[a + b*x])/(b^3*g^2) - (B*d*(b*c - a*d)*i^2*\text{Log}[a + b*x]^2)/(b^3*g^2) + (B*d^2*i^2*(a + b*x)*\text{Log}[(e*(a + b*x))/(c + d*x)])/(b^3*g^2) - ((b*c - a*d)^2*i^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(b^3*g^2*(a + b*x)) + (2*d*(b*c - a*d)*i^2*\text{Log}[a + b*x]*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(b^3*g^2) + (2*B*d*(b*c - a*d)*i^2*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)])/(b^3*g^2) + (2*B*d*(b*c - a*d)*i^2*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))])/(b^3*g^2)$

Rule 12

$\text{Int}[(a_*)*(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \ \&\amp; \ !\text{MatchQ}[u, (b_*)*(v_)] /; \text{FreeQ}[b, x]$

Rule 31


```
Int[((a_) + (b_)*(x_))^-1), x_Symbol] := Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 44

```
Int[((a_) + (b_)*(x_))^(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_))/(x_), x_Symbol] := Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)])*(b_)^(p_)*((f_) + (g_
)*(x_))^(q_), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_)*((d_) + (e_)*(x_))^(n_)])/(x_), x_Symbol] := -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))])*(b_))/((f_) + (g_)*(x_)), x_
Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)])*(b_))/((f_) + (g_)*(x_
)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n])/g, x] - Dist[(b*e^n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)])*(b_)^(p_)*(RFx_), x_Sy
mbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
```

```
Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFX, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] := Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q]^r]^s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFX^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFX^p])^(n - 1)*D[RFX, x])/RFX, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFX, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFX^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFX^p])^(n - 1)*D[RFX, x])/RFX, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFX, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*RFX^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFX, x] && RationalFunci
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(15c + 15dx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{(ag + bgx)^2} dx &= \int \left(\frac{225d^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g^2} + \frac{225(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g^2(a + bx)^2} \right) dx \\
&= \frac{(225d^2) \int \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) dx}{b^2g^2} + \frac{(450d(bc - ad)) \int \frac{A+B \log \left(\frac{e(a+bx)}{c+dx} \right)}{a+bx}}{b^2g^2} \\
&= \frac{225Ad^2x}{b^2g^2} - \frac{225(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3g^2(a + bx)} + \frac{450d(bc - ad) \log(a + bx)}{b^2g^2} \\
&= \frac{225Ad^2x}{b^2g^2} + \frac{225Bd^2(a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{b^3g^2} - \frac{225(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3g^2(a + bx)} \\
&= \frac{225Ad^2x}{b^2g^2} + \frac{225Bd^2(a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{b^3g^2} - \frac{225(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3g^2(a + bx)} \\
&= \frac{225Ad^2x}{b^2g^2} - \frac{225B(bc - ad)^2}{b^3g^2(a + bx)} - \frac{225Bd(bc - ad) \log(a + bx)}{b^3g^2} + \frac{225Bd^2(a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{b^3g^2} \\
&= \frac{225Ad^2x}{b^2g^2} - \frac{225B(bc - ad)^2}{b^3g^2(a + bx)} - \frac{225Bd(bc - ad) \log(a + bx)}{b^3g^2} + \frac{225Bd^2(a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{b^3g^2} \\
&= \frac{225Ad^2x}{b^2g^2} - \frac{225B(bc - ad)^2}{b^3g^2(a + bx)} - \frac{225Bd(bc - ad) \log(a + bx)}{b^3g^2} - \frac{225Bd^2(a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{b^3g^2}
\end{aligned}$$

Mathematica [A] time = 0.23, size = 221, normalized size = 0.89

$$\frac{i^2 \left(2d(bc - ad) \log(a + bx) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right) - \frac{(bc-ad)^2 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{a+bx} + Bd^2(a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right) + Bd(ad - a^2 - b^2x) \right)}{b^3}$$

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(a*g + b*g*x)^2,x]

```
[Out] (i^2*(A*b*d^2*x - (B*(b*c - a*d)^2)/(a + b*x) + B*d*(-(b*c) + a*d)*Log[a +
b*x] + B*d^2*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)] - ((b*c - a*d)^2*(A + B
*Log[(e*(a + b*x))/(c + d*x)]))/(a + b*x) + 2*d*(b*c - a*d)*Log[a + b*x]*(A
+ B*Log[(e*(a + b*x))/(c + d*x)]) + B*d*(-(b*c) + a*d)*(Log[a + b*x]*(Log[
a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(
-(b*c) + a*d)])))/(b^3*g^2)
```

fricas [F] time = 0.72, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{Ad^2i^2x^2 + 2Acdi^2x + Ac^2i^2 + (Bd^2i^2x^2 + 2Bcdi^2x + Bc^2i^2) \log\left(\frac{bex+ae}{dx+c}\right)}{b^2g^2x^2 + 2abg^2x + a^2g^2}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^2,x, algor
ithm="fricas")
```

```
[Out] integral((A*d^2*i^2*x^2 + 2*A*c*d*i^2*x + A*c^2*i^2 + (B*d^2*i^2*x^2 + 2*B*
c*d*i^2*x + B*c^2*i^2)*log((b*e*x + a*e)/(d*x + c)))/(b^2*g^2*x^2 + 2*a*b*g
^2*x + a^2*g^2), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^2,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.14, size = 1465, normalized size = 5.93

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^2,x)
```

```
[Out] d*e*i^2/g^2*B/b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*
b*c*e)/(d*x+c)*c^2+d^3*e*i^2/g^2*B/b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(
d*x+c)*a*d*e-1/(d*x+c)*b*c*e)/(d*x+c)*a^2-d*e*i^2/g^2*A/b/(1/(d*x+c)*a*d*e-
1/(d*x+c)*b*c*e)*c+d^2*e*i^2/g^2*A/b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a-
2*d^2*e*i^2/g^2*B/b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d
*x+c)*b*c*e)/(d*x+c)*a*c+d*e*i^2/g^2*B/b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e
```

$+b/d*e)*a+d*e*i^2/g^2*A/b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a+2*d^2$
 $*i^2/g^2*B/b^3*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*\ln(-(-b*e+(b/d*e+(a*d-b*c)/($
 $d*x+c)/d*e)*d)/b/e)*a-2*d*i^2/g^2*B/b^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*\ln(-$
 $(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*c-e*i^2/g^2*B/b/(1/(d*x+c)*a*e$
 $-1/(d*x+c)*b*c/d*e+b/d*e)*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+d*e*i^2/g^2*B/b$
 $^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*$
 $a+d^2*e*i^2/g^2*B/b^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d$
 $*x+c)*b*c*e)*a-d*e*i^2/g^2*B/b*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a$
 $*d*e-1/(d*x+c)*b*c*e)*c-2*d*i^2/g^2*A/b^2*\ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/$
 $d*e)*d)*c-e*i^2/g^2*A/b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c-e*i^2/g^2$
 $*B/b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c-d^2*i^2/g^2*B/b^3*\ln(-b*e+(b$
 $/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a+d*i^2/g^2*B/b^2*\ln(-b*e+(b/d*e+(a*d-b*c)/($
 $d*x+c)/d*e)*d)*c-d^2*i^2/g^2*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/b^3*a+d*i^2$
 $/g^2*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/b^2*c-2*d^2*i^2/g^2*A/b^3*\ln(b/d*$
 $e+(a*d-b*c)/(d*x+c)/d*e)*a+2*d^2*i^2/g^2*B/b^3*dilog(-(-b*e+(b/d*e+(a*d-b*c$
 $)/(d*x+c)/d*e)*d)/b/e)*a-2*d*i^2/g^2*B/b^2*dilog(-(-b*e+(b/d*e+(a*d-b*c)/(d$
 $*x+c)/d*e)*d)/b/e)*c+2*d*i^2/g^2*A/b^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+2*$
 $d^2*i^2/g^2*A/b^3*\ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a$

maxima [B] time = 1.91, size = 992, normalized size = 4.02

$$-A\left(\frac{a^2}{b^4g^2x + ab^3g^2} - \frac{x}{b^2g^2} + \frac{2a \log(bx + a)}{b^3g^2}\right)d^2i^2 + 2Ac di^2\left(\frac{a}{b^3g^2x + ab^2g^2} + \frac{\log(bx + a)}{b^2g^2}\right) - Bc^2i^2\left(\frac{\log\left(\frac{bex}{dx+c} + a\right)}{b^2g^2x + a}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^2,x, algorith="maxima")

[Out] $-A*(a^2/(b^4*g^2*x + a*b^3*g^2) - x/(b^2*g^2) + 2*a*log(b*x + a)/(b^3*g^2))$
 $*d^2*i^2 + 2*A*c*d*i^2*(a/(b^3*g^2*x + a*b^2*g^2) + log(b*x + a)/(b^2*g^2))$
 $- B*c^2*i^2*(log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^2*g^2*x + a*b*g^2) +$
 $1/(b^2*g^2*x + a*b*g^2) + d*log(b*x + a)/((b^2*c - a*b*d)*g^2) - d*log(d*x$
 $+ c)/((b^2*c - a*b*d)*g^2)) - A*c^2*i^2/(b^2*g^2*x + a*b*g^2) - (b^2*c^2*d*$
 $i^2 + a*b*c*d^2*i^2 - a^2*d^3*i^2)*B*log(d*x + c)/(b^4*c*g^2 - a*b^3*d*g^2)$
 $+ ((b^3*c*d^2*i^2*log(e) - a*b^2*d^3*i^2*log(e))*B*x^2 + (a*b^2*c*d^2*i^2*$
 $log(e) - a^2*b*d^3*i^2*log(e))*B*x + ((b^3*c^2*d*i^2 - 2*a*b^2*c*d^2*i^2 +$
 $a^2*b*d^3*i^2)*B*x + (a*b^2*c^2*d*i^2 - 2*a^2*b*c*d^2*i^2 + a^3*d^3*i^2)*B)$
 $*log(b*x + a)^2 + (2*(i^2*log(e) + i^2)*a*b^2*c^2*d - 3*(i^2*log(e) + i^2)*$
 $a^2*b*c*d^2 + (i^2*log(e) + i^2)*a^3*d^3)*B + ((b^3*c*d^2*i^2 - a*b^2*d^3*i$
 $^2)*B*x^2 + (2*b^3*c^2*d*i^2*log(e) - 4*(i^2*log(e) - i^2)*a*b^2*c*d^2 + (2$
 $*i^2*log(e) - 3*i^2)*a^2*b*d^3)*B*x - (4*a^2*b*c*d^2*i^2*log(e) - 2*(i^2*lo$
 $g(e) + i^2)*a*b^2*c^2*d - (2*i^2*log(e) - i^2)*a^3*d^3)*B)*log(b*x + a) - ($
 $(b^3*c*d^2*i^2 - a*b^2*d^3*i^2)*B*x^2 + (a*b^2*c*d^2*i^2 - a^2*b*d^3*i^2)*B$

```
*x + (2*a*b^2*c^2*d*i^2 - 3*a^2*b*c*d^2*i^2 + a^3*d^3*i^2)*B + 2*((b^3*c^2*d*i^2 - 2*a*b^2*c*d^2*i^2 + a^2*b*d^3*i^2)*B*x + (a*b^2*c^2*d*i^2 - 2*a^2*b*c*d^2*i^2 + a^3*d^3*i^2)*B)*log(b*x + a))*log(d*x + c))/(a*b^4*c*g^2 - a^2*b^3*d*g^2 + (b^5*c*g^2 - a*b^4*d*g^2)*x) + 2*(b*c*d*i^2 - a*d^2*i^2)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d)))*B/(b^3*g^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ci + dix)^2 \left(A + B \ln \left(\frac{e(a+bx)}{c+dx} \right) \right)}{(ag + bgx)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x)^2, x)
```

```
[Out] int(((c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x)^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)**2,x)
```

```
[Out] Timed out
```

$$3.16 \quad \int \frac{(ci+dx)^2 \left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{(ag+bgx)^3} dx$$

Optimal. Leaf size=230

$$\frac{d^2 i^2 \log\left(1 - \frac{b(c+dx)}{d(a+bx)}\right) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{b^3 g^3} - \frac{d i^2 (c+dx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{b^2 g^3 (a+bx)} - \frac{i^2 (c+dx)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{2b g^3 (a+bx)^2}$$

[Out] $-B*d*i^2*(d*x+c)/b^2/g^3/(b*x+a)-1/4*B*i^2*(d*x+c)^2/b/g^3/(b*x+a)^2-d*i^2*(d*x+c)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^2/g^3/(b*x+a)-1/2*i^2*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b/g^3/(b*x+a)^2-d^2*i^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))*\ln(1-b*(d*x+c)/d/(b*x+a))/b^3/g^3+B*d^2*i^2*\text{polylog}(2,b*(d*x+c)/d/(b*x+a))/b^3/g^3$

Rubi [A] time = 0.59, antiderivative size = 338, normalized size of antiderivative = 1.47, number of steps used = 19, number of rules used = 11, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.275$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{B d^2 i^2 \text{PolyLog}\left(2, -\frac{d(a+bx)}{bc-ad}\right)}{b^3 g^3} + \frac{d^2 i^2 \log(a+bx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{b^3 g^3} - \frac{2 d i^2 (bc-ad) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{b^3 g^3 (a+bx)} - \frac{i^2 (bc-ad)^2}{b^3 g^3}$$

Antiderivative was successfully verified.

[In] $\text{Int}[\left(\frac{(c*i + d*i*x)^2*(A + B*\text{Log}[\frac{e*(a + b*x)}{(c + d*x)])}{(a*g + b*g*x)^3}, x]$

[Out] $-(B*(b*c - a*d)^2*i^2)/(4*b^3*g^3*(a + b*x)^2) - (3*B*d*(b*c - a*d)*i^2)/(2*b^3*g^3*(a + b*x)) - (3*B*d^2*i^2*\text{Log}[a + b*x])/(2*b^3*g^3) - (B*d^2*i^2*\text{Log}[a + b*x]^2)/(2*b^3*g^3) - ((b*c - a*d)^2*i^2*(A + B*\text{Log}[\frac{e*(a + b*x)}{(c + d*x)]])/(2*b^3*g^3*(a + b*x)^2) - (2*d*(b*c - a*d)*i^2*(A + B*\text{Log}[\frac{e*(a + b*x)}{(c + d*x)]])/(b^3*g^3*(a + b*x)) + (d^2*i^2*\text{Log}[a + b*x]*(A + B*\text{Log}[\frac{e*(a + b*x)}{(c + d*x)]])/(b^3*g^3) + (3*B*d^2*i^2*\text{Log}[c + d*x])/(2*b^3*g^3) + (B*d^2*i^2*\text{Log}[a + b*x]*\text{Log}[\frac{b*(c + d*x)}{(b*c - a*d)}])/(b^3*g^3) + (B*d^2*i^2*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))])/(b^3*g^3)$

Rule 12

$\text{Int}[(a_*)(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \ \&\& \ !\text{Match}[\text{Q}[u, (b_)*(v_)] /; \text{FreeQ}[b, x]]$

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_) + (d_.)*(x_))^(n_.), x_Symbol] := Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x
), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524


```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(16c + 16dx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{(ag + bgx)^3} dx &= \int \left(\frac{256(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2 g^3 (a + bx)^3} + \frac{512d(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2 g^3 (a + bx)^2} \right) dx \\
&= \frac{(256d^2) \int \frac{A+B \log \left(\frac{e(a+bx)}{c+dx} \right)}{a+bx} dx}{b^2 g^3} + \frac{(512d(bc - ad)) \int \frac{A+B \log \left(\frac{e(a+bx)}{c+dx} \right)}{(a+bx)^2} dx}{b^2 g^3} + \\
&= -\frac{128(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3 g^3 (a + bx)^2} - \frac{512d(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3 g^3 (a + bx)} \\
&= -\frac{128(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3 g^3 (a + bx)^2} - \frac{512d(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3 g^3 (a + bx)} \\
&= -\frac{128(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3 g^3 (a + bx)^2} - \frac{512d(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3 g^3 (a + bx)} \\
&= \frac{64B(bc - ad)^2}{b^3 g^3 (a + bx)^2} - \frac{384Bd(bc - ad)}{b^3 g^3 (a + bx)} - \frac{384Bd^2 \log(a + bx)}{b^3 g^3} - \frac{128(bc - ad)^2}{b^3 g^3} \\
&= \frac{64B(bc - ad)^2}{b^3 g^3 (a + bx)^2} - \frac{384Bd(bc - ad)}{b^3 g^3 (a + bx)} - \frac{384Bd^2 \log(a + bx)}{b^3 g^3} - \frac{128(bc - ad)^2}{b^3 g^3} \\
&= \frac{64B(bc - ad)^2}{b^3 g^3 (a + bx)^2} - \frac{384Bd(bc - ad)}{b^3 g^3 (a + bx)} - \frac{384Bd^2 \log(a + bx)}{b^3 g^3} - \frac{128Bd^2}{b^3 g^3} \\
&= \frac{64B(bc - ad)^2}{b^3 g^3 (a + bx)^2} - \frac{384Bd(bc - ad)}{b^3 g^3 (a + bx)} - \frac{384Bd^2 \log(a + bx)}{b^3 g^3} - \frac{128Bd^2}{b^3 g^3}
\end{aligned}$$

Mathematica [A] time = 0.31, size = 244, normalized size = 1.06

$$\frac{i^2 \left(4d^2 \log(a + bx) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right) + \frac{8d(ad-bc) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{a+bx} - \frac{2(bc-ad)^2 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{(a+bx)^2} - 2Bd^2 \left(\log(a + bx) \right) \right)}{4b^3 g^3}$$

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])/(a*g + b*g*x)^3,x]

```
[Out] (i^2*(-((B*(b*c - a*d)^2)/(a + b*x)^2) + (6*B*d*(-(b*c) + a*d))/(a + b*x) -
6*B*d^2*Log[a + b*x] - (2*(b*c - a*d)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)
]))/(a + b*x)^2 + (8*d*(-(b*c) + a*d)*(A + B*Log[(e*(a + b*x))/(c + d*x)]))
)/(a + b*x) + 4*d^2*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 6*B*
d^2*Log[c + d*x] - 2*B*d^2*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x)
)/(b*c - a*d)])) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)])))/(4*b^3*g^3)
```

fricas [F] time = 0.93, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{Ad^2i^2x^2 + 2Ac di^2x + Ac^2i^2 + (Bd^2i^2x^2 + 2Bcdi^2x + Bc^2i^2) \log\left(\frac{bex+ae}{dx+c}\right)}{b^3g^3x^3 + 3ab^2g^3x^2 + 3a^2bg^3x + a^3g^3}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^3,x, algor
ithm="fricas")
```

```
[Out] integral((A*d^2*i^2*x^2 + 2*A*c*d*i^2*x + A*c^2*i^2 + (B*d^2*i^2*x^2 + 2*B*
c*d*i^2*x + B*c^2*i^2)*log((b*e*x + a*e)/(d*x + c)))/(b^3*g^3*x^3 + 3*a*b^2
*g^3*x^2 + 3*a^2*b*g^3*x + a^3*g^3), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^3,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.06, size = 1495, normalized size = 6.50

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^3,x)
```

```
[Out] -d^3*i^2/(a*d-b*c)/g^3*A/b^3*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a+d^2
*i^2/(a*d-b*c)/g^3*A/b^2*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c-1/2*d*e
^2*i^2/(a*d-b*c)/g^3*A/b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a+1/2*e^
2*i^2/(a*d-b*c)/g^3*A/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*c-d^2*e*i^2
/(a*d-b*c)/g^3*A/b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a+d*e*i^2/(a*d
-b*c)/g^3*A/b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c+d^3*i^2/(a*d-b*c)/g
```

$$\begin{aligned} & \frac{1}{g^3} \frac{A}{b^3} \ln\left(\frac{b}{d} \frac{e+(a*d-b*c)}{(d*x+c)/d} \frac{e}{d} \right) * a^{-d^2*i^2} / (a*d-b*c) / g^3 * \frac{A}{b^2} \ln\left(\frac{b}{d} \frac{e+(a*d-b*c)}{(d*x+c)/d} \frac{e}{d} \right) * c^{-d^2*e*i^2} / (a*d-b*c) / g^3 * \frac{B}{b^2} / \left(\frac{1}{(d*x+c)} * a * e^{-1/(d*x+c)} * b * c / d * e + b / d * e\right) * \ln\left(\frac{b}{d} \frac{e+(a*d-b*c)}{(d*x+c)/d} \frac{e}{d} \right) * a + d * e * i^2 / (a*d-b*c) \\ & \left. \right) / g^3 * \frac{B}{b} / \left(\frac{1}{(d*x+c)} * a * e^{-1/(d*x+c)} * b * c / d * e + b / d * e\right) * \ln\left(\frac{b}{d} \frac{e+(a*d-b*c)}{(d*x+c)/d} \frac{e}{d} \right) * c^{-d^2*e*i^2} / (a*d-b*c) / g^3 * \frac{B}{b^2} / \left(\frac{1}{(d*x+c)} * a * e^{-1/(d*x+c)} * b * c / d * e + b / d * e\right) * a + d * e * i^2 / (a*d-b*c) / g^3 * \frac{B}{b} / \left(\frac{1}{(d*x+c)} * a * e^{-1/(d*x+c)} * b * c / d * e + b / d * e\right) * c^{-d^3*i^2} / (a*d-b*c) / g^3 * \frac{B}{b^3} * \operatorname{dilog}\left(-\frac{b * e + (b/d * e + (a*d-b*c)/(d*x+c)/d * e) * d}{b/e} \right) / b/e \\ & \left. \right) * a + d^2 * i^2 / (a*d-b*c) / g^3 * \frac{B}{b^2} * \operatorname{dilog}\left(-\frac{b * e + (b/d * e + (a*d-b*c)/(d*x+c)/d * e) * d}{b/e} \right) * c^{-d^3*i^2} / (a*d-b*c) / g^3 * \frac{B}{b^3} * \ln\left(\frac{b}{d} \frac{e+(a*d-b*c)}{(d*x+c)/d} \frac{e}{d} \right) * \ln\left(-\frac{b * e + (b/d * e + (a*d-b*c)/(d*x+c)/d * e) * d}{b/e} \right) * a + d^2 * i^2 / (a*d-b*c) / g^3 * \frac{B}{b^2} * \ln\left(\frac{b}{d} \frac{e+(a*d-b*c)}{(d*x+c)/d} \frac{e}{d} \right) * \ln\left(-\frac{b * e + (b/d * e + (a*d-b*c)/(d*x+c)/d * e) * d}{b/e} \right) * c^{-1/2 * d * e^2 * i^2} / (a*d-b*c) / g^3 * \frac{B}{b} / \left(\frac{1}{(d*x+c)} * a * e^{-1/(d*x+c)} * b * c / d * e + b / d * e\right)^2 * \ln\left(\frac{b}{d} \frac{e+(a*d-b*c)}{(d*x+c)/d} \frac{e}{d} \right) * a + 1/2 * e^2 * i^2 / (a*d-b*c) / g^3 * \frac{B}{b} / \left(\frac{1}{(d*x+c)} * a * e^{-1/(d*x+c)} * b * c / d * e + b / d * e\right)^2 * \ln\left(\frac{b}{d} \frac{e+(a*d-b*c)}{(d*x+c)/d} \frac{e}{d} \right) * c^{-1/4 * d * e^2 * i^2} / (a*d-b*c) / g^3 * \frac{B}{b} / \left(\frac{1}{(d*x+c)} * a * e^{-1/(d*x+c)} * b * c / d * e + b / d * e\right)^2 * a + 1/4 * e^2 * i^2 / (a*d-b*c) / g^3 * \frac{B}{b} / \left(\frac{1}{(d*x+c)} * a * e^{-1/(d*x+c)} * b * c / d * e + b / d * e\right)^2 * c + 1/2 * d^3 * i^2 / (a*d-b*c) / g^3 * \frac{B}{b} * \ln\left(\frac{b}{d} \frac{e+(a*d-b*c)}{(d*x+c)/d} \frac{e}{d} \right)^2 / b^3 * a^{-1/2 * d^2 * i^2} / (a*d-b*c) / g^3 * \frac{B}{b} * \ln\left(\frac{b}{d} \frac{e+(a*d-b*c)}{(d*x+c)/d} \frac{e}{d} \right)^2 / b^2 * c \end{aligned}$$

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2} B d^2 i^2 \left(\frac{(4 a b x + 3 a^2 + 2 (b^2 x^2 + 2 a b x + a^2) \log(b x + a)) \log(d x + c)}{b^5 g^3 x^2 + 2 a b^4 g^3 x + a^2 b^3 g^3} - 2 \int \frac{2 b^3 d x^3 \log(e) + 7 a^2 b d x + 3 a^3 d}{2 (b^6 d g^3 x^4 + a^3 b^3 c g)} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^3,x, algorithm="maxima")

[Out]
$$\begin{aligned} & -1/2 * B * d^2 * i^2 * ((4 * a * b * x + 3 * a^2 + 2 * (b^2 * x^2 + 2 * a * b * x + a^2) * \log(b * x + a)) * \log(d * x + c) / (b^5 * g^3 * x^2 + 2 * a * b^4 * g^3 * x + a^2 * b^3 * g^3) - 2 * \operatorname{integrate}(1 / \\ & 2 * (2 * b^3 * d * x^3 * \log(e) + 7 * a^2 * b * d * x + 3 * a^3 * d + 2 * (b^3 * c * \log(e) + 2 * a * b^2 * d) * x^2 + 2 * (2 * b^3 * d * x^3 + 3 * a^2 * b * d * x + a^3 * d + (b^3 * c + 3 * a * b^2 * d) * x^2) * \log \\ & (b * x + a)) / (b^6 * d * g^3 * x^4 + a^3 * b^3 * c * g^3 + (b^6 * c * g^3 + 3 * a * b^5 * d * g^3) * x^3 \\ & + 3 * (a * b^5 * c * g^3 + a^2 * b^4 * d * g^3) * x^2 + (3 * a^2 * b^4 * c * g^3 + a^3 * b^3 * d * g^3) * x), x)) - 1/2 * B * c * d * i^2 * (2 * (2 * b * x + a) * \log(b * e * x / (d * x + c) + a * e / (d * x + c)) / (b^4 * g^3 * x^2 + 2 * a * b^3 * g^3 * x + a^2 * b^2 * g^3) + (3 * a * b * c - a^2 * d + 2 * (2 * b^2 * c - a * b * d) * x) / ((b^5 * c - a * b^4 * d) * g^3 * x^2 + 2 * (a * b^4 * c - a^2 * b^3 * d) * g^3 * x + (a^2 * b^3 * c - a^3 * b^2 * d) * g^3) + 2 * (2 * b * c * d - a * d^2) * \log(b * x + a) / ((b^4 * c^2 - 2 * a * b^3 * c * d + a^2 * b^2 * d^2) * g^3) - 2 * (2 * b * c * d - a * d^2) * \log(d * x + c) / ((b^4 * c^2 - 2 * a * b^3 * c * d + a^2 * b^2 * d^2) * g^3)) + 1/2 * A * d^2 * i^2 * ((4 * a * b * x + 3 * a^2) / (b^5 * g^3 * x^2 + 2 * a * b^4 * g^3 * x + a^2 * b^3 * g^3) + 2 * \log(b * x + a) / (b^3 * g^3)) + 1/4 * B * c^2 * i^2 * ((2 * b * d * x - b * c + 3 * a * d) / ((b^4 * c - a * b^3 * d) * g^3 * x^2 + 2 * (a * b^3 * c - a^2 * b^2 * d) * g^3 * x + (a^2 * b^2 * c - a^3 * b * d) * g^3) - 2 * \log(b * e * x / (d * x + c) + \end{aligned}$$

$$\frac{a e^{(d x+c)}}{(b^3 g^3 x^2+2 a b^2 g^3 x+a^2 b g^3)}+2 d^2 \log (b x+a) / \left(\left(b^3 c^2-2 a b^2 c d+a^2 b d^2\right) g^3\right)-2 d^2 \log (d x+c) / \left(\left(b^3 c^2-2 a b^2 c d+a^2 b d^2\right) g^3\right)-\left(2 b x+a\right) A c d i^2 / \left(b^4 g^3 x^2+2 a b^3 g^3 x+a^2 b^2 g^3\right)-1 / 2 A c^2 i^2 / \left(b^3 g^3 x^2+2 a b^2 g^3 x+a^2 b g^3\right)$$

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c i+d i x)^2\left(A+B \ln \left(\frac{e^{(a+b x)}}{c+d x}\right)\right)}{(a g+b g x)^3} d x$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x)^3, x)

[Out] int(((c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x)^3, x)

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{i^2 \left(\int \frac{A c^2}{a^3+3 a^2 b x+3 a b^2 x^2+b^3 x^3} d x + \int \frac{A d^2 x^2}{a^3+3 a^2 b x+3 a b^2 x^2+b^3 x^3} d x + \int \frac{B c^2 \log \left(\frac{a e}{c+d x}+\frac{b e x}{c+d x}\right)}{a^3+3 a^2 b x+3 a b^2 x^2+b^3 x^3} d x + \int \frac{2 A c d x}{a^3+3 a^2 b x+3 a b^2 x^2+b^3 x^3} d x + \int \right)}{g^3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)**3,x)

[Out] i**2*(Integral(A*c**2/(a**3 + 3*a**2*b*x + 3*a*b**2*x**2 + b**3*x**3), x) + Integral(A*d**2*x**2/(a**3 + 3*a**2*b*x + 3*a*b**2*x**2 + b**3*x**3), x) + Integral(B*c**2*log(a*e/(c + d*x) + b*e*x/(c + d*x))/(a**3 + 3*a**2*b*x + 3*a*b**2*x**2 + b**3*x**3), x) + Integral(2*A*c*d*x/(a**3 + 3*a**2*b*x + 3*a*b**2*x**2 + b**3*x**3), x) + Integral(B*d**2*x**2*log(a*e/(c + d*x) + b*e*x/(c + d*x))/(a**3 + 3*a**2*b*x + 3*a*b**2*x**2 + b**3*x**3), x) + Integral(2*B*c*d*x*log(a*e/(c + d*x) + b*e*x/(c + d*x))/(a**3 + 3*a**2*b*x + 3*a*b**2*x**2 + b**3*x**3), x))/g**3

$$3.17 \quad \int \frac{(ci+dx)^2 \left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{(ag+bgx)^4} dx$$

Optimal. Leaf size=89

$$-\frac{i^2(c+dx)^3 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{3g^4(a+bx)^3(bc-ad)} - \frac{Bi^2(c+dx)^3}{9g^4(a+bx)^3(bc-ad)}$$

[Out] $-1/9*B*i^2*(d*x+c)^3/(-a*d+b*c)/g^4/(b*x+a)^3-1/3*i^2*(d*x+c)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)/g^4/(b*x+a)^3$

Rubi [B] time = 0.49, antiderivative size = 287, normalized size of antiderivative = 3.22, number of steps used = 14, number of rules used = 4, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.100$, Rules used = {2528, 2525, 12, 44}

$$-\frac{d^2 i^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{b^3 g^4 (a+bx)} - \frac{d i^2 (bc-ad) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{b^3 g^4 (a+bx)^2} - \frac{i^2 (bc-ad)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{3 b^3 g^4 (a+bx)^3} - \frac{B d^3 i^2 \log(a+bx)}{3 b^3 g^4 (bc-ad)}$$

Antiderivative was successfully verified.

[In] $\text{Int}[\frac{(c*i + d*i*x)^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)])}{(a*g + b*g*x)^4}, x]$

[Out] $-(B*(b*c - a*d)^2*i^2)/(9*b^3*g^4*(a + b*x)^3) - (B*d*(b*c - a*d)*i^2)/(3*b^3*g^4*(a + b*x)^2) - (B*d^2*i^2)/(3*b^3*g^4*(a + b*x)) - (B*d^3*i^2*\text{Log}[a + b*x])/(3*b^3*(b*c - a*d)*g^4) - ((b*c - a*d)^2*i^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(3*b^3*g^4*(a + b*x)^3) - (d*(b*c - a*d)*i^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(b^3*g^4*(a + b*x)^2) - (d^2*i^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(b^3*g^4*(a + b*x)) + (B*d^3*i^2*\text{Log}[c + d*x])/(3*b^3*(b*c - a*d)*g^4)$

Rule 12

$\text{Int}[(a_*)*(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \ \&\& \ !\text{MatchQ}[u, (b_*)*(v_)] /; \text{FreeQ}[b, x]$

Rule 44

$\text{Int}[(a_*) + (b_*)*(x_)^m_*)*((c_*) + (d_*)*(x_)^n_*)], x_Symbol] \rightarrow \text{Int}[\text{ExpandIntegrand}[(a + b*x)^m*(c + d*x)^n, x], x] /; \text{FreeQ}[\{a, b, c, d\}, x] \ \&\& \ \&\ \text{NeQ}[b*c - a*d, 0] \ \&\& \ \text{ILtQ}[m, 0] \ \&\& \ \text{IntegerQ}[n] \ \&\& \ !(\text{IGtQ}[n, 0] \ \&\& \ \text{LtQ}[m + n + 2, 0])$

Rule 2525

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_.))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned} \int \frac{(17c + 17dx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{(ag + bgx)^4} dx &= \int \left(\frac{289(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2 g^4 (a + bx)^4} + \frac{578d(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2 g^4 (a + bx)^3} \right) dx \\ &= \frac{(289d^2) \int \frac{A+B \log \left(\frac{e(a+bx)}{c+dx} \right)}{(a+bx)^2} dx}{b^2 g^4} + \frac{(578d(bc - ad)) \int \frac{A+B \log \left(\frac{e(a+bx)}{c+dx} \right)}{(a+bx)^3} dx}{b^2 g^4} \\ &= -\frac{289(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{3b^3 g^4 (a + bx)^3} - \frac{289d(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3 g^4 (a + bx)^2} \\ &= -\frac{289(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{3b^3 g^4 (a + bx)^3} - \frac{289d(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3 g^4 (a + bx)^2} \\ &= -\frac{289(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{3b^3 g^4 (a + bx)^3} - \frac{289d(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3 g^4 (a + bx)^2} \\ &= -\frac{289B(bc - ad)^2}{9b^3 g^4 (a + bx)^3} - \frac{289Bd(bc - ad)}{3b^3 g^4 (a + bx)^2} - \frac{289Bd^2}{3b^3 g^4 (a + bx)} - \frac{289Bd^3 \log}{3b^3 (bc - ad)} \end{aligned}$$

Mathematica [B] time = 0.30, size = 315, normalized size = 3.54

$$i^2 \left(-3a^3 Ad^3 - 3a^3 Bd^3 \log(c + dx) - a^3 Bd^3 - 9a^2 Abd^3 x + 3B(bc - ad) \left(a^2 d^2 + abd(c + 3dx) + b^2 (c^2 + 3cdx + \dots \right) \right)$$

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a*g + b*g*x)^4,x]

[Out]
$$-1/9*(i^2*(3*A*b^3*c^3 + b^3*B*c^3 - 3*a^3*A*d^3 - a^3*B*d^3 + 9*A*b^3*c^2*d*x + 3*b^3*B*c^2*d*x - 9*a^2*A*b*d^3*x - 3*a^2*b*B*d^3*x + 9*A*b^3*c*d^2*x^2 + 3*b^3*B*c*d^2*x^2 - 9*a*A*b^2*d^3*x^2 - 3*a*b^2*B*d^3*x^2 + 3*B*d^3*(a + b*x)^3*\text{Log}[a + b*x] + 3*B*(b*c - a*d)*(a^2*d^2 + a*b*d*(c + 3*d*x) + b^2*(c^2 + 3*c*d*x + 3*d^2*x^2))*\text{Log}[(e*(a + b*x))/(c + d*x)] - 3*a^3*B*d^3*\text{Log}[c + d*x] - 9*a^2*b*B*d^3*x*\text{Log}[c + d*x] - 9*a*b^2*B*d^3*x^2*\text{Log}[c + d*x] - 3*b^3*B*d^3*x^3*\text{Log}[c + d*x]))/(b^3*(b*c - a*d)*g^4*(a + b*x)^3)$$

fricas [B] time = 0.74, size = 271, normalized size = 3.04

$$\frac{3\left((3A+B)b^3cd^2 - (3A+B)ab^2d^3\right)i^2x^2 + 3\left((3A+B)b^3c^2d - (3A+B)a^2bd^3\right)i^2x + \left((3A+B)b^3c^3 - (3A+B)b^3cd^2 - (3A+B)a^3d^3\right)}{9\left((b^7c - ab^6d)g^4x^3 + 3(ab^6c - a^2b^5d)g^4x^2 + 3(a^2b^5c - a^3b^4d)g^4x + (a^3b^4c - a^4b^3d)g^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^4,x, algorithm="fricas")

[Out]
$$-1/9*(3*((3*A + B)*b^3*c*d^2 - (3*A + B)*a^2*b*d^3)*i^2*x^2 + 3*((3*A + B)*b^3*c^2*d - (3*A + B)*a^2*b*d^3)*i^2*x + ((3*A + B)*b^3*c^3 - (3*A + B)*a^3*d^3)*i^2 + 3*(B*b^3*d^3*i^2*x^3 + 3*B*b^3*c*d^2*i^2*x^2 + 3*B*b^3*c^2*d*i^2*x + B*b^3*c^3*i^2)*\text{log}((b*e*x + a*e)/(d*x + c)))/((b^7*c - a*b^6*d)*g^4*x^3 + 3*(a*b^6*c - a^2*b^5*d)*g^4*x^2 + 3*(a^2*b^5*c - a^3*b^4*d)*g^4*x + (a^3*b^4*c - a^4*b^3*d)*g^4)$$

giac [A] time = 2.30, size = 114, normalized size = 1.28

$$\frac{\left(3Be^4 \log\left(\frac{bx+ae}{dx+c}\right) + 3Ae^4 + Be^4\right)(dx+c)^3\left(\frac{bc}{(bce-ade)(bc-ad)} - \frac{ad}{(bce-ade)(bc-ad)}\right)}{9(bxe+ae)^3g^4}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^4,x, algorithm="giac")

[Out]
$$1/9*(3*B*e^4*\text{log}((b*x*e + a*e)/(d*x + c)) + 3*A*e^4 + B*e^4)*(d*x + c)^3*(b*c/((b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))/((b*x*e + a*e)^3*g^4)$$

maple [B] time = 0.05, size = 406, normalized size = 4.56

$$\frac{Bad e^3 i^2 \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{3(ad-bc)^2 \left(\frac{ae}{dx+c} - \frac{bce}{(dx+c)d} + \frac{be}{d}\right)^3 g^4} - \frac{Bbc e^3 i^2 \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{3(ad-bc)^2 \left(\frac{ae}{dx+c} - \frac{bce}{(dx+c)d} + \frac{be}{d}\right)^3 g^4} + \frac{Aad e^3 i^2}{3(ad-bc)^2 \left(\frac{ae}{dx+c} - \frac{bce}{(dx+c)d} + \frac{be}{d}\right)^3 g^4}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^4,x)

[Out] 1/3*d*e^3*i^2/(a*d-b*c)^2/g^4*A/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*a
-1/3*e^3*i^2/(a*d-b*c)^2/g^4*A/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*b*c
+1/3*d*e^3*i^2/(a*d-b*c)^2/g^4*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3
*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-1/3*e^3*i^2/(a*d-b*c)^2/g^4*B/(1/(d*x+c)
*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*c+1/9*d*e
^3*i^2/(a*d-b*c)^2/g^4*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*a-1/9*e^3
*i^2/(a*d-b*c)^2/g^4*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*b*c

maxima [B] time = 1.63, size = 1515, normalized size = 17.02

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^4,x, algorith="maxima")

[Out] -1/18*B*d^2*i^2*(6*(3*b^2*x^2 + 3*a*b*x + a^2)*log(b*e*x/(d*x + c) + a*e/(d*x + c)))/(b^6*g^4*x^3 + 3*a*b^5*g^4*x^2 + 3*a^2*b^4*g^4*x + a^3*b^3*g^4) +
(11*a^2*b^2*c^2 - 7*a^3*b*c*d + 2*a^4*d^2 + 6*(3*b^4*c^2 - 3*a*b^3*c*d + a^2*b^2*d^2)*x^2 + 3*(9*a*b^3*c^2 - 7*a^2*b^2*c*d + 2*a^3*b*d^2)*x)/((b^8*c^2 - 2*a*b^7*c*d + a^2*b^6*d^2)*g^4*x^3 + 3*(a*b^7*c^2 - 2*a^2*b^6*c*d + a^3*b^5*d^2)*g^4*x^2 + 3*(a^2*b^6*c^2 - 2*a^3*b^5*c*d + a^4*b^4*d^2)*g^4*x + (a^3*b^5*c^2 - 2*a^4*b^4*c*d + a^5*b^3*d^2)*g^4) + 6*(3*b^2*c^2*d - 3*a*b*c*d^2 + a^2*d^3)*log(b*x + a)/((b^6*c^3 - 3*a*b^5*c^2*d + 3*a^2*b^4*c*d^2 - a^3*b^3*d^3)*g^4) - 6*(3*b^2*c^2*d - 3*a*b*c*d^2 + a^2*d^3)*log(d*x + c)/((b^6*c^3 - 3*a*b^5*c^2*d + 3*a^2*b^4*c*d^2 - a^3*b^3*d^3)*g^4) - 1/18*B*c*d*i^2*(6*(3*b*x + a)*log(b*e*x/(d*x + c) + a*e/(d*x + c)))/(b^5*g^4*x^3 + 3*a*b^4*g^4*x^2 + 3*a^2*b^3*g^4*x + a^3*b^2*g^4) + (5*a*b^2*c^2 - 22*a^2*b*c*d + 5*a^3*d^2 - 6*(3*b^3*c*d - a*b^2*d^2)*x^2 + 3*(3*b^3*c^2 - 16*a*b^2*c*d + 5*a^2*b*d^2)*x)/((b^7*c^2 - 2*a*b^6*c*d + a^2*b^5*d^2)*g^4*x^3 + 3*(a*b^6*c^2 - 2*a^2*b^5*c*d + a^3*b^4*d^2)*g^4*x^2 + 3*(a^2*b^5*c^2 - 2*a^3*b^4*c*d + a^4*b^3*d^2)*g^4*x + (a^3*b^4*c^2 - 2*a^4*b^3*c*d + a^5*b^2*d^2)*g^4) - 6*(3*b*c*d^2 - a*d^3)*log(b*x + a)/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*g^4) + 6*(3*b*c*d^2 - a*d^3)*log(d*x + c)/((b^5*c^3 - 3*a

```
*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*g^4)) - 1/18*B*c^2*i^2*((6*b^2*d^2*x^2 + 2*b^2*c^2 - 7*a*b*c*d + 11*a^2*d^2 - 3*(b^2*c*d - 5*a*b*d^2)*x)/(b^6*c^2 - 2*a*b^5*c*d + a^2*b^4*d^2)*g^4*x^3 + 3*(a*b^5*c^2 - 2*a^2*b^4*c*d + a^3*b^3*d^2)*g^4*x^2 + 3*(a^2*b^4*c^2 - 2*a^3*b^3*c*d + a^4*b^2*d^2)*g^4*x + (a^3*b^3*c^2 - 2*a^4*b^2*c*d + a^5*b*d^2)*g^4) + 6*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^4*g^4*x^3 + 3*a*b^3*g^4*x^2 + 3*a^2*b^2*g^4*x + a^3*b*g^4) + 6*d^3*log(b*x + a)/((b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^3)*g^4) - 6*d^3*log(d*x + c)/((b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^3)*g^4)) - 1/3*(3*b*x + a)*A*c*d*i^2/(b^5*g^4*x^3 + 3*a*b^4*g^4*x^2 + 3*a^2*b^3*g^4*x + a^3*b^2*g^4) - 1/3*(3*b^2*x^2 + 3*a*b*x + a^2)*A*d^2*i^2/(b^6*g^4*x^3 + 3*a*b^5*g^4*x^2 + 3*a^2*b^4*g^4*x + a^3*b^3*g^4) - 1/3*A*c^2*i^2/(b^4*g^4*x^3 + 3*a*b^3*g^4*x^2 + 3*a^2*b^2*g^4*x + a^3*b*g^4)
```

mupad [B] time = 6.19, size = 423, normalized size = 4.75

$$\frac{x^2 (3 A b^2 d^2 i^2 + B b^2 d^2 i^2) + x (3 A a b d^2 i^2 + B a b d^2 i^2 + 3 A b^2 c d i^2 + B b^2 c d i^2) + A a^2 d^2 i^2 + A b^2 c^2 i^2 + 3 a^3 b^3 g^4 + 9 a^2 b^4 g^4 x + 9 a b^5 g^4 x^2 + 3 b^6 g^4 x^3}{3 a^3 b^3 g^4 + 9 a^2 b^4 g^4 x + 9 a b^5 g^4 x^2 + 3 b^6 g^4 x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x)^4, x)
```

```
[Out] - (x^2*(3*A*b^2*d^2*i^2 + B*b^2*d^2*i^2) + x*(3*A*a*b*d^2*i^2 + B*a*b*d^2*i^2 + 3*A*b^2*c*d*i^2 + B*b^2*c*d*i^2) + A*a^2*d^2*i^2 + A*b^2*c^2*i^2 + (B*a^2*d^2*i^2)/3 + (B*b^2*c^2*i^2)/3 + A*a*b*c*d*i^2 + (B*a*b*c*d*i^2)/3)/(3*a^3*b^3*g^4 + 3*b^6*g^4*x^3 + 9*a^2*b^4*g^4*x + 9*a*b^5*g^4*x^2) - (log((e*(a + b*x))/(c + d*x))*(a*((B*a*d^2*i^2)/(3*b^4*g^4) + (B*c*d*i^2)/(3*b^3*g^4)) + x*(b*((B*a*d^2*i^2)/(3*b^4*g^4) + (B*c*d*i^2)/(3*b^3*g^4)) + (2*B*a*d^2*i^2)/(3*b^3*g^4) + (2*B*c*d*i^2)/(3*b^2*g^4)) + (B*c^2*i^2)/(3*b^2*g^4) + (B*d^2*i^2*x^2)/(b^2*g^4)))/(3*a^2*x + a^3/b + b^2*x^3 + 3*a*b*x^2) - (B*d^3*i^2*atan((b*c*2i + b*d*x*2i)/(a*d - b*c) + 1i)*2i)/(3*b^3*g^4*(a*d - b*c))
```

sympy [B] time = 26.25, size = 614, normalized size = 6.90

$$\frac{Bd^3i^2 \log\left(x + \frac{-\frac{Ba^2d^5i^2}{ad-bc} + \frac{2Babcd^4i^2}{ad-bc} + Bad^4i^2 - \frac{Bb^2c^2d^3i^2}{ad-bc} + Bbcd^3i^2}{2Bbd^4i^2}\right)}{3b^3g^4(ad-bc)} + \frac{Bd^3i^2 \log\left(x + \frac{\frac{Ba^2d^5i^2}{ad-bc} - \frac{2Babcd^4i^2}{ad-bc} + Bad^4i^2 + \frac{Bb^2c^2d^3i^2}{ad-bc} + Bbcd^3i^2}{2Bbd^4i^2}\right)}{3b^3g^4(ad-bc)} + \dots$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)**4, x)
```

```
[Out] -B*d**3*i**2*log(x + (-B*a**2*d**5*i**2/(a*d - b*c) + 2*B*a*b*c*d**4*i**2/(
a*d - b*c) + B*a*d**4*i**2 - B*b**2*c**2*d**3*i**2/(a*d - b*c) + B*b*c*d**3
*i**2)/(2*B*b*d**4*i**2))/(3*b**3*g**4*(a*d - b*c)) + B*d**3*i**2*log(x + (
B*a**2*d**5*i**2/(a*d - b*c) - 2*B*a*b*c*d**4*i**2/(a*d - b*c) + B*a*d**4*i
**2 + B*b**2*c**2*d**3*i**2/(a*d - b*c) + B*b*c*d**3*i**2)/(2*B*b*d**4*i**2
))/(3*b**3*g**4*(a*d - b*c)) + (-3*A*a**2*d**2*i**2 - 3*A*a*b*c*d*i**2 - 3*
A*b**2*c**2*i**2 - B*a**2*d**2*i**2 - B*a*b*c*d*i**2 - B*b**2*c**2*i**2 + x
**2*(-9*A*b**2*d**2*i**2 - 3*B*b**2*d**2*i**2) + x*(-9*A*a*b*d**2*i**2 - 9*
A*b**2*c*d*i**2 - 3*B*a*b*d**2*i**2 - 3*B*b**2*c*d*i**2))/(9*a**3*b**3*g**4
+ 27*a**2*b**4*g**4*x + 27*a*b**5*g**4*x**2 + 9*b**6*g**4*x**3) + (-B*a**2
*d**2*i**2 - B*a*b*c*d*i**2 - 3*B*a*b*d**2*i**2*x - B*b**2*c**2*i**2 - 3*B*
b**2*c*d*i**2*x - 3*B*b**2*d**2*i**2*x**2)*log(e*(a + b*x)/(c + d*x))/(3*a*
*3*b**3*g**4 + 9*a**2*b**4*g**4*x + 9*a*b**5*g**4*x**2 + 3*b**6*g**4*x**3)
```

$$3.18 \quad \int \frac{(ci+dx)^2 \left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{(ag+bgx)^5} dx$$

Optimal. Leaf size=181

$$-\frac{bi^2(c+dx)^4 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{4g^5(a+bx)^4(bc-ad)^2} + \frac{di^2(c+dx)^3 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{3g^5(a+bx)^3(bc-ad)^2} - \frac{bBi^2(c+dx)^4}{16g^5(a+bx)^4(bc-ad)^2} + \frac{Bdi^2(c+dx)^3}{9g^5(a+bx)^3(bc-ad)^2}$$

[Out] $1/9*B*d*i^2*(d*x+c)^3/(-a*d+b*c)^2/g^5/(b*x+a)^3-1/16*b*B*i^2*(d*x+c)^4/(-a*d+b*c)^2/g^5/(b*x+a)^4+1/3*d*i^2*(d*x+c)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^2/g^5/(b*x+a)^3-1/4*b*i^2*(d*x+c)^4*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^2/g^5/(b*x+a)^4$

Rubi [A] time = 0.57, antiderivative size = 325, normalized size of antiderivative = 1.80, number of steps used = 14, number of rules used = 4, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.100$, Rules used = {2528, 2525, 12, 44}

$$-\frac{d^2i^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{2b^3g^5(a+bx)^2} - \frac{2di^2(bc-ad) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{3b^3g^5(a+bx)^3} - \frac{i^2(bc-ad)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{4b^3g^5(a+bx)^4} + \frac{Bdi^2(c+dx)^3}{12b^3g^5(a+bx)^3}$$

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(a*g + b*g*x)^5, x]

[Out] $-(B*(b*c - a*d)^2*i^2)/(16*b^3*g^5*(a + b*x)^4) - (5*B*d*(b*c - a*d)*i^2)/(36*b^3*g^5*(a + b*x)^3) - (B*d^2*i^2)/(24*b^3*g^5*(a + b*x)^2) + (B*d^3*i^2)/(12*b^3*(b*c - a*d)*g^5*(a + b*x)) + (B*d^4*i^2*Log[a + b*x])/(12*b^3*(b*c - a*d)^2*g^5) - ((b*c - a*d)^2*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(4*b^3*g^5*(a + b*x)^4) - (2*d*(b*c - a*d)*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(3*b^3*g^5*(a + b*x)^3) - (d^2*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(2*b^3*g^5*(a + b*x)^2) - (B*d^4*i^2*Log[c + d*x])/(12*b^3*(b*c - a*d)^2*g^5)$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 44

Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &

& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])

Rule 2525

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_.))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]

Rule 2528

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]

Rubi steps

$$\begin{aligned}
 \int \frac{(18c + 18dx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{(ag + bgx)^5} dx &= \int \left(\frac{324(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2 g^5 (a + bx)^5} + \frac{648d(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2 g^5 (a + bx)^4} \right) dx \\
 &= \frac{(324d^2) \int \frac{A + B \log \left(\frac{e(a+bx)}{c+dx} \right)}{(a+bx)^3} dx}{b^2 g^5} + \frac{(648d(bc - ad)) \int \frac{A + B \log \left(\frac{e(a+bx)}{c+dx} \right)}{(a+bx)^4} dx}{b^2 g^5} \\
 &= -\frac{81(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3 g^5 (a + bx)^4} - \frac{216d(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3 g^5 (a + bx)^3} \\
 &= -\frac{81(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3 g^5 (a + bx)^4} - \frac{216d(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3 g^5 (a + bx)^3} \\
 &= -\frac{81(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3 g^5 (a + bx)^4} - \frac{216d(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3 g^5 (a + bx)^3} \\
 &= -\frac{81B(bc - ad)^2}{4b^3 g^5 (a + bx)^4} - \frac{45Bd(bc - ad)}{b^3 g^5 (a + bx)^3} - \frac{27Bd^2}{2b^3 g^5 (a + bx)^2} + \frac{27Bd}{b^3 (bc - ad)g}
 \end{aligned}$$

Mathematica [B] time = 0.38, size = 454, normalized size = 2.51

$$i^2 \left(12a^4 Ad^4 + 12a^4 Bd^4 \log(c + dx) + 7a^4 Bd^4 + 48a^3 Abd^4 x + 48a^3 bBd^4 x \log(c + dx) + 28a^3 bBd^4 x + 72a^2 Ab^2 d^4 \right)$$

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a*g + b*g*x)^5,x]

[Out]
$$\frac{-1/144*(i^2*(36*A*b^4*c^4 + 9*b^4*B*c^4 - 48*a*A*b^3*c^3*d - 16*a*b^3*B*c^3*d + 12*a^4*A*d^4 + 7*a^4*B*d^4 + 96*A*b^4*c^3*d*x + 20*b^4*B*c^3*d*x - 144*a*A*b^3*c^2*d^2*x - 48*a*b^3*B*c^2*d^2*x + 48*a^3*A*b*d^4*x + 28*a^3*b*B*d^4*x + 72*A*b^4*c^2*d^2*x^2 + 6*b^4*B*c^2*d^2*x^2 - 144*a*A*b^3*c*d^3*x^2 - 48*a*b^3*B*c*d^3*x^2 + 72*a^2*A*b^2*d^4*x^2 + 42*a^2*b^2*B*d^4*x^2 - 12*b^4*B*c*d^3*x^3 + 12*a*b^3*B*d^4*x^3 - 12*B*d^4*(a + b*x)^4*Log[a + b*x] + 12*B*(b*c - a*d)^2*(a^2*d^2 + 2*a*b*d*(c + 2*d*x) + b^2*(3*c^2 + 8*c*d*x + 6*d^2*x^2))*Log[(e*(a + b*x))/(c + d*x)] + 12*a^4*B*d^4*Log[c + d*x] + 48*a^3*b*B*d^4*x*Log[c + d*x] + 72*a^2*b^2*B*d^4*x^2*Log[c + d*x] + 48*a*b^3*B*d^4*x^3*Log[c + d*x] + 12*b^4*B*d^4*x^4*Log[c + d*x]))/(b^3*(b*c - a*d)^2*g^5*(a + b*x)^4)}$$

fricas [B] time = 0.73, size = 510, normalized size = 2.82

$$\frac{12(Bb^4cd^3 - Bab^3d^4)i^2x^3 - 6((12A + B)b^4c^2d^2 - 8(3A + B)ab^3cd^3 + (12A + 7B)a^2b^2d^4)i^2x^2 - 4((24A + 5B)b^4c^2d^3 - 12(3A + B)a^2b^2d^4)}{144((b^9c^2 - 2ab^8cd +$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^5,x, algorith="fricas")

[Out]
$$\frac{1/144*(12*(B*b^4*c*d^3 - B*a*b^3*d^4)*i^2*x^3 - 6*((12*A + B)*b^4*c^2*d^2 - 8*(3*A + B)*a*b^3*c*d^3 + (12*A + 7*B)*a^2*b^2*d^4)*i^2*x^2 - 4*((24*A + 5*B)*b^4*c^2*d^3 - 12*(3*A + B)*a*b^3*c^2*d^2 + (12*A + 7*B)*a^3*b*d^4)*i^2*x - (9*(4*A + B)*b^4*c^4 - 16*(3*A + B)*a*b^3*c^3*d + (12*A + 7*B)*a^4*d^4)*i^2 + 12*(B*b^4*d^4*i^2*x^4 + 4*B*a*b^3*d^4*i^2*x^3 - 6*(B*b^4*c^2*d^2 - 2*B*a*b^3*c*d^3)*i^2*x^2 - 4*(2*B*b^4*c^3*d - 3*B*a*b^3*c^2*d^2)*i^2*x - (3*B*b^4*c^4 - 4*B*a*b^3*c^3*d)*i^2)*log((b*e*x + a*e)/(d*x + c)))/((b^9*c^2 - 2*a*b^8*c*d + a^2*b^7*d^2)*g^5*x^4 + 4*(a*b^8*c^2 - 2*a^2*b^7*c*d + a^3*b^6*d^2)*g^5*x^3 + 6*(a^2*b^7*c^2 - 2*a^3*b^6*c*d + a^4*b^5*d^2)*g^5*x^2 + 4*(a^3*b^6*c^2 - 2*a^4*b^5*c*d + a^5*b^4*d^2)*g^5*x + (a^4*b^5*c^2 - 2*a^5*b^4*c*d + a^6*b^3*d^2)*g^5)}$$

giac [A] time = 2.95, size = 238, normalized size = 1.31

$$\frac{\left(36 B b e^5 \log\left(\frac{b x e+a e}{d x+c}\right)-\frac{48(b x e+a e) B d e^4 \log\left(\frac{b x e+a e}{d x+c}\right)}{d x+c}+36 A b e^5+9 B b e^5-\frac{48(b x e+a e) A d e^4}{d x+c}-\frac{16(b x e+a e) B d e^4}{d x+c}\right)\left(\frac{b c}{(b c e-a d e)(b c-a d)}\right)}{144\left(\frac{(b x e+a e)^4 b c g^5}{(d x+c)^4}-\frac{(b x e+a e)^4 a d g^5}{(d x+c)^4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^5,x, algorithm="giac")

[Out] 1/144*(36*B*b*e^5*log((b*x*e + a*e)/(d*x + c)) - 48*(b*x*e + a*e)*B*d*e^4*log((b*x*e + a*e)/(d*x + c))/(d*x + c) + 36*A*b*e^5 + 9*B*b*e^5 - 48*(b*x*e + a*e)*A*d*e^4/(d*x + c) - 16*(b*x*e + a*e)*B*d*e^4/(d*x + c))*(b*c/((b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))/((b*x*e + a*e)^4*b*c*g^5/(d*x + c)^4 - (b*x*e + a*e)^4*a*d*g^5/(d*x + c)^4)

maple [B] time = 0.05, size = 828, normalized size = 4.57

$$\frac{B a b d e^4 i^2 \ln\left(\frac{b e}{d} + \frac{(a d-b c) e}{(d x+c) d}\right)}{4(a d-b c)^3\left(\frac{a e}{d x+c}-\frac{b c e}{(d x+c) d}+\frac{b e}{d}\right)^4 g^5} + \frac{B b^2 c e^4 i^2 \ln\left(\frac{b e}{d} + \frac{(a d-b c) e}{(d x+c) d}\right)}{4(a d-b c)^3\left(\frac{a e}{d x+c}-\frac{b c e}{(d x+c) d}+\frac{b e}{d}\right)^4 g^5} - \frac{A a b d e^4 i^2}{4(a d-b c)^3\left(\frac{a e}{d x+c}-\frac{b c e}{(d x+c) d}+\frac{b e}{d}\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^5,x)

[Out] 1/3*d^2*e^3*i^2/(a*d-b*c)^3/g^5*A/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*a-1/3*d*e^3*i^2/(a*d-b*c)^3/g^5*A/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*b*c-1/4*d*e^4*i^2/(a*d-b*c)^3/g^5*A*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*a+1/4*e^4*i^2/(a*d-b*c)^3/g^5*A*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*c+1/3*d^2*e^3*i^2/(a*d-b*c)^3/g^5*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-1/3*d*e^3*i^2/(a*d-b*c)^3/g^5*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*c+1/9*d^2*e^3*i^2/(a*d-b*c)^3/g^5*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*a-1/9*d*e^3*i^2/(a*d-b*c)^3/g^5*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*b*c-1/4*d*e^4*i^2/(a*d-b*c)^3/g^5*B*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*a+1/4*e^4*i^2/(a*d-b*c)^3/g^5*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-1/16*d*e^4*i^2/(a*d-b*c)^3/g^5*B*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*a+1/16*e^4*i^2/(a*d-b*c)^3/g^5*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*c

maxima [B] time = 2.27, size = 2218, normalized size = 12.25

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^5,x, algorithm="maxima")

[Out]
$$-1/144*B*d^2*i^2*(12*(6*b^2*x^2 + 4*a*b*x + a^2)*\log(b*e*x/(d*x + c) + a*e/(d*x + c)))/(b^7*g^5*x^4 + 4*a*b^6*g^5*x^3 + 6*a^2*b^5*g^5*x^2 + 4*a^3*b^4*g^5*x + a^4*b^3*g^5) + (13*a^2*b^3*c^3 - 75*a^3*b^2*c^2*d + 33*a^4*b*c*d^2 - 7*a^5*d^3 - 12*(6*b^5*c^2*d - 4*a*b^4*c*d^2 + a^2*b^3*d^3)*x^3 + 6*(6*b^5*c^3 - 46*a*b^4*c^2*d + 29*a^2*b^3*c*d^2 - 7*a^3*b^2*d^3)*x^2 + 4*(10*a*b^4*c^3 - 63*a^2*b^3*c^2*d + 33*a^3*b^2*c*d^2 - 7*a^4*b*d^3)*x)/((b^10*c^3 - 3*a*b^9*c^2*d + 3*a^2*b^8*c*d^2 - a^3*b^7*d^3)*g^5*x^4 + 4*(a*b^9*c^3 - 3*a^2*b^8*c^2*d + 3*a^3*b^7*c*d^2 - a^4*b^6*d^3)*g^5*x^3 + 6*(a^2*b^8*c^3 - 3*a^3*b^7*c^2*d + 3*a^4*b^6*c*d^2 - a^5*b^5*d^3)*g^5*x^2 + 4*(a^3*b^7*c^3 - 3*a^4*b^6*c^2*d + 3*a^5*b^5*c*d^2 - a^6*b^4*d^3)*g^5*x + (a^4*b^6*c^3 - 3*a^5*b^5*c^2*d + 3*a^6*b^4*c*d^2 - a^7*b^3*d^3)*g^5) - 12*(6*b^2*c^2*d^2 - 4*a*b*c*d^3 + a^2*d^4)*\log(b*x + a)/((b^7*c^4 - 4*a*b^6*c^3*d + 6*a^2*b^5*c^2*d^2 - 4*a^3*b^4*c*d^3 + a^4*b^3*d^4)*g^5) + 12*(6*b^2*c^2*d^2 - 4*a*b*c*d^3 + a^2*d^4)*\log(d*x + c)/((b^7*c^4 - 4*a*b^6*c^3*d + 6*a^2*b^5*c^2*d^2 - 4*a^3*b^4*c*d^3 + a^4*b^3*d^4)*g^5) - 1/72*B*c*d*i^2*(12*(4*b*x + a)*\log(b*e*x/(d*x + c) + a*e/(d*x + c)))/(b^6*g^5*x^4 + 4*a*b^5*g^5*x^3 + 6*a^2*b^4*g^5*x^2 + 4*a^3*b^3*g^5*x + a^4*b^2*g^5) + (7*a*b^3*c^3 - 33*a^2*b^2*c^2*d + 75*a^3*b*c*d^2 - 13*a^4*d^3 + 12*(4*b^4*c*d^2 - a*b^3*d^3)*x^3 - 6*(4*b^4*c^2*d - 29*a*b^3*c*d^2 + 7*a^2*b^2*d^3)*x^2 + 4*(4*b^4*c^3 - 21*a*b^3*c^2*d + 57*a^2*b^2*c*d^2 - 13*a^3*b*d^3)*x)/((b^9*c^3 - 3*a*b^8*c^2*d + 3*a^2*b^7*c*d^2 - a^3*b^6*d^3)*g^5*x^4 + 4*(a*b^8*c^3 - 3*a^2*b^7*c^2*d + 3*a^3*b^6*c*d^2 - a^4*b^5*d^3)*g^5*x^3 + 6*(a^2*b^7*c^3 - 3*a^3*b^6*c^2*d + 3*a^4*b^5*c*d^2 - a^5*b^4*d^3)*g^5*x^2 + 4*(a^3*b^6*c^3 - 3*a^4*b^5*c^2*d + 3*a^5*b^4*c*d^2 - a^6*b^3*d^3)*g^5*x + (a^4*b^5*c^3 - 3*a^5*b^4*c^2*d + 3*a^6*b^3*c*d^2 - a^7*b^2*d^3)*g^5) + 12*(4*b*c*d^3 - a*d^4)*\log(b*x + a)/((b^6*c^4 - 4*a*b^5*c^3*d + 6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*g^5) - 12*(4*b*c*d^3 - a*d^4)*\log(d*x + c)/((b^6*c^4 - 4*a*b^5*c^3*d + 6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*g^5) + 1/48*B*c^2*i^2*((12*b^3*d^3*x^3 - 3*b^3*c^3 + 13*a*b^2*c^2*d - 23*a^2*b*c*d^2 + 25*a^3*d^3 - 6*(b^3*c*d^2 - 7*a*b^2*d^3)*x^2 + 4*(b^3*c^2*d - 5*a*b^2*c*d^2 + 13*a^2*b*d^3)*x)/((b^8*c^3 - 3*a*b^7*c^2*d + 3*a^2*b^6*c*d^2 - a^3*b^5*d^3)*g^5*x^4 + 4*(a*b^7*c^3 - 3*a^2*b^6*c^2*d + 3*a^3*b^5*c*d^2 - a^4*b^4*d^3)*g^5*x^3 + 6*(a^2*b^6*c^3 - 3*a^3*b^5*c^2*d + 3*a^4*b^4*c*d^2 - a^5*b^3*d^3)*g^5*x^2 + 4*(a^3*b^5*c^3 - 3*a^4*b^4*c^2*d + 3*a^5*b^3*c*d^2 - a^6*b^2*d^3)*g^5*x + (a^4*b^4*c^3 - 3*a^5*b^3*c^2*d + 3*a^6*b^2*c*d^2 - a^7*b*d^3)*g^5) - 12*\log(b*e*x/(d*x + c) + a*e/(d*x + c)))/(b^5*g^5*x^4 + 4*a*b^4*g^5*x^3 + 6*a^2*b^3*g^5*x^2 +$$

$$4a^3b^2g^5x + a^4b^2g^5) + 12d^4 \log(bx + a) / ((b^5c^4 - 4a^3b^4c^3d + 6a^2b^3c^2d^2 - 4a^3b^2c^3d^3 + a^4b^4c^4)g^5) - 12d^4 \log(dx + c) / ((b^5c^4 - 4a^3b^4c^3d + 6a^2b^3c^2d^2 - 4a^3b^2c^3d^3 + a^4b^4c^4)g^5) - 1/6(4bx + a)A^2c^2d^2 / (b^6g^5x^4 + 4a^3b^5g^5x^3 + 6a^2b^4g^5x^2 + 4a^3b^3g^5x + a^4b^2g^5) - 1/12(6b^2x^2 + 4abx + a^2)A^2d^2i^2 / (b^7g^5x^4 + 4a^3b^6g^5x^3 + 6a^2b^5g^5x^2 + 4a^3b^4g^5x + a^4b^3g^5) - 1/4A^2c^2i^2 / (b^5g^5x^4 + 4a^3b^4g^5x^3 + 6a^2b^3g^5x^2 + 4a^3b^2g^5x + a^4b^2g^5)$$

mupad [B] time = 6.86, size = 647, normalized size = 3.57

$$\frac{12Aa^3d^3i^2 - 36Ab^3c^3i^2 + 7Ba^3d^3i^2 - 9Bb^3c^3i^2 + 12Aab^2c^2d^2i^2 + 12Aa^2bcd^2i^2 + 7Bab^2c^2d^2i^2 + 7Ba^2bcd^2i^2}{12(ad-bc)} + \frac{x^2(12Aab^2d^3i^2 + 7Bab^2d^3i^2 + 12Aa^2b^3d^3i^2 + 7Bb^3c^3d^3i^2)}{12a^4b^3g^5 + 48a^3b^4g^5x + 72a^2b^5g^5x^2 + 48a^3b^6g^5x^3 + 72a^2b^7g^5x^4 + 48a^3b^8g^5x^5 + 72a^4b^9g^5x^6 + 48a^5b^{10}g^5x^7 + 72a^6b^{11}g^5x^8 + 48a^7b^{12}g^5x^9 + 72a^8b^{13}g^5x^{10} + 48a^9b^{14}g^5x^{11} + 72a^{10}b^{15}g^5x^{12} + 48a^{11}b^{16}g^5x^{13} + 72a^{12}b^{17}g^5x^{14} + 48a^{13}b^{18}g^5x^{15} + 72a^{14}b^{19}g^5x^{16} + 48a^{15}b^{20}g^5x^{17} + 72a^{16}b^{21}g^5x^{18} + 48a^{17}b^{22}g^5x^{19} + 72a^{18}b^{23}g^5x^{20} + 48a^{19}b^{24}g^5x^{21} + 72a^{20}b^{25}g^5x^{22} + 48a^{21}b^{26}g^5x^{23} + 72a^{22}b^{27}g^5x^{24} + 48a^{23}b^{28}g^5x^{25} + 72a^{24}b^{29}g^5x^{26} + 48a^{25}b^{30}g^5x^{27} + 72a^{26}b^{31}g^5x^{28} + 48a^{27}b^{32}g^5x^{29} + 72a^{28}b^{33}g^5x^{30} + 48a^{29}b^{34}g^5x^{31} + 72a^{30}b^{35}g^5x^{32} + 48a^{31}b^{36}g^5x^{33} + 72a^{32}b^{37}g^5x^{34} + 48a^{33}b^{38}g^5x^{35} + 72a^{34}b^{39}g^5x^{36} + 48a^{35}b^{40}g^5x^{37} + 72a^{36}b^{41}g^5x^{38} + 48a^{37}b^{42}g^5x^{39} + 72a^{38}b^{43}g^5x^{40} + 48a^{39}b^{44}g^5x^{41} + 72a^{40}b^{45}g^5x^{42} + 48a^{41}b^{46}g^5x^{43} + 72a^{42}b^{47}g^5x^{44} + 48a^{43}b^{48}g^5x^{45} + 72a^{44}b^{49}g^5x^{46} + 48a^{45}b^{50}g^5x^{47} + 72a^{46}b^{51}g^5x^{48} + 48a^{47}b^{52}g^5x^{49} + 72a^{48}b^{53}g^5x^{50} + 48a^{49}b^{54}g^5x^{51} + 72a^{50}b^{55}g^5x^{52} + 48a^{51}b^{56}g^5x^{53} + 72a^{52}b^{57}g^5x^{54} + 48a^{53}b^{58}g^5x^{55} + 72a^{54}b^{59}g^5x^{56} + 48a^{55}b^{60}g^5x^{57} + 72a^{56}b^{61}g^5x^{58} + 48a^{57}b^{62}g^5x^{59} + 72a^{58}b^{63}g^5x^{60} + 48a^{59}b^{64}g^5x^{61} + 72a^{60}b^{65}g^5x^{62} + 48a^{61}b^{66}g^5x^{63} + 72a^{62}b^{67}g^5x^{64} + 48a^{63}b^{68}g^5x^{65} + 72a^{64}b^{69}g^5x^{66} + 48a^{65}b^{70}g^5x^{67} + 72a^{66}b^{71}g^5x^{68} + 48a^{67}b^{72}g^5x^{69} + 72a^{68}b^{73}g^5x^{70} + 48a^{69}b^{74}g^5x^{71} + 72a^{70}b^{75}g^5x^{72} + 48a^{71}b^{76}g^5x^{73} + 72a^{72}b^{77}g^5x^{74} + 48a^{73}b^{78}g^5x^{75} + 72a^{74}b^{79}g^5x^{76} + 48a^{75}b^{80}g^5x^{77} + 72a^{76}b^{81}g^5x^{78} + 48a^{77}b^{82}g^5x^{79} + 72a^{78}b^{83}g^5x^{80} + 48a^{79}b^{84}g^5x^{81} + 72a^{80}b^{85}g^5x^{82} + 48a^{81}b^{86}g^5x^{83} + 72a^{82}b^{87}g^5x^{84} + 48a^{83}b^{88}g^5x^{85} + 72a^{84}b^{89}g^5x^{86} + 48a^{85}b^{90}g^5x^{87} + 72a^{86}b^{91}g^5x^{88} + 48a^{87}b^{92}g^5x^{89} + 72a^{88}b^{93}g^5x^{90} + 48a^{89}b^{94}g^5x^{91} + 72a^{90}b^{95}g^5x^{92} + 48a^{91}b^{96}g^5x^{93} + 72a^{92}b^{97}g^5x^{94} + 48a^{93}b^{98}g^5x^{95} + 72a^{94}b^{99}g^5x^{96} + 48a^{95}b^{100}g^5x^{97} + 72a^{96}b^{101}g^5x^{98} + 48a^{97}b^{102}g^5x^{99} + 72a^{98}b^{103}g^5x^{100} + 48a^{99}b^{104}g^5x^{101} + 72a^{100}b^{105}g^5x^{102} + 48a^{101}b^{106}g^5x^{103} + 72a^{102}b^{107}g^5x^{104} + 48a^{103}b^{108}g^5x^{105} + 72a^{104}b^{109}g^5x^{106} + 48a^{105}b^{110}g^5x^{107} + 72a^{106}b^{111}g^5x^{108} + 48a^{107}b^{112}g^5x^{109} + 72a^{108}b^{113}g^5x^{110} + 48a^{109}b^{114}g^5x^{111} + 72a^{110}b^{115}g^5x^{112} + 48a^{111}b^{116}g^5x^{113} + 72a^{112}b^{117}g^5x^{114} + 48a^{113}b^{118}g^5x^{115} + 72a^{114}b^{119}g^5x^{116} + 48a^{115}b^{120}g^5x^{117} + 72a^{116}b^{121}g^5x^{118} + 48a^{117}b^{122}g^5x^{119} + 72a^{118}b^{123}g^5x^{120} + 48a^{119}b^{124}g^5x^{121} + 72a^{120}b^{125}g^5x^{122} + 48a^{121}b^{126}g^5x^{123} + 72a^{122}b^{127}g^5x^{124} + 48a^{123}b^{128}g^5x^{125} + 72a^{124}b^{129}g^5x^{126} + 48a^{125}b^{130}g^5x^{127} + 72a^{126}b^{131}g^5x^{128} + 48a^{127}b^{132}g^5x^{129} + 72a^{128}b^{133}g^5x^{130} + 48a^{129}b^{134}g^5x^{131} + 72a^{130}b^{135}g^5x^{132} + 48a^{131}b^{136}g^5x^{133} + 72a^{132}b^{137}g^5x^{134} + 48a^{133}b^{138}g^5x^{135} + 72a^{134}b^{139}g^5x^{136} + 48a^{135}b^{140}g^5x^{137} + 72a^{136}b^{141}g^5x^{138} + 48a^{137}b^{142}g^5x^{139} + 72a^{138}b^{143}g^5x^{140} + 48a^{139}b^{144}g^5x^{141} + 72a^{140}b^{145}g^5x^{142} + 48a^{141}b^{146}g^5x^{143} + 72a^{142}b^{147}g^5x^{144} + 48a^{143}b^{148}g^5x^{145} + 72a^{144}b^{149}g^5x^{146} + 48a^{145}b^{150}g^5x^{147} + 72a^{146}b^{151}g^5x^{148} + 48a^{147}b^{152}g^5x^{149} + 72a^{148}b^{153}g^5x^{150} + 48a^{149}b^{154}g^5x^{151} + 72a^{150}b^{155}g^5x^{152} + 48a^{151}b^{156}g^5x^{153} + 72a^{152}b^{157}g^5x^{154} + 48a^{153}b^{158}g^5x^{155} + 72a^{154}b^{159}g^5x^{156} + 48a^{155}b^{160}g^5x^{157} + 72a^{156}b^{161}g^5x^{158} + 48a^{157}b^{162}g^5x^{159} + 72a^{158}b^{163}g^5x^{160} + 48a^{159}b^{164}g^5x^{161} + 72a^{160}b^{165}g^5x^{162} + 48a^{161}b^{166}g^5x^{163} + 72a^{162}b^{167}g^5x^{164} + 48a^{163}b^{168}g^5x^{165} + 72a^{164}b^{169}g^5x^{166} + 48a^{165}b^{170}g^5x^{167} + 72a^{166}b^{171}g^5x^{168} + 48a^{167}b^{172}g^5x^{169} + 72a^{168}b^{173}g^5x^{170} + 48a^{169}b^{174}g^5x^{171} + 72a^{170}b^{175}g^5x^{172} + 48a^{171}b^{176}g^5x^{173} + 72a^{172}b^{177}g^5x^{174} + 48a^{173}b^{178}g^5x^{175} + 72a^{174}b^{179}g^5x^{176} + 48a^{175}b^{180}g^5x^{177} + 72a^{176}b^{181}g^5x^{178} + 48a^{177}b^{182}g^5x^{179} + 72a^{178}b^{183}g^5x^{180} + 48a^{179}b^{184}g^5x^{181} + 72a^{180}b^{185}g^5x^{182} + 48a^{181}b^{186}g^5x^{183} + 72a^{182}b^{187}g^5x^{184} + 48a^{183}b^{188}g^5x^{185} + 72a^{184}b^{189}g^5x^{186} + 48a^{185}b^{190}g^5x^{187} + 72a^{186}b^{191}g^5x^{188} + 48a^{187}b^{192}g^5x^{189} + 72a^{188}b^{193}g^5x^{190} + 48a^{189}b^{194}g^5x^{191} + 72a^{190}b^{195}g^5x^{192} + 48a^{191}b^{196}g^5x^{193} + 72a^{192}b^{197}g^5x^{194} + 48a^{193}b^{198}g^5x^{195} + 72a^{194}b^{199}g^5x^{196} + 48a^{195}b^{200}g^5x^{197} + 72a^{196}b^{201}g^5x^{198} + 48a^{197}b^{202}g^5x^{199} + 72a^{198}b^{203}g^5x^{200} + 48a^{199}b^{204}g^5x^{201} + 72a^{200}b^{205}g^5x^{202} + 48a^{201}b^{206}g^5x^{203} + 72a^{202}b^{207}g^5x^{204} + 48a^{203}b^{208}g^5x^{205} + 72a^{204}b^{209}g^5x^{206} + 48a^{205}b^{210}g^5x^{207} + 72a^{206}b^{211}g^5x^{208} + 48a^{207}b^{212}g^5x^{209} + 72a^{208}b^{213}g^5x^{210} + 48a^{209}b^{214}g^5x^{211} + 72a^{210}b^{215}g^5x^{212} + 48a^{211}b^{216}g^5x^{213} + 72a^{212}b^{217}g^5x^{214} + 48a^{213}b^{218}g^5x^{215} + 72a^{214}b^{219}g^5x^{216} + 48a^{215}b^{220}g^5x^{217} + 72a^{216}b^{221}g^5x^{218} + 48a^{217}b^{222}g^5x^{219} + 72a^{218}b^{223}g^5x^{220} + 48a^{219}b^{224}g^5x^{221} + 72a^{220}b^{225}g^5x^{222} + 48a^{221}b^{226}g^5x^{223} + 72a^{222}b^{227}g^5x^{224} + 48a^{223}b^{228}g^5x^{225} + 72a^{224}b^{229}g^5x^{226} + 48a^{225}b^{230}g^5x^{227} + 72a^{226}b^{231}g^5x^{228} + 48a^{227}b^{232}g^5x^{229} + 72a^{228}b^{233}g^5x^{230} + 48a^{229}b^{234}g^5x^{231} + 72a^{230}b^{235}g^5x^{232} + 48a^{231}b^{236}g^5x^{233} + 72a^{232}b^{237}g^5x^{234} + 48a^{233}b^{238}g^5x^{235} + 72a^{234}b^{239}g^5x^{236} + 48a^{235}b^{240}g^5x^{237} + 72a^{236}b^{241}g^5x^{238} + 48a^{237}b^{242}g^5x^{239} + 72a^{238}b^{243}g^5x^{240} + 48a^{239}b^{244}g^5x^{241} + 72a^{240}b^{245}g^5x^{242} + 48a^{241}b^{246}g^5x^{243} + 72a^{242}b^{247}g^5x^{244} + 48a^{243}b^{248}g^5x^{245} + 72a^{244}b^{249}g^5x^{246} + 48a^{245}b^{250}g^5x^{247} + 72a^{246}b^{251}g^5x^{248} + 48a^{247}b^{252}g^5x^{249} + 72a^{248}b^{253}g^5x^{250} + 48a^{249}b^{254}g^5x^{251} + 72a^{250}b^{255}g^5x^{252} + 48a^{251}b^{256}g^5x^{253} + 72a^{252}b^{257}g^5x^{254} + 48a^{253}b^{258}g^5x^{255} + 72a^{254}b^{259}g^5x^{256} + 48a^{255}b^{260}g^5x^{257} + 72a^{256}b^{261}g^5x^{258} + 48a^{257}b^{262}g^5x^{259} + 72a^{258}b^{263}g^5x^{260} + 48a^{259}b^{264}g^5x^{261} + 72a^{260}b^{265}g^5x^{262} + 48a^{261}b^{266}g^5x^{263} + 72a^{262}b^{267}g^5x^{264} + 48a^{263}b^{268}g^5x^{265} + 72a^{264}b^{269}g^5x^{266} + 48a^{265}b^{270}g^5x^{267} + 72a^{266}b^{271}g^5x^{268} + 48a^{267}b^{272}g^5x^{269} + 72a^{268}b^{273}g^5x^{270} + 48a^{269}b^{274}g^5x^{271} + 72a^{270}b^{275}g^5x^{272} + 48a^{271}b^{276}g^5x^{273} + 72a^{272}b^{277}g^5x^{274} + 48a^{273}b^{278}g^5x^{275} + 72a^{274}b^{279}g^5x^{276} + 48a^{275}b^{280}g^5x^{277} + 72a^{276}b^{281}g^5x^{278} + 48a^{277}b^{282}g^5x^{279} + 72a^{278}b^{283}g^5x^{280} + 48a^{279}b^{284}g^5x^{281} + 72a^{280}b^{285}g^5x^{282} + 48a^{281}b^{286}g^5x^{283} + 72a^{282}b^{287}g^5x^{284} + 48a^{283}b^{288}g^5x^{285} + 72a^{284}b^{289}g^5x^{286} + 48a^{285}b^{290}g^5x^{287} + 72a^{286}b^{291}g^5x^{288} + 48a^{287}b^{292}g^5x^{289} + 72a^{288}b^{293}g^5x^{290} + 48a^{289}b^{294}g^5x^{291} + 72a^{290}b^{295}g^5x^{292} + 48a^{291}b^{296}g^5x^{293} + 72a^{292}b^{297}g^5x^{294} + 48a^{293}b^{298}g^5x^{295} + 72a^{294}b^{299}g^5x^{296} + 48a^{295}b^{300}g^5x^{297} + 72a^{296}b^{301}g^5x^{298} + 48a^{297}b^{302}g^5x^{299} + 72a^{298}b^{303}g^5x^{300} + 48a^{299}b^{304}g^5x^{301} + 72a^{300}b^{305}g^5x^{302} + 48a^{301}b^{306}g^5x^{303} + 72a^{302}b^{307}g^5x^{304} + 48a^{303}b^{308}g^5x^{305} + 72a^{304}b^{309}g^5x^{306} + 48a^{305}b^{310}g^5x^{307} + 72a^{306}b^{311}g^5x^{308} + 48a^{307}b^{312}g^5x^{309} + 72a^{308}b^{313}g^5x^{310} + 48a^{309}b^{314}g^5x^{311} + 72a^{310}b^{315}g^5x^{312} + 48a^{311}b^{316}g^5x^{313} + 72a^{312}b^{317}g^5x^{314} + 48a^{313}b^{318}g^5x^{315} + 72a^{314}b^{319}g^5x^{316} + 48a^{315}b^{320}g^5x^{317} + 72a^{316}b^{321}g^5x^{318} + 48a^{317}b^{322}g^5x^{319} + 72a^{318}b^{323}g^5x^{320} + 48a^{319}b^{324}g^5x^{321} + 72a^{320}b^{325}g^5x^{322} + 48a^{321}b^{326}g^5x^{323} + 72a^{322}b^{327}g^5x^{324} + 48a^{323}b^{328}g^5x^{325} + 72a^{324}b^{329}g^5x^{326} + 48a^{325}b^{330}g^5x^{327} + 72a^{326}b^{331}g^5x^{328} + 48a^{327}b^{332}g^5x^{329} + 72a^{328}b^{333}g^5x^{330} + 48a^{329}b^{334}g^5x^{331} + 72a^{330}b^{335}g^5x^{332} + 48a^{331}b^{336}g^5x^{333} + 72a^{332}b^{337}g^5x^{334} + 48a^{333}b^{338}g^5x^{335} + 72a^{334}b^{339}g^5x^{336} + 48a^{335}b^{340}g^5x^{337} + 72a^{336}b^{341}g^5x^{338} + 48a^{337}b^{342}g^5x^{339} + 72a^{338}b^{343}g^5x^{340} + 48a^{339}b^{344}g^5x^{341} + 72a^{340}b^{345}g^5x^{342} + 48a^{341}b^{346}g^5x^{343} + 72a^{342}b^{347}g^5x^{344} + 48a^{343}b^{348}g^5x^{345} + 72a^{344}b^{349}g^5x^{346} + 48a^{345}b^{350}g^5x^{347} + 72a^{346}b^{351}g^5x^{348} + 48a^{347}b^{352}g^5x^{349} + 72a^{348}b^{353}g^5x^{350} + 48a^{349}b^{354}g^5x^{351} + 72a^{350}b^{355}g^5x^{352} + 48a^{351}b^{356}g^5x^{353} + 72a^{352}b^{357}g^5x^{354} + 48a^{353}b^{358}g^5x^{355} + 72a^{354}b^{359}g^5x^{356} + 48a^{355}b^{360}g^5x^{357} + 72a^{356}b^{361}g^5x^{358} + 48a^{357}b^{362}g^5x^{359} + 72a^{358}b^{363}g^5x^{360} + 48a^{359}b^{364}g^5x^{361} + 72a^{360}b^{365}g^5x^{362} + 48a^{361}b^{366}g^5x^{363} + 72a^{362}b^{367}g^5x^{364} + 48a^{363}b^{368}g^5x^{365} + 72a^{364}b^{369}g^5x^{366} + 48a^{365}b^{370}g^5x^{367} + 72a^{366}b^{371}g^5x^{368} + 48a^{367}b^{372}g^5x^{369} + 72a^{368}b^{373}g^5x^{370} + 48a^{369}b^{374}g^5x^{371} + 72a^{370}b^{375}g^5x^{372} + 48a^{371}b^{376}g^5x^{373} + 72a^{372}b^{377}g^5x^{374} + 48a^{373}b^{378}g^5x^{375} + 72a^{374}b^{379}g^5x^{376} + 48a^{375}b^{380}g^5x^{377} + 72a^{376}b^{381}g^5x^{378} + 48a^{377}b^{382}g^5x^{379} + 72a^{378}b^{383}g^5x^{380} + 48a^{379}b^{384}g^5x^{381} + 72a^{380}b^{385}g^5x^{382} + 48a^{381}b^{386}g^5x^{383} + 72a^{382}b^{387}g^5x^{384} + 48a^{383}b^{388}g^5x^{385} + 72a^{384}b^{389}g^5x^{386} + 48a^{385}b^{390}g^5x^{387} + 72a^{386}b^{391}g^5x^{388} + 48a^{387}b^{392}g^5x^{389} + 72a^{388}b^{393}g^5x^{390} + 48a^{389}b^{394}g^5x^{391} + 72a^{390}b^{395}g^5x^{392} + 48a^{391}b^{396}g^5x^{393} + 72a^{392}b^{397}g^5x^{394} + 48a^{393}b^{398}g^5x^{395} + 72a^{394}b^{399}g^5x^{396} + 48a^{395}b^{400}g^5x^{397} + 72a^{396}b^{401}g^5x^{398} + 48a^{397}b^{402}g^5x^{399} + 72a^{398}b^{403}g^5x^{400} + 48a^{399}b^{404}g^5x^{401} + 72a^{400}b^{405}g^5x^{402} + 48a^{401}b^{406}g^5x^{403} + 72a^{402}b^{407}g^5x^{404} + 48a^{403}b^{408}g^5x^{405} + 72a^{404}b^{409}g^5x^{406} + 48a^{405}b^{410}g^5x^{407} + 72a^{406}b^{411}g^5x^{408} + 48a^{407}b^{412}g^5x^{409} + 72a^{408}b^{413}g^5x^{410} + 48a^{409}b^{414}g^5x^{411} + 72a^{410}b^{415}g^5x^{412} + 48a^{411}b^{416}g^5x^{413} + 72a^{412}b^{417}g^5x^{414} + 48a^{413}b^{418}g^5x^{415} + 72a^{414}b^{419}g^5x^{416} + 48a^{415}b^{420}g^5x^{417} + 72a^{416}b^{421}g^5x^{418} + 48a^{417}b^{422}g^5x^{419} + 72a^{418}b^{423}g^5x^{420} + 48a^{419}b^{424}g^5x^{421} + 72a^{420}b^{425}g^5x^{422} + 48a^{421}b^{426}g^5x^{423} + 72a^{422}b^{427}g^5x^{424} + 48a^{423}b^{428}g^5x^{425} + 72a^{424}b^{429}g^5x^{426} + 48a^{425}b^{430}g^5x^{427} + 72a^{426}b^{431}g^5x^{428} + 48a^{427}b^{432}g^5x^{429} + 72a^{428}b^{433}g^5x^{430} + 48a^{429}b^{434}g^5x^{431} + 72a^{430}b^{435}g^5x^{432} + 48a^{431}b^{436}g^5x^{433} + 72a^{432}b^{437}g^5x^{434} + 48a^{433}b^{438}g^5x^{435} + 72a^{434}b^{439}g^5x^{436} + 48a^{435}b^{440}g^5x^{437} + 72a^{436}b^{441}g^5x^{438} + 48a^{437}b^{442}g^5x^{439} + 72a^{438}b^{443}g^5x^{440} + 48a^{439}b^{444}g^5x^{441} + 72a^{440}b^{445}g^5x^{442} + 48a^{441}b^{446}g^5x^{443} + 72a^{442}b^{447}g^5x^{444} + 48a^{443}b^{448}g^5x^{445} + 72a^{444}b^{449}g^5x^{446} + 48a^{445}b^{450}g^5x^{447} + 72a^{446}b^{451}g^5x^{448} + 48a^{447}b^{452}g^5x^{449} + 72a^{448}b^{453}g^5x^{450} + 48a^{449}b^{454}g^5x^{451} + 72a^{450}b^{455}g^5x^{452} + 48a^{451}b^{456}g^5x^{453} + 72a^{452}b^{457}g^5x^{454} + 48a^{453}b^{458}g^5x^{455} + 72a^{454}b^{459}g^5x^{456} + 48a^{455}b^{460}g^5x^{457} + 72a^{456}b^{461}g^5x^{458} + 48a^{457}b^{462}g^5x^{459} + 72a^{458}b^{463}g^5x^{460} + 48a^{459}b^{464}g^5x^{461} + 72a^{460}b^{465}g^5x^{462} + 48a^{461}b^{466}g^5x^{463} + 72a^{462}b^{467}g^5x^{464} + 48a^{463}b^{468}g^5x^{465} + 72a^{464}b^{469}g^5x^{466} + 48a^{465}b^{470}g^5x^{467} + 72a^{466}b^{471}g^5x^{468} + 48a^{467}b^{472}g^5x^{469} + 72a^{468}b^{473}g^5x^{470} + 48a^{469}b^{474}g^5x^{471} + 72a^{470}b^{475}g^5x^{472} + 48a^{471}b^{476}g^5x^{473} + 72a^{472}b^{477}g^5x^{474} + 48a^{473}b^{478}g^5x^{475} + 72a^{474}b^{479}g^5x^{476} + 48a^{475}b^{4$$

```
[Out] -B*d**4*i**2*log(x + (-B*a**3*d**7*i**2/(a*d - b*c)**2 + 3*B*a**2*b*c*d**6*
i**2/(a*d - b*c)**2 - 3*B*a*b**2*c**2*d**5*i**2/(a*d - b*c)**2 + B*a*d**5*i
**2 + B*b**3*c**3*d**4*i**2/(a*d - b*c)**2 + B*b*c*d**4*i**2)/(2*B*b*d**5*i
**2))/(12*b**3*g**5*(a*d - b*c)**2) + B*d**4*i**2*log(x + (B*a**3*d**7*i**2
/(a*d - b*c)**2 - 3*B*a**2*b*c*d**6*i**2/(a*d - b*c)**2 + 3*B*a*b**2*c**2*d
**5*i**2/(a*d - b*c)**2 + B*a*d**5*i**2 - B*b**3*c**3*d**4*i**2/(a*d - b*c)
**2 + B*b*c*d**4*i**2)/(2*B*b*d**5*i**2))/(12*b**3*g**5*(a*d - b*c)**2) + (
-12*A*a**3*d**3*i**2 - 12*A*a**2*b*c*d**2*i**2 - 12*A*a*b**2*c**2*d*i**2 +
36*A*b**3*c**3*i**2 - 7*B*a**3*d**3*i**2 - 7*B*a**2*b*c*d**2*i**2 - 7*B*a*b
**2*c**2*d*i**2 + 9*B*b**3*c**3*i**2 - 12*B*b**3*d**3*i**2*x**3 + x**2*(-72
*A*a*b**2*d**3*i**2 + 72*A*b**3*c*d**2*i**2 - 42*B*a*b**2*d**3*i**2 + 6*B*b
**3*c*d**2*i**2) + x*(-48*A*a**2*b*d**3*i**2 - 48*A*a*b**2*c*d**2*i**2 + 96
*A*b**3*c**2*d*i**2 - 28*B*a**2*b*d**3*i**2 - 28*B*a*b**2*c*d**2*i**2 + 20*
B*b**3*c**2*d*i**2))/(144*a**5*b**3*d*g**5 - 144*a**4*b**4*c*g**5 + x**4*(1
44*a*b**7*d*g**5 - 144*b**8*c*g**5) + x**3*(576*a**2*b**6*d*g**5 - 576*a*b
**7*c*g**5) + x**2*(864*a**3*b**5*d*g**5 - 864*a**2*b**6*c*g**5) + x*(576*a
**4*b**4*d*g**5 - 576*a**3*b**5*c*g**5)) + (-B*a**2*d**2*i**2 - 2*B*a*b*c*d*
i**2 - 4*B*a*b*d**2*i**2*x - 3*B*b**2*c**2*i**2 - 8*B*b**2*c*d*i**2*x - 6*B
*b**2*d**2*i**2*x**2)*log(e*(a + b*x)/(c + d*x))/(12*a**4*b**3*g**5 + 48*a
**3*b**4*g**5*x + 72*a**2*b**5*g**5*x**2 + 48*a*b**6*g**5*x**3 + 12*b**7*g**
5*x**4)
```

$$3.19 \quad \int \frac{(ci+dx)^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{(ag+bgx)^6} dx$$

Optimal. Leaf size=281

$$\frac{b^2 i^2 (c+dx)^5 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{5g^6 (a+bx)^5 (bc-ad)^3} - \frac{d^2 i^2 (c+dx)^3 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{3g^6 (a+bx)^3 (bc-ad)^3} + \frac{bdi^2 (c+dx)^4 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{2g^6 (a+bx)^4 (bc-ad)^3}$$

[Out] $-1/9*B*d^2*i^2*(d*x+c)^3/(-a*d+b*c)^3/g^6/(b*x+a)^3+1/8*b*B*d*i^2*(d*x+c)^4/(-a*d+b*c)^3/g^6/(b*x+a)^4-1/25*b^2*B*i^2*(d*x+c)^5/(-a*d+b*c)^3/g^6/(b*x+a)^5-1/3*d^2*i^2*(d*x+c)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^3/g^6/(b*x+a)^3+1/2*b*d*i^2*(d*x+c)^4*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^3/g^6/(b*x+a)^4-1/5*b^2*i^2*(d*x+c)^5*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^3/g^6/(b*x+a)^5$

Rubi [A] time = 0.68, antiderivative size = 359, normalized size of antiderivative = 1.28, number of steps used = 14, number of rules used = 4, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.100$, Rules used = {2528, 2525, 12, 44}

$$\frac{d^2 i^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{3b^3 g^6 (a+bx)^3} - \frac{di^2 (bc-ad) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{2b^3 g^6 (a+bx)^4} - \frac{i^2 (bc-ad)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{5b^3 g^6 (a+bx)^5} - \frac{Bc}{30b^3 g^6 (a+bx)^6}$$

Antiderivative was successfully verified.

[In] $\text{Int}[\frac{(c*i + d*i*x)^2*(A + B*\text{Log}[\frac{e*(a + b*x)}{c + d*x}])}{(a*g + b*g*x)^6}, x]$

[Out] $-(B*(b*c - a*d)^2*i^2)/(25*b^3*g^6*(a + b*x)^5) - (3*B*d*(b*c - a*d)*i^2)/(40*b^3*g^6*(a + b*x)^4) - (B*d^2*i^2)/(90*b^3*g^6*(a + b*x)^3) + (B*d^3*i^2)/(60*b^3*(b*c - a*d)*g^6*(a + b*x)^2) - (B*d^4*i^2)/(30*b^3*(b*c - a*d)^2*g^6*(a + b*x)) - (B*d^5*i^2*\text{Log}[a + b*x])/(30*b^3*(b*c - a*d)^3*g^6) - ((b*c - a*d)^2*i^2*(A + B*\text{Log}[\frac{e*(a + b*x)}{c + d*x}]))/(5*b^3*g^6*(a + b*x)^5) - (d*(b*c - a*d)*i^2*(A + B*\text{Log}[\frac{e*(a + b*x)}{c + d*x}]))/(2*b^3*g^6*(a + b*x)^4) - (d^2*i^2*(A + B*\text{Log}[\frac{e*(a + b*x)}{c + d*x}]))/(3*b^3*g^6*(a + b*x)^3) + (B*d^5*i^2*\text{Log}[c + d*x])/(30*b^3*(b*c - a*d)^3*g^6)$

Rule 12

$\text{Int}[(a_*)*(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \&\& \text{!MatchQ}[u, (b_*)*(v_)] /; \text{FreeQ}[b, x]$

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*
(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunci
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(19c + 19dx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{(ag + bgx)^6} dx &= \int \left(\frac{361(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2 g^6 (a + bx)^6} + \frac{722d(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2 g^6 (a + bx)^5} \right) dx \\
&= \frac{(361d^2) \int \frac{A+B \log \left(\frac{e(a+bx)}{c+dx} \right)}{(a+bx)^4} dx}{b^2 g^6} + \frac{(722d(bc - ad)) \int \frac{A+B \log \left(\frac{e(a+bx)}{c+dx} \right)}{(a+bx)^5} dx}{b^2 g^6} \\
&= -\frac{361(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{5b^3 g^6 (a + bx)^5} - \frac{361d(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{2b^3 g^6 (a + bx)^4} \\
&= -\frac{361(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{5b^3 g^6 (a + bx)^5} - \frac{361d(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{2b^3 g^6 (a + bx)^4} \\
&= -\frac{361(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{5b^3 g^6 (a + bx)^5} - \frac{361d(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{2b^3 g^6 (a + bx)^4} \\
&= -\frac{361B(bc - ad)^2}{25b^3 g^6 (a + bx)^5} - \frac{1083Bd(bc - ad)}{40b^3 g^6 (a + bx)^4} - \frac{361Bd^2}{90b^3 g^6 (a + bx)^3} + \frac{361Ad}{60b^3 g^6 (a + bx)^2}
\end{aligned}$$

Mathematica [A] time = 0.86, size = 344, normalized size = 1.22

$$i^2 \left(-\frac{360a^2 Ad^2}{(a+bx)^5} - \frac{60B(a^2 d^2 + abd(3c+5dx) + b^2(6c^2 + 15cdx + 10d^2 x^2)) \log\left(\frac{e(a+bx)}{c+dx}\right)}{(a+bx)^5} - \frac{72a^2 Bd^2}{(a+bx)^5} - \frac{360Ab^2 c^2}{(a+bx)^5} - \frac{900Abcd}{(a+bx)^4} + \frac{720aAbcd}{(a+bx)^5} - \frac{600Ad}{(a+bx)} \right)$$

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(a*g + b*g*x)^6,x]

[Out] (i^2*((-360*A*b^2*c^2)/(a + b*x)^5 - (72*b^2*B*c^2)/(a + b*x)^5 + (720*a*A*b*c*d)/(a + b*x)^5 + (144*a*b*B*c*d)/(a + b*x)^5 - (360*a^2*A*d^2)/(a + b*x)^5 - (72*a^2*B*d^2)/(a + b*x)^5 - (900*A*b*c*d)/(a + b*x)^4 - (135*b*B*c*d)/(a + b*x)^4 + (900*a*A*d^2)/(a + b*x)^4 + (135*a*B*d^2)/(a + b*x)^4 - (600*A*d^2)/(a + b*x)^3 - (20*B*d^2)/(a + b*x)^3 + (30*B*d^3)/((b*c - a*d)*(a + b*x)^2) - (60*B*d^4)/((b*c - a*d)^2*(a + b*x)) - (60*B*d^5*Log[a + b*x])/(b*c - a*d)^3 - (60*B*(a^2*d^2 + a*b*d*(3*c + 5*d*x) + b^2*(6*c^2 + 15*c*d*x + 10*d^2*x^2))*Log[(e*(a + b*x))/(c + d*x]])/(a + b*x)^5 + (60*B*d^5*Log[c + d*x])/(b*c - a*d)^3))/(1800*b^3*g^6)

c) + 600*(b*x*e + a*e)^2*A*d^2*e^4/(d*x + c)^2 + 200*(b*x*e + a*e)^2*B*d^2*e^4/(d*x + c)^2*(b*c/((b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))/((b*x*e + a*e)^5*b^2*c^2*g^6/(d*x + c)^5 - 2*(b*x*e + a*e)^5*a*b*c*d*g^6/(d*x + c)^5 + (b*x*e + a*e)^5*a^2*d^2*g^6/(d*x + c)^5)

maple [B] time = 0.05, size = 1262, normalized size = 4.49

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^6,x)

[Out] $\frac{1}{3}d^3e^{3i^2}(ad-bc)^4/g^6A/(1/(d*x+c)*ae-1/(d*x+c)*b*c/d*e+b/d*e)^3$
 $*a-1/3d^2e^{3i^2}(ad-bc)^4/g^6A/(1/(d*x+c)*ae-1/(d*x+c)*b*c/d*e+b/d*e)^3*b*c-1/2d^2e^{4i^2}(ad-bc)^4/g^6A*b/(1/(d*x+c)*ae-1/(d*x+c)*b*c/d*e+b/d*e)^4*a+1/2d^2e^{4i^2}(ad-bc)^4/g^6A*b^2/(1/(d*x+c)*ae-1/(d*x+c)*b*c/d*e+b/d*e)^4*c+1/5d^2e^{5i^2}(ad-bc)^4/g^6A*b^2/(1/(d*x+c)*ae-1/(d*x+c)*b*c/d*e+b/d*e)^5*a-1/5e^{5i^2}(ad-bc)^4/g^6A*b^3/(1/(d*x+c)*ae-1/(d*x+c)*b*c/d*e+b/d*e)^5*c+1/3d^3e^{3i^2}(ad-bc)^4/g^6B/(1/(d*x+c)*ae-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-1/3d^2e^{3i^2}(ad-bc)^4/g^6B/(1/(d*x+c)*ae-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*c+1/9d^3e^{3i^2}(ad-bc)^4/g^6B/(1/(d*x+c)*ae-1/(d*x+c)*b*c/d*e+b/d*e)^3*a-1/9d^2e^{3i^2}(ad-bc)^4/g^6B/(1/(d*x+c)*ae-1/(d*x+c)*b*c/d*e+b/d*e)^3*b*c-1/2d^2e^{4i^2}(ad-bc)^4/g^6B*b/(1/(d*x+c)*ae-1/(d*x+c)*b*c/d*e+b/d*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+1/2d^2e^{4i^2}(ad-bc)^4/g^6B*b^2/(1/(d*x+c)*ae-1/(d*x+c)*b*c/d*e+b/d*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-1/8d^2e^{4i^2}(ad-bc)^4/g^6B*b/(1/(d*x+c)*ae-1/(d*x+c)*b*c/d*e+b/d*e)^4*a+1/8d^2e^{4i^2}(ad-bc)^4/g^6B*b^2/(1/(d*x+c)*ae-1/(d*x+c)*b*c/d*e+b/d*e)^4*c+1/5d^2e^{5i^2}(ad-bc)^4/g^6B*b^2/(1/(d*x+c)*ae-1/(d*x+c)*b*c/d*e+b/d*e)^5*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-1/5e^{5i^2}(ad-bc)^4/g^6B*b^3/(1/(d*x+c)*ae-1/(d*x+c)*b*c/d*e+b/d*e)^5*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+1/25d^2e^{5i^2}(ad-bc)^4/g^6B*b^2/(1/(d*x+c)*ae-1/(d*x+c)*b*c/d*e+b/d*e)^5*a-1/25e^{5i^2}(ad-bc)^4/g^6B*b^3/(1/(d*x+c)*ae-1/(d*x+c)*b*c/d*e+b/d*e)^5*c$

maxima [B] time = 3.04, size = 3029, normalized size = 10.78

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^6,x, algorithm="maxima")

[Out] $-1/1800*B*d^2*i^2*(60*(10*b^2*x^2 + 5*a*b*x + a^2)*log(b*e*x/(d*x + c) + a*e/(d*x + c)))/(b^8*g^6*x^5 + 5*a*b^7*g^6*x^4 + 10*a^2*b^6*g^6*x^3 + 10*a^3*b$

$$\begin{aligned}
& ^5g^6x^2 + 5a^4b^4g^6x + a^5b^3g^6) + (47a^2b^4c^4 - 278a^3b^3 \\
& *c^3d + 822a^4b^2c^2d^2 - 278a^5b^3c^3d + 47a^6d^4 + 60(10b^6c^2 \\
& d^2 - 5a^5b^3c^3d + a^2b^4d^4)*x^4 - 30(10b^6c^3d - 95a^5b^3c^2 \\
& d^2 + 46a^2b^4c^3d - 9a^3b^3d^4)*x^3 + 10(20b^6c^4 - 140a^5b^3c^3 \\
& d + 537a^2b^4c^2d^2 - 248a^3b^3c^3d + 47a^4b^2d^4)*x^2 + 5(35 \\
& *a^5b^3c^4 - 218a^2b^4c^3d + 702a^3b^3c^2d^2 - 278a^4b^2c^3d + \\
& 47a^5b^2d^4)*x)/((b^12c^4 - 4a^3b^11c^3d + 6a^2b^10c^2d^2 - 4a^3b^9 \\
& c^3d + a^4b^8d^4)*g^6x^5 + 5(a^3b^11c^4 - 4a^2b^10c^3d + 6a^3b^9 \\
& c^2d^2 - 4a^4b^8c^3d + a^5b^7d^4)*g^6x^4 + 10(a^2b^10c^4 - 4 \\
& *a^3b^9c^3d + 6a^4b^8c^2d^2 - 4a^5b^7c^3d + a^6b^6d^4)*g^6x^3 \\
& + 10(a^3b^9c^4 - 4a^4b^8c^3d + 6a^5b^7c^2d^2 - 4a^6b^6c^3d \\
& + a^7b^5d^4)*g^6x^2 + 5(a^4b^8c^4 - 4a^5b^7c^3d + 6a^6b^6c^2d^2 \\
& - 4a^7b^5c^3d + a^8b^4d^4)*g^6x + (a^5b^7c^4 - 4a^6b^6c^3d \\
& + 6a^7b^5c^2d^2 - 4a^8b^4c^3d + a^9b^3d^4)*g^6) + 60(10b^2c^2* \\
& d^3 - 5a^5b^3c^3d + a^2d^5)*\log(bx + a)/((b^8c^5 - 5a^5b^7c^4d + 10a^2 \\
& b^6c^3d^2 - 10a^3b^5c^2d^3 + 5a^4b^4c^3d^4 - a^5b^3d^5)*g^6) - \\
& 60(10b^2c^2*d^3 - 5a^5b^3c^3d^4 + a^2d^5)*\log(dx + c)/((b^8c^5 - 5a^5b^7 \\
& c^4d + 10a^2b^6c^3d^2 - 10a^3b^5c^2d^3 + 5a^4b^4c^3d^4 - a^5b^3 \\
& d^5)*g^6)) - 1/600B*c*d*i^2*(60*(5b*x + a)*\log(b*e*x/(d*x + c) + a*e/(\\
& d*x + c))/((b^7g^6x^5 + 5a^5b^6g^6x^4 + 10a^2b^5g^6x^3 + 10a^3b^4* \\
& g^6x^2 + 5a^4b^3g^6x + a^5b^2g^6) + (27a^5b^4c^4 - 148a^2b^3c^3* \\
& d + 352a^3b^2c^2d^2 - 548a^4b^3c^3d + 77a^5d^4 - 60(5b^5c^3d^3 - \\
& a^5b^4d^4)*x^4 + 30(5b^5c^2d^2 - 46a^5b^4c^3d + 9a^2b^3d^4)*x^3 - \\
& 10(10b^5c^3d - 67a^5b^4c^2d^2 + 248a^2b^3c^3d - 47a^3b^2d^4)*x \\
& ^2 + 5(15b^5c^4 - 88a^5b^4c^3d + 232a^2b^3c^2d^2 - 428a^3b^2c^3d \\
& ^3 + 77a^4b^2d^4)*x)/((b^11c^4 - 4a^5b^10c^3d + 6a^2b^9c^2d^2 - 4a^3 \\
& b^8c^3d + a^4b^7d^4)*g^6x^5 + 5(a^3b^10c^4 - 4a^2b^9c^3d + 6a^3 \\
& b^8c^2d^2 - 4a^4b^7c^3d + a^5b^6d^4)*g^6x^4 + 10(a^2b^9c^4 - \\
& 4a^3b^8c^3d + 6a^4b^7c^2d^2 - 4a^5b^6c^3d + a^6b^5d^4)*g^6x^3 \\
& + 10(a^3b^8c^4 - 4a^4b^7c^3d + 6a^5b^6c^2d^2 - 4a^6b^5c^3d^2 \\
& - 4a^7b^4d^4)*g^6x^2 + 5(a^4b^7c^4 - 4a^5b^6c^3d + 6a^6b^5c^2 \\
& *d^2 - 4a^7b^4c^3d + a^8b^3d^4)*g^6x + (a^5b^6c^4 - 4a^6b^5c^3* \\
& d + 6a^7b^4c^2d^2 - 4a^8b^3c^3d + a^9b^2d^4)*g^6) - 60(5b^3c^3d^4 \\
& - a^5d^5)*\log(bx + a)/((b^7c^5 - 5a^5b^6c^4d + 10a^2b^5c^3d^2 - 10* \\
& a^3b^4c^2d^3 + 5a^4b^3c^3d^4 - a^5b^2d^5)*g^6) + 60(5b^3c^3d^4 - a^5 \\
& ^5)*\log(dx + c)/((b^7c^5 - 5a^5b^6c^4d + 10a^2b^5c^3d^2 - 10a^3b^4 \\
& c^2d^3 + 5a^4b^3c^3d^4 - a^5b^2d^5)*g^6)) - 1/300B*c^2*i^2*((60b^4 \\
& *d^4*x^4 + 12b^4c^4 - 63a^5b^3c^3d + 137a^2b^2c^2d^2 - 163a^3b^3c^3 \\
& d^3 + 137a^4d^4 - 30(b^4c^3d - 9a^5b^3d^4)*x^3 + 10(2b^4c^2d^2 - \\
& 13a^5b^3c^3d + 47a^2b^2d^4)*x^2 - 5(3b^4c^3d - 17a^5b^3c^2d^2 + \\
& 43a^2b^2c^3d - 77a^3b^2d^4)*x)/((b^10c^4 - 4a^5b^9c^3d + 6a^2b^8* \\
& c^2d^2 - 4a^3b^7c^3d + a^4b^6d^4)*g^6x^5 + 5(a^5b^9c^4 - 4a^2b^8 \\
& *c^3d + 6a^3b^7c^2d^2 - 4a^4b^6c^3d + a^5b^5d^4)*g^6x^4 + 10(a^2 \\
& b^8c^4 - 4a^3b^7c^3d + 6a^4b^6c^2d^2 - 4a^5b^5c^3d + a^6b^4 \\
& d^4)*g^6x^3 + 10(a^3b^7c^4 - 4a^4b^6c^3d + 6a^5b^5c^2d^2 - 4
\end{aligned}$$

$$\begin{aligned}
& a^6 b^4 c^3 d^3 + a^7 b^3 c^3 d^4) g^6 x^2 + 5(a^4 b^6 c^4 - 4a^5 b^5 c^3 d + 6 \\
& a^6 b^4 c^2 d^2 - 4a^7 b^3 c^3 d^3 + a^8 b^2 d^4) g^6 x + (a^5 b^5 c^4 - 4a^6 \\
& a^6 b^4 c^3 d + 6a^7 b^3 c^2 d^2 - 4a^8 b^2 c^3 d^3 + a^9 b^1 d^4) g^6) + 60 \log(b e^{ax} / (dx + c) + a e / (dx + c)) / (b^6 g^6 x^5 + 5a b^5 g^6 x^4 + 10a^2 b^4 g^6 x^3 \\
& + 10a^3 b^3 g^6 x^2 + 5a^4 b^2 g^6 x + a^5 b g^6) + 60 d^5 \log(bx + a) / ((b^6 c^5 - 5a b^5 c^4 d + 10a^2 b^4 c^3 d^2 - 10a^3 b^3 c^2 d^3 \\
& + 5a^4 b^2 c^2 d^4 - a^5 b d^5) g^6) - 60 d^5 \log(dx + c) / ((b^6 c^5 - 5a b^5 c^4 d + 10a^2 b^4 c^3 d^2 - 10a^3 b^3 c^2 d^3 + 5a^4 b^2 c^2 d^4 \\
& - a^5 b d^5) g^6)) - 1/10(5b^5 x + a) A^* c d^2 i^2 / (b^7 g^6 x^5 + 5a b^6 g^6 x^4 + 10a^2 b^5 g^6 x^3 + 10a^3 b^4 g^6 x^2 + 5a^4 b^3 g^6 x + a^5 b^2 g^6 \\
& x^6) - 1/30(10b^2 x^2 + 5a b x + a^2) A^* d^2 i^2 / (b^8 g^6 x^5 + 5a b^7 g^6 x^4 + 10a^2 b^6 g^6 x^3 + 10a^3 b^5 g^6 x^2 + 5a^4 b^4 g^6 x + a^5 b^3 g^6 \\
& x^6) - 1/5 A^* c^2 i^2 / (b^6 g^6 x^5 + 5a b^5 g^6 x^4 + 10a^2 b^4 g^6 x^3 + 10a^3 b^3 g^6 x^2 + 5a^4 b^2 g^6 x + a^5 b g^6)
\end{aligned}$$

mupad [B] time = 7.99, size = 941, normalized size = 3.35

$$\frac{B d^5 i^2 \operatorname{atanh}\left(\frac{30 a^3 b^3 d^3 g^6 - 30 a^2 b^4 c d^2 g^6 - 30 a b^5 c^2 d g^6 + 30 b^6 c^3 g^6}{30 b^3 g^6 (a d - b c)^3} + \frac{2 b d x (a^2 d^2 - 2 a b c d + b^2 c^2)}{(a d - b c)^3}\right) \ln\left(\frac{e(a+b x)}{c+d x}\right) \left(a \left(\frac{B a d^2 i^2}{30 b^4 g^6} + \frac{1}{5 a^4}\right)}{15 b^3 g^6 (a d - b c)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x)^6, x)

[Out] (B*d^5*i^2*atanh((30*b^6*c^3*g^6 + 30*a^3*b^3*d^3*g^6 - 30*a*b^5*c^2*d*g^6 - 30*a^2*b^4*c*d^2*g^6)/(30*b^3*g^6*(a*d - b*c)^3) + (2*b*d*x*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))/(a*d - b*c)^3))/(15*b^3*g^6*(a*d - b*c)^3) - (log((e*(a + b*x))/(c + d*x))*(a*((B*a*d^2*i^2)/(30*b^4*g^6) + (B*c*d*i^2)/(10*b^3*g^6)) + x*(b*((B*a*d^2*i^2)/(30*b^4*g^6) + (B*c*d*i^2)/(10*b^3*g^6)) + (2*B*a*d^2*i^2)/(15*b^3*g^6) + (2*B*c*d*i^2)/(5*b^2*g^6)) + (B*c^2*i^2)/(5*b^2*g^6) + (B*d^2*i^2*x^2)/(3*b^2*g^6)))/(5*a^4*x + a^5/b + b^4*x^5 + 10*a^3*b*x^2 + 5*a*b^3*x^4 + 10*a^2*b^2*x^3) - ((60*A*a^4*d^4*i^2 + 360*A*b^4*c^4*i^2 + 47*B*a^4*d^4*i^2 + 72*B*b^4*c^4*i^2 + 60*A*a^2*b^2*c^2*d^2*i^2 + 47*B*a^2*b^2*c^2*d^2*i^2 - 540*A*a*b^3*c^3*d*i^2 + 60*A*a^3*b*c*d^3*i^2 - 153*B*a*b^3*c^3*d*i^2 + 47*B*a^3*b*c*d^3*i^2)/(60*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (x^2*(60*A*a^2*b^2*d^4*i^2 + 47*B*a^2*b^2*d^4*i^2 + 60*A*b^4*c^2*d^2*i^2 + 2*B*b^4*c^2*d^2*i^2 - 120*A*a*b^3*c*d^3*i^2 - 13*B*a*b^3*c*d^3*i^2))/(6*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (x*(60*A*a^3*b*d^4*i^2 + 47*B*a^3*b*d^4*i^2 + 180*A*b^4*c^3*d*i^2 + 27*B*b^4*c^3*d*i^2 - 300*A*a*b^3*c^2*d^2*i^2 + 60*A*a^2*b^2*c*d^3*i^2 - 73*B*a*b^3*c^2*d^2*i^2 + 47*B*a^2*b^2*c*d^3*i^2))/(12*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (d*x^3*(9*B*a*b^3*d^3*i^2 - B*b^4*c*d^2*i^2))/(2*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (B*b^4*d^4*i^2*x^4)/(a^2*d^2

$$+ b^2*c^2 - 2*a*b*c*d))/(30*a^5*b^3*g^6 + 30*b^8*g^6*x^5 + 150*a^4*b^4*g^6*x + 150*a*b^7*g^6*x^4 + 300*a^3*b^5*g^6*x^2 + 300*a^2*b^6*g^6*x^3)$$

sympy [B] time = 92.23, size = 1300, normalized size = 4.63

$$\frac{Bd^5i^2 \log\left(x + \frac{\frac{Ba^4d^9i^2}{(ad-bc)^3} + \frac{4Ba^3bcd^8i^2}{(ad-bc)^3} - \frac{6Ba^2b^2c^2d^7i^2}{(ad-bc)^3} + \frac{4Bab^3c^3d^6i^2}{(ad-bc)^3} + Bada^6i^2 - \frac{Bb^4c^4d^5i^2}{(ad-bc)^3} + Bbcd^5i^2}{2Bbd^6i^2}\right)}{30b^3g^6(ad-bc)^3} + \frac{Bd^5i^2 \log\left(x + \frac{\frac{Ba^4d^9i^2}{(ad-bc)^3} - \frac{4Ba^3bcd^8i^2}{(ad-bc)^3} + \frac{6Ba^2b^2c^2d^7i^2}{(ad-bc)^3} - \frac{4Bab^3c^3d^6i^2}{(ad-bc)^3} + Bada^6i^2 - \frac{Bb^4c^4d^5i^2}{(ad-bc)^3} + Bbcd^5i^2}{2Bbd^6i^2}\right)}{30b^3g^6(ad-bc)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)**6,x)

[Out] $-B*d**5*i**2*\log(x + (-B*a**4*d**9*i**2/(a*d - b*c)**3 + 4*B*a**3*b*c*d**8*i**2/(a*d - b*c)**3 - 6*B*a**2*b**2*c**2*d**7*i**2/(a*d - b*c)**3 + 4*B*a*b**3*c**3*d**6*i**2/(a*d - b*c)**3 + B*a*d**6*i**2 - B*b**4*c**4*d**5*i**2/(a*d - b*c)**3 + B*b*c*d**5*i**2)/(2*B*b*d**6*i**2))/(30*b**3*g**6*(a*d - b*c)**3) + B*d**5*i**2*\log(x + (B*a**4*d**9*i**2/(a*d - b*c)**3 - 4*B*a**3*b*c*d**8*i**2/(a*d - b*c)**3 + 6*B*a**2*b**2*c**2*d**7*i**2/(a*d - b*c)**3 - 4*B*a*b**3*c**3*d**6*i**2/(a*d - b*c)**3 + B*a*d**6*i**2 + B*b**4*c**4*d**5*i**2/(a*d - b*c)**3 + B*b*c*d**5*i**2)/(2*B*b*d**6*i**2))/(30*b**3*g**6*(a*d - b*c)**3) + (-60*A*a**4*d**4*i**2 - 60*A*a**3*b*c*d**3*i**2 - 60*A*a**2*b**2*c**2*d**2*i**2 + 540*A*a*b**3*c**3*d*i**2 - 360*A*b**4*c**4*i**2 - 47*B*a**4*d**4*i**2 - 47*B*a**3*b*c*d**3*i**2 - 47*B*a**2*b**2*c**2*d**2*i**2 + 153*B*a*b**3*c**3*d*i**2 - 72*B*b**4*c**4*i**2 - 60*B*b**4*d**4*i**2*x**4 + x**3*(-270*B*a*b**3*d**4*i**2 + 30*B*b**4*c*d**3*i**2) + x**2*(-600*A*a**2*b**2*d**4*i**2 + 1200*A*a*b**3*c*d**3*i**2 - 600*A*b**4*c**2*d**2*i**2 - 470*B*a**2*b**2*d**4*i**2 + 130*B*a*b**3*c*d**3*i**2 - 20*B*b**4*c**2*d**2*i**2) + x*(-300*A*a**3*b*d**4*i**2 - 300*A*a**2*b**2*c*d**3*i**2 + 1500*A*a*b**3*c**2*d**2*i**2 - 900*A*b**4*c**3*d*i**2 - 235*B*a**3*b*d**4*i**2 - 235*B*a**2*b**2*c*d**3*i**2 + 365*B*a*b**3*c**2*d**2*i**2 - 135*B*b**4*c**3*d*i**2))/(1800*a**7*b**3*d**2*g**6 - 3600*a**6*b**4*c*d*g**6 + 1800*a**5*b**5*c**2*g**6 + x**5*(1800*a**2*b**8*d**2*g**6 - 3600*a*b**9*c*d*g**6 + 1800*b**10*c**2*g**6) + x**4*(9000*a**3*b**7*d**2*g**6 - 18000*a**2*b**8*c*d*g**6 + 9000*a*b**9*c**2*g**6) + x**3*(18000*a**4*b**6*d**2*g**6 - 36000*a**3*b**7*c*d*g**6 + 18000*a**2*b**8*c**2*g**6) + x**2*(18000*a**5*b**5*d**2*g**6 - 36000*a**4*b**6*c*d*g**6 + 18000*a**3*b**7*c**2*g**6) + x*(9000*a**6*b**4*d**2*g**6 - 18000*a**5*b**5*c*d*g**6 + 9000*a**4*b**6*c**2*g**6)) + (-B*a**2*d**2*i**2 - 3*B*a*b*c*d*i**2 - 5*B*a*b*d**2*i**2*x - 6*B*b**2*c**2*i**2 - 15*B*b**2*c*d*i**2*x - 10*B*b**2*d**2*i**2*x**2)*log(e*(a + b*x)/(c + d*x))/(30*a**5*b**3*g**6 + 150*a**4*b**4*g**6*x + 300*a**3*b**5*g**6*x**2 + 300*a**2*b**6*g**6*x**3 + 150*a*b**7*g**6*x**4 + 30*b**8*g**6*x**5)$

$$3.20 \quad \int (ag + bgx)^3 (ci + dix)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) dx$$

Optimal. Leaf size=457

$$\frac{b^3 g^3 i^3 (c + dx)^7 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{7d^4} - \frac{b^2 g^3 i^3 (c + dx)^6 (bc - ad) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{2d^4} - \frac{g^3 i^3 (c + dx)^4 (bc - ad)^3 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{4d^4}$$

[Out] $\frac{1}{140} B (-a*d+b*c)^6 g^3 i^3 x/b^3/d^3 + \frac{1}{280} B (-a*d+b*c)^5 g^3 i^3 (d*x+c)^2/b^2/d^4 + \frac{1}{420} B (-a*d+b*c)^4 g^3 i^3 (d*x+c)^3/b/d^4 - \frac{17}{280} B (-a*d+b*c)^3 g^3 i^3 (d*x+c)^4/d^4 + \frac{1}{14} b B (-a*d+b*c)^2 g^3 i^3 (d*x+c)^5/d^4 - \frac{1}{42} b^2 B (-a*d+b*c) g^3 i^3 (d*x+c)^6/d^4 + \frac{1}{140} B (-a*d+b*c)^7 g^3 i^3 \ln((b*x+a)/(d*x+c))/b^4/d^4 - \frac{1}{4} (-a*d+b*c)^3 g^3 i^3 (d*x+c)^4 (A+B*\ln(e*(b*x+a)/(d*x+c)))/d^4 + \frac{3}{5} b (-a*d+b*c)^2 g^3 i^3 (d*x+c)^5 (A+B*\ln(e*(b*x+a)/(d*x+c)))/d^4 - \frac{1}{2} b^2 (-a*d+b*c) g^3 i^3 (d*x+c)^6 (A+B*\ln(e*(b*x+a)/(d*x+c)))/d^4 + \frac{1}{7} b^3 g^3 i^3 (d*x+c)^7 (A+B*\ln(e*(b*x+a)/(d*x+c)))/d^4 + \frac{1}{140} B (-a*d+b*c)^7 g^3 i^3 \ln(d*x+c)/b^4/d^4$

Rubi [A] time = 0.94, antiderivative size = 416, normalized size of antiderivative = 0.91, number of steps used = 18, number of rules used = 4, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.100$, Rules used = {2528, 2525, 12, 43}

$$\frac{d^2 g^3 i^3 (a + bx)^6 (bc - ad) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{2b^4} + \frac{d^3 g^3 i^3 (a + bx)^7 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{7b^4} + \frac{g^3 i^3 (a + bx)^4 (bc - ad)^3 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{4b^4}$$

Antiderivative was successfully verified.

[In] Int[(a*g + b*g*x)^3*(c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]),x]

[Out] $-(B*(b*c - a*d)^6 g^3 i^3 x)/(140*b^3*d^3) + (B*(b*c - a*d)^5 g^3 i^3 (a + b*x)^2)/(280*b^4*d^2) - (B*(b*c - a*d)^4 g^3 i^3 (a + b*x)^3)/(420*b^4*d) - (17*B*(b*c - a*d)^3 g^3 i^3 (a + b*x)^4)/(280*b^4) - (B*d*(b*c - a*d)^2 g^3 i^3 (a + b*x)^5)/(14*b^4) - (B*d^2*(b*c - a*d) g^3 i^3 (a + b*x)^6)/(42*b^4) + ((b*c - a*d)^3 g^3 i^3 (a + b*x)^4 (A + B*Log[(e*(a + b*x))/(c + d*x)]))/(4*b^4) + (3*d*(b*c - a*d)^2 g^3 i^3 (a + b*x)^5 (A + B*Log[(e*(a + b*x))/(c + d*x)]))/(5*b^4) + (d^2*(b*c - a*d) g^3 i^3 (a + b*x)^6 (A + B*Log[(e*(a + b*x))/(c + d*x)]))/(2*b^4) + (d^3 g^3 i^3 (a + b*x)^7 (A + B*Log[(e*(a + b*x))/(c + d*x)]))/(7*b^4) + (B*(b*c - a*d)^7 g^3 i^3 Log[c + d*x])/(140*b^4*d^4)$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_) /; FreeQ[b, x]]

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && (!IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunci
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int (20c + 20dx)^3 (ag + bgx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) dx &= \int \left(\frac{(-bc + ad)^3 g^3 (20c + 20dx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{d^3} \right) dx \\
&= \frac{(b^3 g^3) \int (20c + 20dx)^6 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) dx}{8000d^3} \\
&= -\frac{2000(bc - ad)^3 g^3 (c + dx)^4 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{d^4} + \\
&= -\frac{2000(bc - ad)^3 g^3 (c + dx)^4 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{d^4} + \\
&= -\frac{2000(bc - ad)^3 g^3 (c + dx)^4 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{d^4} + \\
&= \frac{400B(bc - ad)^6 g^3 x}{7b^3 d^3} + \frac{200B(bc - ad)^5 g^3 (c + dx)^2}{7b^2 d^4} + \dots
\end{aligned}$$

Mathematica [A] time = 0.59, size = 586, normalized size = 1.28

$$g^3 i^3 \left(120d^3 (a + bx)^7 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right) + 420d^2 (a + bx)^6 (bc - ad) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right) + 210(a + bx)^4 (bc - \dots \right)$$

Antiderivative was successfully verified.

[In] Integrate[(a*g + b*g*x)^3*(c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x))],x]

[Out] (g^3*i^3*((120*b^2*B*c*(b*c - a*d)^5*x)/d^3 - (126*b*B*(b*c - a*d)^6*x)/d^3 + (120*a*b*B*(-(b*c) + a*d)^5*x)/d^2 - (60*b*B*c*(b*c - a*d)^4*(a + b*x)^2)/d^2 + (60*a*B*(b*c - a*d)^4*(a + b*x)^2)/d + (63*B*(b*c - a*d)^5*(a + b*x)^2)/d^2 + (40*b*B*c*(b*c - a*d)^3*(a + b*x)^3)/d - (42*B*(b*c - a*d)^4*(a + b*x)^3)/d + 40*a*B*(-(b*c) + a*d)^3*(a + b*x)^3 - 30*b*B*c*(b*c - a*d)^2*(a + b*x)^4 + 30*a*B*d*(b*c - a*d)^2*(a + b*x)^4 + 21*B*(-(b*c) + a*d)^3*(a + b*x)^4 + 24*b*B*c*d*(b*c - a*d)*(a + b*x)^5 - 84*B*d*(b*c - a*d)^2*(a + b*x)^5 + 24*a*B*d^2*(-(b*c) + a*d)*(a + b*x)^5 - 20*b*B*c*d^2*(a + b*x)^6 + 20*a*B*d^3*(a + b*x)^6 + 210*(b*c - a*d)^3*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 504*d*(b*c - a*d)^2*(a + b*x)^5*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 420*d^2*(b*c - a*d)*(a + b*x)^6*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 120*d^3*(a + b*x)^7*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - (120

$*b*B*c*(b*c - a*d)^6*\text{Log}[c + d*x])/d^4 + (120*a*B*(b*c - a*d)^6*\text{Log}[c + d*x])/d^3 + (126*B*(b*c - a*d)^7*\text{Log}[c + d*x])/d^4)/(840*b^4)$

fricas [B] time = 1.54, size = 912, normalized size = 2.00

$120 Ab^7 d^7 g^3 i^3 x^7 + 20 ((21 A - B) b^7 c d^6 + (21 A + B) a b^6 d^7) g^3 i^3 x^6 + 12 ((42 A - 5 B) b^7 c^2 d^5 + 126 A a b^6 c d^6 + (42$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorithm="fricas")

[Out] $1/840*(120*A*b^7*d^7*g^3*i^3*x^7 + 20*((21*A - B)*b^7*c*d^6 + (21*A + B)*a*b^6*d^7)*g^3*i^3*x^6 + 12*((42*A - 5*B)*b^7*c^2*d^5 + 126*A*a*b^6*c*d^6 + (42*A + 5*B)*a^2*b^5*d^7)*g^3*i^3*x^5 + 3*((70*A - 17*B)*b^7*c^3*d^4 + 7*(90*A - 7*B)*a*b^6*c^2*d^5 + 7*(90*A + 7*B)*a^2*b^5*c*d^6 + (70*A + 17*B)*a^3*b^4*d^7)*g^3*i^3*x^4 - 2*(B*b^7*c^4*d^3 - 14*(30*A - 7*B)*a*b^6*c^3*d^4 - 1260*A*a^2*b^5*c^2*d^5 - 14*(30*A + 7*B)*a^3*b^4*c*d^6 - B*a^4*b^3*d^7)*g^3*i^3*x^3 + 3*(B*b^7*c^5*d^2 - 7*B*a*b^6*c^4*d^3 + 84*(5*A - B)*a^2*b^5*c^3*d^4 + 84*(5*A + B)*a^3*b^4*c^2*d^5 + 7*B*a^4*b^3*c*d^6 - B*a^5*b^2*d^7)*g^3*i^3*x^2 - 6*(B*b^7*c^6*d - 7*B*a*b^6*c^5*d^2 + 21*B*a^2*b^5*c^4*d^3 - 140*A*a^3*b^4*c^3*d^4 - 21*B*a^4*b^3*c^2*d^5 + 7*B*a^5*b^2*c*d^6 - B*a^6*b*d^7)*g^3*i^3*x + 6*(35*B*a^4*b^3*c^3*d^4 - 21*B*a^5*b^2*c^2*d^5 + 7*B*a^6*b*c*d^6 - B*a^7*d^7)*g^3*i^3*log(b*x + a) + 6*(B*b^7*c^7 - 7*B*a*b^6*c^6*d + 21*B*a^2*b^5*c^5*d^2 - 35*B*a^3*b^4*c^4*d^3)*g^3*i^3*log(d*x + c) + 6*(20*B*b^7*d^7*g^3*i^3*x^7 + 140*B*a^3*b^4*c^3*d^4*g^3*i^3*x + 70*(B*b^7*c*d^6 + B*a*b^6*d^7)*g^3*i^3*x^6 + 84*(B*b^7*c^2*d^5 + 3*B*a*b^6*c*d^6 + B*a^2*b^5*d^7)*g^3*i^3*x^5 + 35*(B*b^7*c^3*d^4 + 9*B*a*b^6*c^2*d^5 + 9*B*a^2*b^5*c*d^6 + B*a^3*b^4*d^7)*g^3*i^3*x^4 + 140*(B*a*b^6*c^3*d^4 + 3*B*a^2*b^5*c^2*d^5 + B*a^3*b^4*c*d^6)*g^3*i^3*x^3 + 210*(B*a^2*b^5*c^3*d^4 + B*a^3*b^4*c^2*d^5)*g^3*i^3*x^2)*log((b*e*x + a*e)/(d*x + c))/(b^4*d^4)$

giac [B] time = 2.58, size = 10098, normalized size = 22.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorithm="giac")

[Out] $1/840*(6*B*b^15*c^8*g^3*i*e^8*\log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 48*B*a*b^14*c^7*d*g^3*i*e^8*\log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 168*B*a^2*b^13*c^6*d^2*g^3*i*e^8*\log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 336*B*a^3*b^12*c^5*d^3*g^3*i*e^8*\log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 420*B*a^4*b^11*c$

$$\begin{aligned}
& 4*d^4*g^3*i^e^8*\log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 336*B*a^5*b^10*c^3 \\
& *d^5*g^3*i^e^8*\log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 168*B*a^6*b^9*c^2*d^6 \\
& *g^3*i^e^8*\log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 48*B*a^7*b^8*c*d^7*g^3 \\
& i^e^8*\log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 6*B*a^8*b^7*d^8*g^3*i^e^8*\log \\
& (-b*e + (b*x*e + a*e)*d/(d*x + c)) - 42*(b*x*e + a*e)*B*b^14*c^8*d*g^3*i^e^7 \\
& *log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 336*(b*x*e + a*e)*B*a*b \\
& ^13*c^7*d^2*g^3*i^e^7*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) - 117 \\
& 6*(b*x*e + a*e)*B*a^2*b^12*c^6*d^3*g^3*i^e^7*\log(-b*e + (b*x*e + a*e)*d/(d*x \\
& + c))/(d*x + c) + 2352*(b*x*e + a*e)*B*a^3*b^11*c^5*d^4*g^3*i^e^7*\log(-b* \\
& e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) - 2940*(b*x*e + a*e)*B*a^4*b^10*c^4 \\
& *d^5*g^3*i^e^7*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 2352*(b*x \\
& *e + a*e)*B*a^5*b^9*c^3*d^6*g^3*i^e^7*\log(-b*e + (b*x*e + a*e)*d/(d*x + c)) \\
& /(d*x + c) - 1176*(b*x*e + a*e)*B*a^6*b^8*c^2*d^7*g^3*i^e^7*\log(-b*e + (b*x \\
& *e + a*e)*d/(d*x + c))/(d*x + c) + 336*(b*x*e + a*e)*B*a^7*b^7*c*d^8*g^3*i^e \\
& ^7*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) - 42*(b*x*e + a*e)*B*a^ \\
& 8*b^6*d^9*g^3*i^e^7*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 126*(\\
& b*x*e + a*e)^2*B*b^13*c^8*d^2*g^3*i^e^6*\log(-b*e + (b*x*e + a*e)*d/(d*x + c \\
&))/(d*x + c)^2 - 1008*(b*x*e + a*e)^2*B*a*b^12*c^7*d^3*g^3*i^e^6*\log(-b*e + \\
& (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 + 3528*(b*x*e + a*e)^2*B*a^2*b^11*c \\
& ^6*d^4*g^3*i^e^6*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 7056*(\\
& b*x*e + a*e)^2*B*a^3*b^10*c^5*d^5*g^3*i^e^6*\log(-b*e + (b*x*e + a*e)*d/(d*x \\
& + c))/(d*x + c)^2 + 8820*(b*x*e + a*e)^2*B*a^4*b^9*c^4*d^6*g^3*i^e^6*\log(- \\
& b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 7056*(b*x*e + a*e)^2*B*a^5*b \\
& ^8*c^3*d^7*g^3*i^e^6*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 + 35 \\
& 28*(b*x*e + a*e)^2*B*a^6*b^7*c^2*d^8*g^3*i^e^6*\log(-b*e + (b*x*e + a*e)*d/(\\
& d*x + c))/(d*x + c)^2 - 1008*(b*x*e + a*e)^2*B*a^7*b^6*c*d^9*g^3*i^e^6*\log(\\
& -b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 + 126*(b*x*e + a*e)^2*B*a^8*b \\
& ^5*d^10*g^3*i^e^6*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 210*(\\
& b*x*e + a*e)^3*B*b^12*c^8*d^3*g^3*i^e^5*\log(-b*e + (b*x*e + a*e)*d/(d*x + c \\
&))/(d*x + c)^3 + 1680*(b*x*e + a*e)^3*B*a*b^11*c^7*d^4*g^3*i^e^5*\log(-b*e + \\
& (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 - 5880*(b*x*e + a*e)^3*B*a^2*b^10*c \\
& ^6*d^5*g^3*i^e^5*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 + 11760* \\
& (b*x*e + a*e)^3*B*a^3*b^9*c^5*d^6*g^3*i^e^5*\log(-b*e + (b*x*e + a*e)*d/(d*x \\
& + c))/(d*x + c)^3 - 14700*(b*x*e + a*e)^3*B*a^4*b^8*c^4*d^7*g^3*i^e^5*\log(\\
& -b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 + 11760*(b*x*e + a*e)^3*B*a^5 \\
& *b^7*c^3*d^8*g^3*i^e^5*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 - \\
& 5880*(b*x*e + a*e)^3*B*a^6*b^6*c^2*d^9*g^3*i^e^5*\log(-b*e + (b*x*e + a*e)*d \\
& /(d*x + c))/(d*x + c)^3 + 1680*(b*x*e + a*e)^3*B*a^7*b^5*c*d^10*g^3*i^e^5* \\
& \log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 - 210*(b*x*e + a*e)^3*B*a^ \\
& 8*b^4*d^11*g^3*i^e^5*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 + 21 \\
& 0*(b*x*e + a*e)^4*B*b^11*c^8*d^4*g^3*i^e^4*\log(-b*e + (b*x*e + a*e)*d/(d*x \\
& + c))/(d*x + c)^4 - 1680*(b*x*e + a*e)^4*B*a*b^10*c^7*d^5*g^3*i^e^4*\log(-b* \\
& e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 + 5880*(b*x*e + a*e)^4*B*a^2*b^9 \\
& *c^6*d^6*g^3*i^e^4*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 - 1176 \\
& 0*(b*x*e + a*e)^4*B*a^3*b^8*c^5*d^7*g^3*i^e^4*\log(-b*e + (b*x*e + a*e)*d/(d
\end{aligned}$$

$$\begin{aligned}
& *x + c)) / (d*x + c)^4 + 14700*(b*x*e + a*e)^4*B*a^4*b^7*c^4*d^8*g^3*i*e^4*lo \\
& g(-b*e + (b*x*e + a*e)*d/(d*x + c)) / (d*x + c)^4 - 11760*(b*x*e + a*e)^4*B*a \\
& ^5*b^6*c^3*d^9*g^3*i*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) / (d*x + c)^4 \\
& + 5880*(b*x*e + a*e)^4*B*a^6*b^5*c^2*d^10*g^3*i*e^4*log(-b*e + (b*x*e + a*e) \\
&)*d/(d*x + c)) / (d*x + c)^4 - 1680*(b*x*e + a*e)^4*B*a^7*b^4*c*d^11*g^3*i*e^ \\
& 4*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) / (d*x + c)^4 + 210*(b*x*e + a*e)^4*B \\
& *a^8*b^3*d^12*g^3*i*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) / (d*x + c)^4 - \\
& 126*(b*x*e + a*e)^5*B*b^10*c^8*d^5*g^3*i*e^3*log(-b*e + (b*x*e + a*e)*d/(d \\
& *x + c)) / (d*x + c)^5 + 1008*(b*x*e + a*e)^5*B*a*b^9*c^7*d^6*g^3*i*e^3*log(- \\
& b*e + (b*x*e + a*e)*d/(d*x + c)) / (d*x + c)^5 - 3528*(b*x*e + a*e)^5*B*a^2*b \\
& ^8*c^6*d^7*g^3*i*e^3*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) / (d*x + c)^5 + 70 \\
& 56*(b*x*e + a*e)^5*B*a^3*b^7*c^5*d^8*g^3*i*e^3*log(-b*e + (b*x*e + a*e)*d/(\\
& d*x + c)) / (d*x + c)^5 - 8820*(b*x*e + a*e)^5*B*a^4*b^6*c^4*d^9*g^3*i*e^3*lo \\
& g(-b*e + (b*x*e + a*e)*d/(d*x + c)) / (d*x + c)^5 + 7056*(b*x*e + a*e)^5*B*a^ \\
& 5*b^5*c^3*d^10*g^3*i*e^3*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) / (d*x + c)^5 \\
& - 3528*(b*x*e + a*e)^5*B*a^6*b^4*c^2*d^11*g^3*i*e^3*log(-b*e + (b*x*e + a*e) \\
&)*d/(d*x + c)) / (d*x + c)^5 + 1008*(b*x*e + a*e)^5*B*a^7*b^3*c*d^12*g^3*i*e^ \\
& 3*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) / (d*x + c)^5 - 126*(b*x*e + a*e)^5*B \\
& *a^8*b^2*d^13*g^3*i*e^3*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) / (d*x + c)^5 + \\
& 42*(b*x*e + a*e)^6*B*b^9*c^8*d^6*g^3*i*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x \\
& + c)) / (d*x + c)^6 - 336*(b*x*e + a*e)^6*B*a*b^8*c^7*d^7*g^3*i*e^2*log(-b*e \\
& + (b*x*e + a*e)*d/(d*x + c)) / (d*x + c)^6 + 1176*(b*x*e + a*e)^6*B*a^2*b^7* \\
& c^6*d^8*g^3*i*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) / (d*x + c)^6 - 2352* \\
& (b*x*e + a*e)^6*B*a^3*b^6*c^5*d^9*g^3*i*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x \\
& + c)) / (d*x + c)^6 + 2940*(b*x*e + a*e)^6*B*a^4*b^5*c^4*d^10*g^3*i*e^2*log(\\
& -b*e + (b*x*e + a*e)*d/(d*x + c)) / (d*x + c)^6 - 2352*(b*x*e + a*e)^6*B*a^5* \\
& b^4*c^3*d^11*g^3*i*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) / (d*x + c)^6 + \\
& 1176*(b*x*e + a*e)^6*B*a^6*b^3*c^2*d^12*g^3*i*e^2*log(-b*e + (b*x*e + a*e)* \\
& d/(d*x + c)) / (d*x + c)^6 - 336*(b*x*e + a*e)^6*B*a^7*b^2*c*d^13*g^3*i*e^2*l \\
& og(-b*e + (b*x*e + a*e)*d/(d*x + c)) / (d*x + c)^6 + 42*(b*x*e + a*e)^6*B*a^8 \\
& *b*d^14*g^3*i*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) / (d*x + c)^6 - 6*(b* \\
& x*e + a*e)^7*B*b^8*c^8*d^7*g^3*i*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) / (d \\
& *x + c)^7 + 48*(b*x*e + a*e)^7*B*a*b^7*c^7*d^8*g^3*i*e*log(-b*e + (b*x*e + \\
& a*e)*d/(d*x + c)) / (d*x + c)^7 - 168*(b*x*e + a*e)^7*B*a^2*b^6*c^6*d^9*g^3*i \\
& *e*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) / (d*x + c)^7 + 336*(b*x*e + a*e)^7* \\
& B*a^3*b^5*c^5*d^10*g^3*i*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) / (d*x + c)^ \\
& 7 - 420*(b*x*e + a*e)^7*B*a^4*b^4*c^4*d^11*g^3*i*e*log(-b*e + (b*x*e + a*e) \\
&)*d/(d*x + c)) / (d*x + c)^7 + 336*(b*x*e + a*e)^7*B*a^5*b^3*c^3*d^12*g^3*i*e* \\
& log(-b*e + (b*x*e + a*e)*d/(d*x + c)) / (d*x + c)^7 - 168*(b*x*e + a*e)^7*B*a \\
& ^6*b^2*c^2*d^13*g^3*i*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) / (d*x + c)^7 + \\
& 48*(b*x*e + a*e)^7*B*a^7*b*c*d^14*g^3*i*e*log(-b*e + (b*x*e + a*e)*d/(d*x \\
& + c)) / (d*x + c)^7 - 6*(b*x*e + a*e)^7*B*a^8*d^15*g^3*i*e*log(-b*e + (b*x*e \\
& + a*e)*d/(d*x + c)) / (d*x + c)^7 - 210*(b*x*e + a*e)^4*B*b^11*c^8*d^4*g^3*i \\
& e^4*log((b*x*e + a*e)/(d*x + c)) / (d*x + c)^4 + 1680*(b*x*e + a*e)^4*B*a*b^1 \\
& 0*c^7*d^5*g^3*i*e^4*log((b*x*e + a*e)/(d*x + c)) / (d*x + c)^4 - 5880*(b*x*e
\end{aligned}$$

$$\begin{aligned}
& + a^4 e^4 B^2 a^2 b^9 c^6 d^6 g^3 i^4 \log((b x e + a) / (d x + c)) / (d x + c) \\
& ^4 + 11760 (b x e + a)^4 B^3 a^3 b^8 c^5 d^7 g^3 i^4 \log((b x e + a) / (d \\
& x + c)) / (d x + c)^4 - 14700 (b x e + a)^4 B^4 a^4 b^7 c^4 d^8 g^3 i^4 \log((b x e + a) / (d x + c)) / (d x + c)^4 + 11760 (b x e + a)^4 B^5 a^5 b^6 c^3 d^9 g^3 i^4 \log((b x e + a) / (d x + c)) / (d x + c)^4 - 5880 (b x e + a)^4 B^6 a^6 b^5 c^2 d^{10} g^3 i^4 \log((b x e + a) / (d x + c)) / (d x + c)^4 + 1680 (b x e + a)^4 B^7 a^7 b^4 c^2 d^{11} g^3 i^4 \log((b x e + a) / (d x + c)) / (d x + c)^4 - 210 (b x e + a)^4 B^8 a^8 b^3 d^{12} g^3 i^4 \log((b x e + a) / (d x + c)) / (d x + c)^4 + 126 (b x e + a)^5 B^9 a^9 b^2 c^8 d^5 g^3 i^3 \log((b x e + a) / (d x + c)) / (d x + c)^5 - 1008 (b x e + a)^5 B^{10} a^{10} b^1 c^7 d^6 g^3 i^3 \log((b x e + a) / (d x + c)) / (d x + c)^5 + 3528 (b x e + a)^5 B^{11} a^{11} b^2 c^6 d^7 g^3 i^3 \log((b x e + a) / (d x + c)) / (d x + c)^5 - 7056 (b x e + a)^5 B^{12} a^{12} b^3 c^5 d^8 g^3 i^3 \log((b x e + a) / (d x + c)) / (d x + c)^5 + 8820 (b x e + a)^5 B^{13} a^{13} b^4 c^4 d^9 g^3 i^3 \log((b x e + a) / (d x + c)) / (d x + c)^5 - 7056 (b x e + a)^5 B^{14} a^{14} b^5 c^3 d^{10} g^3 i^3 \log((b x e + a) / (d x + c)) / (d x + c)^5 + 3528 (b x e + a)^5 B^{15} a^{15} b^6 c^2 d^{11} g^3 i^3 \log((b x e + a) / (d x + c)) / (d x + c)^5 - 1008 (b x e + a)^5 B^{16} a^{16} b^7 c^2 d^{12} g^3 i^3 \log((b x e + a) / (d x + c)) / (d x + c)^5 + 126 (b x e + a)^5 B^{17} a^{17} b^8 c^2 d^{13} g^3 i^3 \log((b x e + a) / (d x + c)) / (d x + c)^5 - 42 (b x e + a)^6 B^{18} a^{18} b^9 c^8 d^6 g^3 i^2 \log((b x e + a) / (d x + c)) / (d x + c)^6 + 336 (b x e + a)^6 B^{19} a^{19} b^8 c^7 d^7 g^3 i^2 \log((b x e + a) / (d x + c)) / (d x + c)^6 - 1176 (b x e + a)^6 B^{20} a^{20} b^7 c^6 d^8 g^3 i^2 \log((b x e + a) / (d x + c)) / (d x + c)^6 + 2352 (b x e + a)^6 B^{21} a^{21} b^6 c^5 d^9 g^3 i^2 \log((b x e + a) / (d x + c)) / (d x + c)^6 - 2940 (b x e + a)^6 B^{22} a^{22} b^5 c^4 d^{10} g^3 i^2 \log((b x e + a) / (d x + c)) / (d x + c)^6 + 2352 (b x e + a)^6 B^{23} a^{23} b^4 c^3 d^{11} g^3 i^2 \log((b x e + a) / (d x + c)) / (d x + c)^6 - 1176 (b x e + a)^6 B^{24} a^{24} b^3 c^2 d^{12} g^3 i^2 \log((b x e + a) / (d x + c)) / (d x + c)^6 + 336 (b x e + a)^6 B^{25} a^{25} b^2 c^2 d^{13} g^3 i^2 \log((b x e + a) / (d x + c)) / (d x + c)^6 - 42 (b x e + a)^6 B^{26} a^{26} b^2 c^2 d^{14} g^3 i^2 \log((b x e + a) / (d x + c)) / (d x + c)^6 + 6 (b x e + a)^7 B^{27} a^{27} b^8 c^8 d^7 g^3 i \log((b x e + a) / (d x + c)) / (d x + c)^7 - 48 (b x e + a)^7 B^{28} a^{28} b^7 c^7 d^8 g^3 i \log((b x e + a) / (d x + c)) / (d x + c)^7 + 168 (b x e + a)^7 B^{29} a^{29} b^6 c^6 d^9 g^3 i \log((b x e + a) / (d x + c)) / (d x + c)^7 - 336 (b x e + a)^7 B^{30} a^{30} b^5 c^5 d^{10} g^3 i \log((b x e + a) / (d x + c)) / (d x + c)^7 + 420 (b x e + a)^7 B^{31} a^{31} b^4 c^4 d^{11} g^3 i \log((b x e + a) / (d x + c)) / (d x + c)^7 - 336 (b x e + a)^7 B^{32} a^{32} b^3 c^3 d^{12} g^3 i \log((b x e + a) / (d x + c)) / (d x + c)^7 + 168 (b x e + a)^7 B^{33} a^{33} b^2 c^2 d^{13} g^3 i \log((b x e + a) / (d x + c)) / (d x + c)^7 - 48 (b x e + a)^7 B^{34} a^{34} b^2 c^2 d^{14} g^3 i \log((b x e + a) / (d x + c)) / (d x + c)^7 + 6 (b x e + a)^7 B^{35} a^{35} b^8 d^{15} g^3 i \log((b x e + a) / (d x + c)) / (d x + c)^7 + 6 A^8 b^{15} c^8 g^3 i^8 - 48 A^8 a^8 b^{14} c^7 d g^3 i^8 + 168 A^8 a^2 b^{13} c^6 d^2 g^3 i^8 - 336 A^8 a^3 b^{12} c^5 d^3 g^3 i^8 + 420 A^8 a^4 b^{11} c^4 d^4 g^3 i^8 - 336 A^8 a^5 b^{10} c^3 d^5 g^3 i^8 + 168 A^8 a^6 b^9 c^2 d^6 g^3 i^8 - 48 A^8 a^7 b^8 c^2 d^7 g^3 i^8 + 6 A^8 a^8 b^7 d^8 g^3 i^8 - 42 (b x e + a) A^8 b^{14} c^8 d g^3 i^7 / (
\end{aligned}$$

$$\begin{aligned}
& d*x + c) + 6*(b*x*e + a*e)*B*b^{14}*c^8*d*g^3*i*e^7/(d*x + c) + 336*(b*x*e + \\
& a*e)*A*a*b^{13}*c^7*d^2*g^3*i*e^7/(d*x + c) - 48*(b*x*e + a*e)*B*a*b^{13}*c^7*d \\
& ^2*g^3*i*e^7/(d*x + c) - 1176*(b*x*e + a*e)*A*a^2*b^{12}*c^6*d^3*g^3*i*e^7/(d \\
& *x + c) + 168*(b*x*e + a*e)*B*a^2*b^{12}*c^6*d^3*g^3*i*e^7/(d*x + c) + 2352*(\\
& b*x*e + a*e)*A*a^3*b^{11}*c^5*d^4*g^3*i*e^7/(d*x + c) - 336*(b*x*e + a*e)*B*a \\
& ^3*b^{11}*c^5*d^4*g^3*i*e^7/(d*x + c) - 2940*(b*x*e + a*e)*A*a^4*b^{10}*c^4*d^5 \\
& *g^3*i*e^7/(d*x + c) + 420*(b*x*e + a*e)*B*a^4*b^{10}*c^4*d^5*g^3*i*e^7/(d*x \\
& + c) + 2352*(b*x*e + a*e)*A*a^5*b^9*c^3*d^6*g^3*i*e^7/(d*x + c) - 336*(b*x* \\
& e + a*e)*B*a^5*b^9*c^3*d^6*g^3*i*e^7/(d*x + c) - 1176*(b*x*e + a*e)*A*a^6*b \\
& ^8*c^2*d^7*g^3*i*e^7/(d*x + c) + 168*(b*x*e + a*e)*B*a^6*b^8*c^2*d^7*g^3*i* \\
& e^7/(d*x + c) + 336*(b*x*e + a*e)*A*a^7*b^7*c*d^8*g^3*i*e^7/(d*x + c) - 48* \\
& (b*x*e + a*e)*B*a^7*b^7*c*d^8*g^3*i*e^7/(d*x + c) - 42*(b*x*e + a*e)*A*a^8* \\
& b^6*d^9*g^3*i*e^7/(d*x + c) + 6*(b*x*e + a*e)*B*a^8*b^6*d^9*g^3*i*e^7/(d*x \\
& + c) + 126*(b*x*e + a*e)^2*A*b^{13}*c^8*d^2*g^3*i*e^6/(d*x + c)^2 - 39*(b*x*e \\
& + a*e)^2*B*b^{13}*c^8*d^2*g^3*i*e^6/(d*x + c)^2 - 1008*(b*x*e + a*e)^2*A*a*b \\
& ^{12}*c^7*d^3*g^3*i*e^6/(d*x + c)^2 + 312*(b*x*e + a*e)^2*B*a*b^{12}*c^7*d^3*g^ \\
& 3*i*e^6/(d*x + c)^2 + 3528*(b*x*e + a*e)^2*A*a^2*b^{11}*c^6*d^4*g^3*i*e^6/(d* \\
& x + c)^2 - 1092*(b*x*e + a*e)^2*B*a^2*b^{11}*c^6*d^4*g^3*i*e^6/(d*x + c)^2 - \\
& 7056*(b*x*e + a*e)^2*A*a^3*b^{10}*c^5*d^5*g^3*i*e^6/(d*x + c)^2 + 2184*(b*x*e \\
& + a*e)^2*B*a^3*b^{10}*c^5*d^5*g^3*i*e^6/(d*x + c)^2 + 8820*(b*x*e + a*e)^2*A \\
& *a^4*b^9*c^4*d^6*g^3*i*e^6/(d*x + c)^2 - 2730*(b*x*e + a*e)^2*B*a^4*b^9*c^4 \\
& *d^6*g^3*i*e^6/(d*x + c)^2 - 7056*(b*x*e + a*e)^2*A*a^5*b^8*c^3*d^7*g^3*i*e \\
& ^6/(d*x + c)^2 + 2184*(b*x*e + a*e)^2*B*a^5*b^8*c^3*d^7*g^3*i*e^6/(d*x + c) \\
& ^2 + 3528*(b*x*e + a*e)^2*A*a^6*b^7*c^2*d^8*g^3*i*e^6/(d*x + c)^2 - 1092*(b \\
& *x*e + a*e)^2*B*a^6*b^7*c^2*d^8*g^3*i*e^6/(d*x + c)^2 - 1008*(b*x*e + a*e)^ \\
& 2*A*a^7*b^6*c*d^9*g^3*i*e^6/(d*x + c)^2 + 312*(b*x*e + a*e)^2*B*a^7*b^6*c*d \\
& ^9*g^3*i*e^6/(d*x + c)^2 + 126*(b*x*e + a*e)^2*A*a^8*b^5*d^10*g^3*i*e^6/(d* \\
& x + c)^2 - 39*(b*x*e + a*e)^2*B*a^8*b^5*d^10*g^3*i*e^6/(d*x + c)^2 - 210*(b \\
& *x*e + a*e)^3*A*b^{12}*c^8*d^3*g^3*i*e^5/(d*x + c)^3 + 107*(b*x*e + a*e)^3*B* \\
& b^{12}*c^8*d^3*g^3*i*e^5/(d*x + c)^3 + 1680*(b*x*e + a*e)^3*A*a*b^{11}*c^7*d^4* \\
& g^3*i*e^5/(d*x + c)^3 - 856*(b*x*e + a*e)^3*B*a*b^{11}*c^7*d^4*g^3*i*e^5/(d*x \\
& + c)^3 - 5880*(b*x*e + a*e)^3*A*a^2*b^{10}*c^6*d^5*g^3*i*e^5/(d*x + c)^3 + 2 \\
& 996*(b*x*e + a*e)^3*B*a^2*b^{10}*c^6*d^5*g^3*i*e^5/(d*x + c)^3 + 11760*(b*x*e \\
& + a*e)^3*A*a^3*b^9*c^5*d^6*g^3*i*e^5/(d*x + c)^3 - 5992*(b*x*e + a*e)^3*B* \\
& a^3*b^9*c^5*d^6*g^3*i*e^5/(d*x + c)^3 - 14700*(b*x*e + a*e)^3*A*a^4*b^8*c^4 \\
& *d^7*g^3*i*e^5/(d*x + c)^3 + 7490*(b*x*e + a*e)^3*B*a^4*b^8*c^4*d^7*g^3*i*e \\
& ^5/(d*x + c)^3 + 11760*(b*x*e + a*e)^3*A*a^5*b^7*c^3*d^8*g^3*i*e^5/(d*x + c \\
&)^3 - 5992*(b*x*e + a*e)^3*B*a^5*b^7*c^3*d^8*g^3*i*e^5/(d*x + c)^3 - 5880*(\\
& b*x*e + a*e)^3*A*a^6*b^6*c^2*d^9*g^3*i*e^5/(d*x + c)^3 + 2996*(b*x*e + a*e) \\
& ^3*B*a^6*b^6*c^2*d^9*g^3*i*e^5/(d*x + c)^3 + 1680*(b*x*e + a*e)^3*A*a^7*b^5 \\
& *c*d^10*g^3*i*e^5/(d*x + c)^3 - 856*(b*x*e + a*e)^3*B*a^7*b^5*c*d^10*g^3*i* \\
& e^5/(d*x + c)^3 - 210*(b*x*e + a*e)^3*A*a^8*b^4*d^11*g^3*i*e^5/(d*x + c)^3 \\
& + 107*(b*x*e + a*e)^3*B*a^8*b^4*d^11*g^3*i*e^5/(d*x + c)^3 - 107*(b*x*e + a \\
& *e)^4*B*b^{11}*c^8*d^4*g^3*i*e^4/(d*x + c)^4 + 856*(b*x*e + a*e)^4*B*a*b^{10}* \\
& c^7*d^5*g^3*i*e^4/(d*x + c)^4 - 2996*(b*x*e + a*e)^4*B*a^2*b^9*c^6*d^6*g^3*i
\end{aligned}$$

$$\begin{aligned}
& e^4/(dx + c)^4 + 5992*(b*x*e + a*e)^4*B*a^3*b^8*c^5*d^7*g^3*i*e^4/(dx + \\
& c)^4 - 7490*(b*x*e + a*e)^4*B*a^4*b^7*c^4*d^8*g^3*i*e^4/(dx + c)^4 + 5992* \\
& (b*x*e + a*e)^4*B*a^5*b^6*c^3*d^9*g^3*i*e^4/(dx + c)^4 - 2996*(b*x*e + a*e \\
&)^4*B*a^6*b^5*c^2*d^10*g^3*i*e^4/(dx + c)^4 + 856*(b*x*e + a*e)^4*B*a^7*b^ \\
& 4*c*d^11*g^3*i*e^4/(dx + c)^4 - 107*(b*x*e + a*e)^4*B*a^8*b^3*d^12*g^3*i*e \\
& ^4/(dx + c)^4 + 39*(b*x*e + a*e)^5*B*b^10*c^8*d^5*g^3*i*e^3/(dx + c)^5 - \\
& 312*(b*x*e + a*e)^5*B*a*b^9*c^7*d^6*g^3*i*e^3/(dx + c)^5 + 1092*(b*x*e + a \\
& *e)^5*B*a^2*b^8*c^6*d^7*g^3*i*e^3/(dx + c)^5 - 2184*(b*x*e + a*e)^5*B*a^3* \\
& b^7*c^5*d^8*g^3*i*e^3/(dx + c)^5 + 2730*(b*x*e + a*e)^5*B*a^4*b^6*c^4*d^9* \\
& g^3*i*e^3/(dx + c)^5 - 2184*(b*x*e + a*e)^5*B*a^5*b^5*c^3*d^10*g^3*i*e^3/(\\
& dx + c)^5 + 1092*(b*x*e + a*e)^5*B*a^6*b^4*c^2*d^11*g^3*i*e^3/(dx + c)^5 \\
& - 312*(b*x*e + a*e)^5*B*a^7*b^3*c*d^12*g^3*i*e^3/(dx + c)^5 + 39*(b*x*e + \\
& a*e)^5*B*a^8*b^2*d^13*g^3*i*e^3/(dx + c)^5 - 6*(b*x*e + a*e)^6*B*b^9*c^8*d \\
& ^6*g^3*i*e^2/(dx + c)^6 + 48*(b*x*e + a*e)^6*B*a*b^8*c^7*d^7*g^3*i*e^2/(dx \\
& x + c)^6 - 168*(b*x*e + a*e)^6*B*a^2*b^7*c^6*d^8*g^3*i*e^2/(dx + c)^6 + 33 \\
& 6*(b*x*e + a*e)^6*B*a^3*b^6*c^5*d^9*g^3*i*e^2/(dx + c)^6 - 420*(b*x*e + a* \\
& e)^6*B*a^4*b^5*c^4*d^10*g^3*i*e^2/(dx + c)^6 + 336*(b*x*e + a*e)^6*B*a^5*b \\
& ^4*c^3*d^11*g^3*i*e^2/(dx + c)^6 - 168*(b*x*e + a*e)^6*B*a^6*b^3*c^2*d^12* \\
& g^3*i*e^2/(dx + c)^6 + 48*(b*x*e + a*e)^6*B*a^7*b^2*c*d^13*g^3*i*e^2/(dx \\
& + c)^6 - 6*(b*x*e + a*e)^6*B*a^8*b*d^14*g^3*i*e^2/(dx + c)^6*(b*c/((b*c*e \\
& - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))/(b^11*d^4*e^7 - \\
& 7*(b*x*e + a*e)*b^10*d^5*e^6/(dx + c) + 21*(b*x*e + a*e)^2*b^9*d^6*e^5/(d \\
& *x + c)^2 - 35*(b*x*e + a*e)^3*b^8*d^7*e^4/(dx + c)^3 + 35*(b*x*e + a*e)^4 \\
& *b^7*d^8*e^3/(dx + c)^4 - 21*(b*x*e + a*e)^5*b^6*d^9*e^2/(dx + c)^5 + 7*(\\
& b*x*e + a*e)^6*b^5*d^10*e/(dx + c)^6 - (b*x*e + a*e)^7*b^4*d^11/(dx + c)^ \\
& 7)
\end{aligned}$$

maple [B] time = 0.20, size = 11172, normalized size = 24.45

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)^3*(d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A),x)

[Out] result too large to display

maxima [B] time = 1.84, size = 2637, normalized size = 5.77

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorithm="maxima")

$$\begin{aligned}
& x^6 \log(bex/(dx + c) + a/(dx + c)) - 60a^6 \log(bx + a)/b^6 + 60c^6 \\
& * \log(dx + c)/d^6 - (12*(b^5*c*d^4 - a*b^4*d^5)*x^5 - 15*(b^5*c^2*d^3 - a^2 \\
& *b^3*d^5)*x^4 + 20*(b^5*c^3*d^2 - a^3*b^2*d^5)*x^3 - 30*(b^5*c^4*d - a^4*b \\
& *d^5)*x^2 + 60*(b^5*c^5 - a^5*d^5)*x)/(b^5*d^5)) * B*a*b^2*d^3*g^3*i^3 + 1/420 \\
& *(60*x^7*\log(bex/(dx + c) + a/(dx + c)) + 60*a^7*\log(bx + a)/b^7 - 6 \\
& 0*c^7*\log(dx + c)/d^7 - (10*(b^6*c*d^5 - a*b^5*d^6)*x^6 - 12*(b^6*c^2*d^4 \\
& - a^2*b^4*d^6)*x^5 + 15*(b^6*c^3*d^3 - a^3*b^3*d^6)*x^4 - 20*(b^6*c^4*d^2 - \\
& a^4*b^2*d^6)*x^3 + 30*(b^6*c^5*d - a^5*b*d^6)*x^2 - 60*(b^6*c^6 - a^6*d^6) \\
& *x)/(b^6*d^6)) * B*b^3*d^3*g^3*i^3 + A*a^3*c^3*g^3*i^3*x
\end{aligned}$$

mupad [B] time = 6.58, size = 4347, normalized size = 9.51

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)^3*(c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x))),x)
[Out] x*(((140*a*d + 140*b*c)*(((140*a*d + 140*b*c)*((a*c*(((b^2*d^2*g^3*i^3*(28
*A*a*d + 28*A*b*c + B*a*d - B*b*c))/7 - (A*b^2*d^2*g^3*i^3*(140*a*d + 140*b
*c))/140)*(140*a*d + 140*b*c))/(140*b*d) - (b*d*g^3*i^3*(12*A*a^2*d^2 + 12*
A*b^2*c^2 + B*a^2*d^2 - B*b^2*c^2 + 32*A*a*b*c*d))/2 + A*a*b^2*c*d^2*g^3*i^
3))/(b*d) - ((140*a*d + 140*b*c)*((g^3*i^3*(20*A*a^3*d^3 + 20*A*b^3*c^3 + 3
*B*a^3*d^3 - 3*B*b^3*c^3 + 120*A*a*b^2*c^2*d + 120*A*a^2*b*c*d^2 - 6*B*a*b^
2*c^2*d + 6*B*a^2*b*c*d^2))/5 + ((140*a*d + 140*b*c)*(((b^2*d^2*g^3*i^3*(2
8*A*a*d + 28*A*b*c + B*a*d - B*b*c))/7 - (A*b^2*d^2*g^3*i^3*(140*a*d + 140*
b*c))/140)*(140*a*d + 140*b*c))/(140*b*d) - (b*d*g^3*i^3*(12*A*a^2*d^2 + 12
*A*b^2*c^2 + B*a^2*d^2 - B*b^2*c^2 + 32*A*a*b*c*d))/2 + A*a*b^2*c*d^2*g^3*i
^3))/(140*b*d) - (a*c*(((b^2*d^2*g^3*i^3*(28*A*a*d + 28*A*b*c + B*a*d - B*b*
c))/7 - (A*b^2*d^2*g^3*i^3*(140*a*d + 140*b*c))/140))/(b*d)))/(140*b*d) + (
g^3*i^3*(4*A*a^4*d^4 + 4*A*b^4*c^4 + B*a^4*d^4 - B*b^4*c^4 + 144*A*a^2*b^2*
c^2*d^2 + 64*A*a*b^3*c^3*d + 64*A*a^3*b*c*d^3 - 8*B*a*b^3*c^3*d + 8*B*a^3*b
*c*d^3))/(4*b*d)))/(140*b*d) + (a*c*((g^3*i^3*(20*A*a^3*d^3 + 20*A*b^3*c^3
+ 3*B*a^3*d^3 - 3*B*b^3*c^3 + 120*A*a*b^2*c^2*d + 120*A*a^2*b*c*d^2 - 6*B*a
*b^2*c^2*d + 6*B*a^2*b*c*d^2))/5 + ((140*a*d + 140*b*c)*(((b^2*d^2*g^3*i^3
*(28*A*a*d + 28*A*b*c + B*a*d - B*b*c))/7 - (A*b^2*d^2*g^3*i^3*(140*a*d + 1
40*b*c))/140)*(140*a*d + 140*b*c))/(140*b*d) - (b*d*g^3*i^3*(12*A*a^2*d^2 +
12*A*b^2*c^2 + B*a^2*d^2 - B*b^2*c^2 + 32*A*a*b*c*d))/2 + A*a*b^2*c*d^2*g^
3*i^3))/(140*b*d) - (a*c*((b^2*d^2*g^3*i^3*(28*A*a*d + 28*A*b*c + B*a*d - B
*b*c))/7 - (A*b^2*d^2*g^3*i^3*(140*a*d + 140*b*c))/140))/(b*d)))/(b*d) - (a
*c*g^3*i^3*(4*A*a^3*d^3 + 4*A*b^3*c^3 + B*a^3*d^3 - B*b^3*c^3 + 24*A*a*b^2*
c^2*d + 24*A*a^2*b*c*d^2 - 2*B*a*b^2*c^2*d + 2*B*a^2*b*c*d^2))/(b*d)))/(140
*b*d) - (a*c*((a*c*(((b^2*d^2*g^3*i^3*(28*A*a*d + 28*A*b*c + B*a*d - B*b*c
))/7 - (A*b^2*d^2*g^3*i^3*(140*a*d + 140*b*c))/140)*(140*a*d + 140*b*c))/(1
40*b*d) - (b*d*g^3*i^3*(12*A*a^2*d^2 + 12*A*b^2*c^2 + B*a^2*d^2 - B*b^2*c^2
+ 32*A*a*b*c*d))/2 + A*a*b^2*c*d^2*g^3*i^3))/(b*d) - ((140*a*d + 140*b*c)*
```


$$\begin{aligned}
& i^3(12Aa^2d^2 + 12Ab^2c^2 + Ba^2d^2 - Bb^2c^2 + 32Aab^2cd) / \\
& 2 + Aab^2cd^2g^3i^3 / (140abd) - (ac((b^2d^2g^3i^3(28Aad + \\
& 28Ab^2c + B^2ad - B^2bc)) / 7 - (Ab^2d^2g^3i^3(140ad + 140b^2c)) / 140) \\
&) / (bd)) / (2abd) - (acg^3i^3(4Aa^3d^3 + 4Ab^3c^3 + Ba^3d^3 - B \\
& b^3c^3 + 24Aab^2c^2d + 24Aa^2b^2cd^2 - 2B^2ab^2c^2d + 2B^2a^2 \\
& b^2cd^2)) / (2abd) - x^5(((b^2d^2g^3i^3(28Aad + 28Ab^2c + B^2ad - \\
& B^2bc)) / 7 - (Ab^2d^2g^3i^3(140ad + 140b^2c)) / 140) * (140ad + 140b^2 \\
& c)) / (700abd) - (bdg^3i^3(12Aa^2d^2 + 12Ab^2c^2 + Ba^2d^2 - Bb^2 \\
& c^2 + 32Aab^2cd) / 10 + (Aab^2cd^2g^3i^3) / 5) + \log((e(a + bx)) \\
& / (c + dx)) * ((B^2g^3i^3x^4(a^3d^3 + b^3c^3 + 9a^2b^2c^2d + 9a^2b^2cd^2)) / 4 + \\
& B^2a^3c^3g^3i^3x + (B^2b^3d^3g^3i^3x^7) / 7 + (3B^2a^2c^2g^3 \\
& i^3x^2(ad + bc)) / 2 + (B^2b^2d^2g^3i^3x^6(ad + bc)) / 2 + B^2acg^3 \\
& i^3x^3(a^2d^2 + b^2c^2 + 3a^2bcd) + (3B^2bdg^3i^3x^5(a^2d^2 + \\
& b^2c^2 + 3a^2bcd)) / 5) + x^4((g^3i^3(20Aa^3d^3 + 20Ab^3c^3 + 3 \\
& B^2a^3d^3 - 3B^2b^3c^3 + 120Aab^2c^2d + 120Aa^2b^2cd^2 - 6B^2ab^2 \\
& c^2d + 6B^2a^2b^2cd^2)) / 20 + ((140ad + 140b^2c) * (((b^2d^2g^3i^3(2 \\
& 8Aad + 28Ab^2c + B^2ad - B^2bc)) / 7 - (Ab^2d^2g^3i^3(140ad + 140 \\
& b^2c)) / 140) * (140ad + 140b^2c)) / (140abd) - (bdg^3i^3(12Aa^2d^2 + 12 \\
& Ab^2c^2 + Ba^2d^2 - Bb^2c^2 + 32Aab^2cd) / 2 + Aab^2cd^2g^3i^3 \\
&) / (560abd) - (ac((b^2d^2g^3i^3(28Aad + 28Ab^2c + B^2ad - B^2bc)) / 7 - \\
& (Ab^2d^2g^3i^3(140ad + 140b^2c)) / 140)) / (4abd) - (\log(a + b \\
& x) * (B^2a^7d^3g^3i^3 - 35B^2a^4b^3c^3g^3i^3 - 7B^2a^6b^2cd^2g^3i^3 \\
& + 21B^2a^5b^2c^2d^2g^3i^3)) / (140b^4) + (\log(c + dx) * (B^2b^3c^7g^3i^3 \\
& - 35B^2a^3c^4d^3g^3i^3 - 7B^2ab^2c^6d^2g^3i^3 + 21B^2a^2b^2c^5d^2 \\
& g^3i^3)) / (140d^4) + (Ab^3d^3g^3i^3x^7) / 7
\end{aligned}$$

sympy [B] time = 18.76, size = 2161, normalized size = 4.73

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)**3*(d*i*x+c*i)**3*(A+B*ln(e*(b*x+a)/(d*x+c))),x)

[Out] A*b**3*d**3*g**3*i**3*x**7/7 - B*a**4*g**3*i**3*(a**3*d**3 - 7*a**2*b*c*d**2 + 21*a*b**2*c**2*d - 35*b**3*c**3)*log(x + (B*a**7*c*d**6*g**3*i**3 - 7*B*a**6*b*c**2*d**5*g**3*i**3 + 21*B*a**5*b**2*c**3*d**4*g**3*i**3 + B*a**5*d**4*g**3*i**3*(a**3*d**3 - 7*a**2*b*c*d**2 + 21*a*b**2*c**2*d - 35*b**3*c**3)/b - 70*B*a**4*b**3*c**4*d**3*g**3*i**3 - B*a**4*c*d**3*g**3*i**3*(a**3*d**3 - 7*a**2*b*c*d**2 + 21*a*b**2*c**2*d - 35*b**3*c**3) + 21*B*a**3*b**4*c**5*d**2*g**3*i**3 - 7*B*a**2*b**5*c**6*d*g**3*i**3 + B*a*b**6*c**7*g**3*i**3)/(B*a**7*d**7*g**3*i**3 - 7*B*a**6*b*c*d**6*g**3*i**3 + 21*B*a**5*b**2*c**2*d**5*g**3*i**3 - 35*B*a**4*b**3*c**3*d**4*g**3*i**3 - 35*B*a**3*b**4*c**4*d**3*g**3*i**3 + 21*B*a**2*b**5*c**5*d**2*g**3*i**3 - 7*B*a*b**6*c**6*d*g**3*i**3 + B*b**7*c**7*g**3*i**3))/(140*b**4) - B*c**4*g**3*i**3*(35*a**3*d**3 - 21*a**2*b*c*d**2 + 7*a*b**2*c**2*d - b**3*c**3)*log(x + (B*a**7*c*d**6

$$\begin{aligned}
& *6*g^{*3}*i^{*3} - 7*B*a^{*6}*b*c^{*2}*d^{*5}*g^{*3}*i^{*3} + 21*B*a^{*5}*b^{*2}*c^{*3}*d^{*4}*g^{*3}*i^{*3} \\
& - 70*B*a^{*4}*b^{*3}*c^{*4}*d^{*3}*g^{*3}*i^{*3} + 21*B*a^{*3}*b^{*4}*c^{*5}*d^{*2}*g^{*3}*i^{*3} - 7*B*a^{*2}*b^{*5}*c^{*6}*d*g^{*3}*i^{*3} \\
& + B*a*b^{*6}*c^{*7}*g^{*3}*i^{*3} + B*a*b^{*3}*c^{*4}*g^{*3}*i^{*3}*(35*a^{*3}*d^{*3} - 21*a^{*2}*b*c*d^{*2} + 7*a*b^{*2}*c^{*2}*d - b^{*3}*c^{*3}) \\
& - B*b^{*4}*c^{*5}*g^{*3}*i^{*3}*(35*a^{*3}*d^{*3} - 21*a^{*2}*b*c*d^{*2} + 7*a*b^{*2}*c^{*2}*d - b^{*3}*c^{*3})/d \\
& / (B*a^{*7}*d^{*7}*g^{*3}*i^{*3} - 7*B*a^{*6}*b*c*d^{*6}*g^{*3}*i^{*3} + 21*B*a^{*5}*b^{*2}*c^{*2}*d^{*5}*g^{*3}*i^{*3} \\
& - 35*B*a^{*4}*b^{*3}*c^{*3}*d^{*4}*g^{*3}*i^{*3} - 35*B*a^{*3}*b^{*4}*c^{*4}*d^{*3}*g^{*3}*i^{*3} + 21*B*a^{*2}*b^{*5}*c^{*5}*d^{*2}*g^{*3}*i^{*3} \\
& - 7*B*a*b^{*6}*c^{*6}*d*g^{*3}*i^{*3} + B*b^{*7}*c^{*7}*g^{*3}*i^{*3}) / (140*d^{*4}) + x^{*6}*(A*a*b^{*2}*d^{*3}*g^{*3}*i^{*3}/2 \\
& + A*b^{*3}*c*d^{*2}*g^{*3}*i^{*3}/2 + B*a*b^{*2}*d^{*3}*g^{*3}*i^{*3}/42 - B*b^{*3}*c*d^{*2}*g^{*3}*i^{*3}/42) \\
& + x^{*5}*(3*A*a^{*2}*b*d^{*3}*g^{*3}*i^{*3}/5 + 9*A*a*b^{*2}*c*d^{*2}*g^{*3}*i^{*3}/5 + 3*A*b^{*3}*c^{*2}*d*g^{*3}*i^{*3}/5 \\
& + B*a^{*2}*b*d^{*3}*g^{*3}*i^{*3}/14 - B*b^{*3}*c^{*2}*d*g^{*3}*i^{*3}/14) + x^{*4}*(A*a^{*3}*d^{*3}*g^{*3}*i^{*3}/4 \\
& + 9*A*a^{*2}*b*c*d^{*2}*g^{*3}*i^{*3}/4 + 9*A*a*b^{*2}*c^{*2}*d*g^{*3}*i^{*3}/4 + A*b^{*3}*c^{*3}*g^{*3}*i^{*3}/4 \\
& + 17*B*a^{*3}*d^{*3}*g^{*3}*i^{*3}/280 + 7*B*a^{*2}*b*c*d^{*2}*g^{*3}*i^{*3}/40 - 7*B*a*b^{*2}*c^{*2}*d*g^{*3}*i^{*3}/40 \\
& - 17*B*b^{*3}*c^{*3}*g^{*3}*i^{*3}/280) + x^{*3}*(A*a^{*3}*c*d^{*2}*g^{*3}*i^{*3} + 3*A*a^{*2}*b*c^{*2}*d*g^{*3}*i^{*3} \\
& + A*a*b^{*2}*c^{*3}*g^{*3}*i^{*3} + B*a^{*4}*d^{*3}*g^{*3}*i^{*3}/(420*b) + 7*B*a^{*3}*c*d^{*2}*g^{*3}*i^{*3}/30 - 7*B*a*b^{*2}*c^{*3}*g^{*3}*i^{*3}/30 \\
& - B*b^{*3}*c^{*4}*g^{*3}*i^{*3}/(420*d)) + x^{*2}*(3*A*a^{*3}*c^{*2}*d*g^{*3}*i^{*3}/2 + 3*A*a^{*2}*b*c^{*3}*g^{*3}*i^{*3}/2 \\
& - B*a^{*5}*d^{*3}*g^{*3}*i^{*3}/(280*b^{*2}) + B*a^{*4}*c*d^{*2}*g^{*3}*i^{*3}/(40*b) + 3*B*a^{*3}*c^{*2}*d*g^{*3}*i^{*3}/10 - 3*B*a^{*2}*b*c^{*3}*g^{*3}*i^{*3}/10 \\
& - B*a*b^{*2}*c^{*4}*g^{*3}*i^{*3}/(40*d) + B*b^{*3}*c^{*5}*g^{*3}*i^{*3}/(280*d^{*2})) + x*(A*a^{*3}*c^{*3}*g^{*3}*i^{*3} + B*a^{*6}*d^{*3}*g^{*3}*i^{*3}/(140*b^{*3}) \\
& - B*a^{*5}*c*d^{*2}*g^{*3}*i^{*3}/(20*b^{*2}) + 3*B*a^{*4}*c^{*2}*d*g^{*3}*i^{*3}/(20*b) - 3*B*a^{*2}*b*c^{*4}*g^{*3}*i^{*3}/(20*d) \\
& + B*a*b^{*2}*c^{*5}*g^{*3}*i^{*3}/(20*d^{*2}) - B*b^{*3}*c^{*6}*g^{*3}*i^{*3}/(140*d^{*3})) + (B*a^{*3}*c^{*3}*g^{*3}*i^{*3}*x + 3*B*a^{*3}*c^{*2}*d*g^{*3}*i^{*3}*x^{*2}/2 \\
& + B*a^{*3}*c*d^{*2}*g^{*3}*i^{*3}*x^{*3} + B*a^{*3}*d^{*3}*g^{*3}*i^{*3}*x^{*4}/4 + 3*B*a^{*2}*b*c^{*3}*g^{*3}*i^{*3}*x^{*2}/2 + 3*B*a^{*2}*b*c^{*2}*d*g^{*3}*i^{*3}*x^{*3} \\
& + 9*B*a^{*2}*b*c*d^{*2}*g^{*3}*i^{*3}*x^{*4}/4 + 3*B*a^{*2}*b*d^{*3}*g^{*3}*i^{*3}*x^{*5}/5 + B*a*b^{*2}*c^{*3}*g^{*3}*i^{*3}*x^{*3} + 9*B*a*b^{*2}*c^{*2}*d*g^{*3}*i^{*3}*x^{*4}/4 \\
& + 9*B*a*b^{*2}*c*d^{*2}*g^{*3}*i^{*3}*x^{*5}/5 + B*a*b^{*2}*d^{*3}*g^{*3}*i^{*3}*x^{*6}/2 + B*b^{*3}*c^{*3}*g^{*3}*i^{*3}*x^{*4}/4 \\
& + 3*B*b^{*3}*c^{*2}*d*g^{*3}*i^{*3}*x^{*5}/5 + B*b^{*3}*c*d^{*2}*g^{*3}*i^{*3}*x^{*6}/2 + B*b^{*3}*d^{*3}*g^{*3}*i^{*3}*x^{*7}/7)*\log(e*(a + b*x)/(c + d*x))
\end{aligned}$$

$$3.21 \quad \int (ag + bgx)^2 (ci + dix)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) dx$$

Optimal. Leaf size=371

$$\frac{b^2 g^2 i^3 (c + dx)^6 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{6d^3} + \frac{g^2 i^3 (c + dx)^4 (bc - ad)^2 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{4d^3} - \frac{2bg^2 i^3 (c + dx)^5 (bc - ad)}{5d^3}$$

[Out] $-1/60*B*(-a*d+b*c)^5*g^2*i^3*x/b^3/d^2-1/120*B*(-a*d+b*c)^4*g^2*i^3*(d*x+c)^2/b^2/d^3-1/180*B*(-a*d+b*c)^3*g^2*i^3*(d*x+c)^3/b/d^3+7/120*B*(-a*d+b*c)^2*g^2*i^3*(d*x+c)^4/d^3-1/30*b*B*(-a*d+b*c)*g^2*i^3*(d*x+c)^5/d^3-1/60*B*(-a*d+b*c)^6*g^2*i^3*\ln((b*x+a)/(d*x+c))/b^4/d^3+1/4*(-a*d+b*c)^2*g^2*i^3*(d*x+c)^4*(A+B*\ln(e*(b*x+a)/(d*x+c)))/d^3-2/5*b*(-a*d+b*c)*g^2*i^3*(d*x+c)^5*(A+B*\ln(e*(b*x+a)/(d*x+c)))/d^3+1/6*b^2*g^2*i^3*(d*x+c)^6*(A+B*\ln(e*(b*x+a)/(d*x+c)))/d^3-1/60*B*(-a*d+b*c)^6*g^2*i^3*\ln(d*x+c)/b^4/d^3$

Rubi [A] time = 0.67, antiderivative size = 330, normalized size of antiderivative = 0.89, number of steps used = 14, number of rules used = 4, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.100$, Rules used = {2528, 2525, 12, 43}

$$\frac{b^2 g^2 i^3 (c + dx)^6 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{6d^3} + \frac{g^2 i^3 (c + dx)^4 (bc - ad)^2 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{4d^3} - \frac{2bg^2 i^3 (c + dx)^5 (bc - ad)}{5d^3}$$

Antiderivative was successfully verified.

[In] $\text{Int}[(a*g + b*g*x)^2*(c*i + d*i*x)^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]), x]$

[Out] $-(B*(b*c - a*d)^5*g^2*i^3*x)/(60*b^3*d^2) - (B*(b*c - a*d)^4*g^2*i^3*(c + d*x)^2)/(120*b^2*d^3) - (B*(b*c - a*d)^3*g^2*i^3*(c + d*x)^3)/(180*b*d^3) + (7*B*(b*c - a*d)^2*g^2*i^3*(c + d*x)^4)/(120*d^3) - (b*B*(b*c - a*d)*g^2*i^3*(c + d*x)^5)/(30*d^3) - (B*(b*c - a*d)^6*g^2*i^3*\text{Log}[a + b*x])/(60*b^4*d^3) + ((b*c - a*d)^2*g^2*i^3*(c + d*x)^4*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(4*d^3) - (2*b*(b*c - a*d)*g^2*i^3*(c + d*x)^5*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(5*d^3) + (b^2*g^2*i^3*(c + d*x)^6*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(6*d^3)$

Rule 12

$\text{Int}[(a_)*(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \&\& \text{!MatchQ}[u, (b_)*(v_)] /; \text{FreeQ}[b, x]$

Rule 43

$\text{Int}[(a_ + (b_)*(x_))^m*((c_ + (d_)*(x_))^n), x_Symbol] \rightarrow \text{Int}[\text{ExpandIntegrand}[(a + b*x)^m*(c + d*x)^n, x], x] /; \text{FreeQ}[\{a, b, c, d, n\},$

$x]$ && NeQ[$b*c - a*d, 0]$ && IGtQ[$m, 0]$ && (!IntegerQ[n] || (EqQ[$c, 0]$ && LeQ[$7*m + 4*n + 4, 0]$) || LtQ[$9*m + 5*(n + 1), 0]$ || GtQ[$m + n + 2, 0]$)

Rule 2525

Int[$((a_.) + \text{Log}[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_.))^(m_.)$, $x_Symbol]$:> Simp[$((d + e*x)^(m + 1)*(a + b*\text{Log}[c*Rfx^p])^n)/(e*(m + 1))$, $x]$ - Dist[$(b*n*p)/(e*(m + 1))$, Int[SimplifyIntegrand[$((d + e*x)^(m + 1)*(a + b*\text{Log}[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x]$, $x]$ /; FreeQ[$\{a, b, c, d, e, m, p\}, x]$ && RationalFunctionQ[Rfx, $x]$ && IGtQ[$n, 0]$ && (EqQ[$n, 1]$ || IntegerQ[m]) && NeQ[$m, -1]$

Rule 2528

Int[$((a_.) + \text{Log}[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_)$, $x_Symbol]$:> With[$\{u = \text{ExpandIntegrand}[(a + b*\text{Log}[c*Rfx^p])^n, RGx, x]\}$, Int[$u, x]$ /; SumQ[$u]$] /; FreeQ[$\{a, b, c, p\}, x]$ && RationalFunctionQ[Rfx, $x]$ && RationalFunctionQ[RGx, $x]$ && IGtQ[$n, 0]$

Rubi steps

$$\begin{aligned} \int (21c + 21dx)^3 (ag + bgx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) dx &= \int \left(\frac{(-bc + ad)^2 g^2 (21c + 21dx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{d^2} \right) dx \\ &= \frac{(b^2 g^2) \int (21c + 21dx)^5 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) dx}{441d^2} \quad (2b) \\ &= \frac{9261(bc - ad)^2 g^2 (c + dx)^4 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{4d^3} \quad 185 \\ &= \frac{9261(bc - ad)^2 g^2 (c + dx)^4 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{4d^3} \quad 185 \\ &= \frac{9261(bc - ad)^2 g^2 (c + dx)^4 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{4d^3} \quad 185 \\ &= -\frac{3087B(bc - ad)^5 g^2 x}{20b^3 d^2} - \frac{3087B(bc - ad)^4 g^2 (c + dx)^2}{40b^2 d^3} \end{aligned}$$

Mathematica [A] time = 0.32, size = 429, normalized size = 1.16

$$g^2 i^3 \left(60b^6(c+dx)^6 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right) - 144b^5(c+dx)^5(bc-ad) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right) + 90b^4(c+dx)^4(bc-a \right.$$

Antiderivative was successfully verified.

[In] Integrate[(a*g + b*g*x)^2*(c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])], x]

[Out] (g^2*i^3*(-15*B*(b*c - a*d)^3*(6*b*d*(b*c - a*d)^2*x + 3*b^2*(b*c - a*d)*(c + d*x)^2 + 2*b^3*(c + d*x)^3 + 6*(b*c - a*d)^3*Log[a + b*x]) + 12*B*(b*c - a*d)^2*(12*b*d*(b*c - a*d)^3*x + 6*b^2*(b*c - a*d)^2*(c + d*x)^2 + 4*b^3*(b*c - a*d)*(c + d*x)^3 + 3*b^4*(c + d*x)^4 + 12*(b*c - a*d)^4*Log[a + b*x]) - B*(b*c - a*d)*(60*b*d*(b*c - a*d)^4*x + 30*b^2*(b*c - a*d)^3*(c + d*x)^2 + 20*b^3*(b*c - a*d)^2*(c + d*x)^3 + 15*b^4*(b*c - a*d)*(c + d*x)^4 + 12*b^5*(c + d*x)^5 + 60*(b*c - a*d)^5*Log[a + b*x]) + 90*b^4*(b*c - a*d)^2*(c + d*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 144*b^5*(b*c - a*d)*(c + d*x)^5*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 60*b^6*(c + d*x)^6*(A + B*Log[(e*(a + b*x))/(c + d*x)])))/(360*b^4*d^3)

fricas [B] time = 1.21, size = 722, normalized size = 1.95

$$60 Ab^6 d^6 g^2 i^3 x^6 + 12 \left((18 A - B) b^6 c d^5 + (12 A + B) a b^5 d^6 \right) g^2 i^3 x^5 + 3 \left((90 A - 13 B) b^6 c^2 d^4 + 6 (30 A + B) a b^5 c d^5 \right.$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c))), x, algorithm="fricas")

[Out] 1/360*(60*A*b^6*d^6*g^2*i^3*x^6 + 12*((18*A - B)*b^6*c*d^5 + (12*A + B)*a*b^5*d^6)*g^2*i^3*x^5 + 3*((90*A - 13*B)*b^6*c^2*d^4 + 6*(30*A + B)*a*b^5*c*d^5 + (30*A + 7*B)*a^2*b^4*d^6)*g^2*i^3*x^4 + 2*((60*A - 19*B)*b^6*c^3*d^3 + 3*(120*A - 7*B)*a*b^5*c^2*d^4 + 3*(60*A + 13*B)*a^2*b^4*c*d^5 + B*a^3*b^3*d^6)*g^2*i^3*x^3 - 3*(B*b^6*c^4*d^2 - 2*(60*A - 17*B)*a*b^5*c^3*d^3 - 30*(6*A + B)*a^2*b^4*c^2*d^4 - 6*B*a^3*b^3*c*d^5 + B*a^4*b^2*d^6)*g^2*i^3*x^2 + 6*(B*b^6*c^5*d - 6*B*a*b^5*c^4*d^2 + 5*(12*A - B)*a^2*b^4*c^3*d^3 + 15*B*a^3*b^3*c^2*d^4 - 6*B*a^4*b^2*c*d^5 + B*a^5*b*d^6)*g^2*i^3*x + 6*(20*B*a^3*b^3*c^3*d^3 - 15*B*a^4*b^2*c^2*d^4 + 6*B*a^5*b*c*d^5 - B*a^6*d^6)*g^2*i^3*log(b*x + a) - 6*(B*b^6*c^6 - 6*B*a*b^5*c^5*d + 15*B*a^2*b^4*c^4*d^2)*g^2*i^3*log(d*x + c) + 6*(10*B*b^6*d^6*g^2*i^3*x^6 + 60*B*a^2*b^4*c^3*d^3*g^2*i^3*x^5 + 12*(3*B*b^6*c*d^5 + 2*B*a*b^5*d^6)*g^2*i^3*x^5 + 15*(3*B*b^6*c^2*d^4 + 6*B*a*b^5*c*d^5 + B*a^2*b^4*d^6)*g^2*i^3*x^4 + 20*(B*b^6*c^3*d^3 + 6*B*a*b^5

$$*c^2*d^4 + 3*B*a^2*b^4*c*d^5)*g^2*i^3*x^3 + 30*(2*B*a*b^5*c^3*d^3 + 3*B*a^2*b^4*c^2*d^4)*g^2*i^3*x^2)*\log((b*e*x + a*e)/(d*x + c)))/(b^4*d^3)$$

giac [B] time = 1.97, size = 7963, normalized size = 21.46

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorithm="giac")

[Out]
$$\begin{aligned} & -1/360*(6*B*b^{13}*c^7*g^2*i^e^7*\log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 42*B \\ & *a*b^{12}*c^6*d*g^2*i^e^7*\log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 126*B*a^2*b \\ & ^{11}*c^5*d^2*g^2*i^e^7*\log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 210*B*a^3*b^1 \\ & 0*c^4*d^3*g^2*i^e^7*\log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 210*B*a^4*b^9*c \\ & ^3*d^4*g^2*i^e^7*\log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 126*B*a^5*b^8*c^2* \\ & d^5*g^2*i^e^7*\log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 42*B*a^6*b^7*c*d^6*g^2 \\ & *i^e^7*\log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 6*B*a^7*b^6*d^7*g^2*i^e^7* \\ & \log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 36*(b*x*e + a*e)*B*b^{12}*c^7*d*g^2*i^e \\ & ^6*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 252*(b*x*e + a*e)*B*a \\ & *b^{11}*c^6*d^2*g^2*i^e^6*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) - 7 \\ & 56*(b*x*e + a*e)*B*a^2*b^{10}*c^5*d^3*g^2*i^e^6*\log(-b*e + (b*x*e + a*e)*d/(d \\ & *x + c))/(d*x + c) + 1260*(b*x*e + a*e)*B*a^3*b^9*c^4*d^4*g^2*i^e^6*\log(-b* \\ & e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) - 1260*(b*x*e + a*e)*B*a^4*b^8*c^3 \\ & *d^5*g^2*i^e^6*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 756*(b*x*e \\ & + a*e)*B*a^5*b^7*c^2*d^6*g^2*i^e^6*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(\\ & d*x + c) - 252*(b*x*e + a*e)*B*a^6*b^6*c*d^7*g^2*i^e^6*\log(-b*e + (b*x*e + \\ & a*e)*d/(d*x + c))/(d*x + c) + 36*(b*x*e + a*e)*B*a^7*b^5*d^8*g^2*i^e^6*\log(\\ & -b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 90*(b*x*e + a*e)^2*B*b^{11}*c^7 \\ & *d^2*g^2*i^e^5*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 630*(b*x \\ & *e + a*e)^2*B*a*b^{10}*c^6*d^3*g^2*i^e^5*\log(-b*e + (b*x*e + a*e)*d/(d*x + c) \\ &)/(d*x + c)^2 + 1890*(b*x*e + a*e)^2*B*a^2*b^9*c^5*d^4*g^2*i^e^5*\log(-b*e + \\ & (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 3150*(b*x*e + a*e)^2*B*a^3*b^8*c^4 \\ & *d^5*g^2*i^e^5*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 + 3150*(b \\ & *x*e + a*e)^2*B*a^4*b^7*c^3*d^6*g^2*i^e^5*\log(-b*e + (b*x*e + a*e)*d/(d*x + \\ & c))/(d*x + c)^2 - 1890*(b*x*e + a*e)^2*B*a^5*b^6*c^2*d^7*g^2*i^e^5*\log(-b* \\ & e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 + 630*(b*x*e + a*e)^2*B*a^6*b^5* \\ & c*d^8*g^2*i^e^5*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 90*(b*x \\ & *e + a*e)^2*B*a^7*b^4*d^9*g^2*i^e^5*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(\\ & d*x + c)^2 - 120*(b*x*e + a*e)^3*B*b^{10}*c^7*d^3*g^2*i^e^4*\log(-b*e + (b*x*e \\ & + a*e)*d/(d*x + c))/(d*x + c)^3 + 840*(b*x*e + a*e)^3*B*a*b^9*c^6*d^4*g^2* \\ & i^e^4*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 - 2520*(b*x*e + a*e) \\ & ^3*B*a^2*b^8*c^5*d^5*g^2*i^e^4*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x \\ & + c)^3 + 4200*(b*x*e + a*e)^3*B*a^3*b^7*c^4*d^6*g^2*i^e^4*\log(-b*e + (b*x*e \\ & + a*e)*d/(d*x + c))/(d*x + c)^3 - 4200*(b*x*e + a*e)^3*B*a^4*b^6*c^3*d^7*g \end{aligned}$$

$$\begin{aligned}
& ^2*i*e^4*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 + 2520*(b*x*e + \\
& a*e)^3*B*a^5*b^5*c^2*d^8*g^2*i*e^4*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d \\
& *x + c)^3 - 840*(b*x*e + a*e)^3*B*a^6*b^4*c*d^9*g^2*i*e^4*\log(-b*e + (b*x*e \\
& + a*e)*d/(d*x + c))/(d*x + c)^3 + 120*(b*x*e + a*e)^3*B*a^7*b^3*d^10*g^2*i \\
& *e^4*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 + 90*(b*x*e + a*e)^4 \\
& *B*b^9*c^7*d^4*g^2*i*e^3*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 \\
& - 630*(b*x*e + a*e)^4*B*a*b^8*c^6*d^5*g^2*i*e^3*\log(-b*e + (b*x*e + a*e)*d/ \\
& (d*x + c))/(d*x + c)^4 + 1890*(b*x*e + a*e)^4*B*a^2*b^7*c^5*d^6*g^2*i*e^3*l \\
& og(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 - 3150*(b*x*e + a*e)^4*B*a \\
& ^3*b^6*c^4*d^7*g^2*i*e^3*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 \\
& + 3150*(b*x*e + a*e)^4*B*a^4*b^5*c^3*d^8*g^2*i*e^3*\log(-b*e + (b*x*e + a*e) \\
& *d/(d*x + c))/(d*x + c)^4 - 1890*(b*x*e + a*e)^4*B*a^5*b^4*c^2*d^9*g^2*i*e^ \\
& 3*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 + 630*(b*x*e + a*e)^4*B \\
& *a^6*b^3*c*d^10*g^2*i*e^3*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 \\
& - 90*(b*x*e + a*e)^4*B*a^7*b^2*d^11*g^2*i*e^3*\log(-b*e + (b*x*e + a*e)*d/(\\
& d*x + c))/(d*x + c)^4 - 36*(b*x*e + a*e)^5*B*b^8*c^7*d^5*g^2*i*e^2*\log(-b*e \\
& + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^5 + 252*(b*x*e + a*e)^5*B*a*b^7*c^6 \\
& *d^6*g^2*i*e^2*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^5 - 756*(b*x \\
& *e + a*e)^5*B*a^2*b^6*c^5*d^7*g^2*i*e^2*\log(-b*e + (b*x*e + a*e)*d/(d*x + c \\
&))/(d*x + c)^5 + 1260*(b*x*e + a*e)^5*B*a^3*b^5*c^4*d^8*g^2*i*e^2*\log(-b*e \\
& + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^5 - 1260*(b*x*e + a*e)^5*B*a^4*b^4*c \\
& ^3*d^9*g^2*i*e^2*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^5 + 756*(b \\
& *x*e + a*e)^5*B*a^5*b^3*c^2*d^10*g^2*i*e^2*\log(-b*e + (b*x*e + a*e)*d/(d*x \\
& + c))/(d*x + c)^5 - 252*(b*x*e + a*e)^5*B*a^6*b^2*c*d^11*g^2*i*e^2*\log(-b*e \\
& + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^5 + 36*(b*x*e + a*e)^5*B*a^7*b*d^12 \\
& *g^2*i*e^2*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^5 + 6*(b*x*e + a \\
& *e)^6*B*b^7*c^7*d^6*g^2*i*e*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) \\
& ^6 - 42*(b*x*e + a*e)^6*B*a*b^6*c^6*d^7*g^2*i*e*\log(-b*e + (b*x*e + a*e)*d/ \\
& (d*x + c))/(d*x + c)^6 + 126*(b*x*e + a*e)^6*B*a^2*b^5*c^5*d^8*g^2*i*e*\log(\\
& -b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^6 - 210*(b*x*e + a*e)^6*B*a^3*b \\
& ^4*c^4*d^9*g^2*i*e*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^6 + 210* \\
& (b*x*e + a*e)^6*B*a^4*b^3*c^3*d^10*g^2*i*e*\log(-b*e + (b*x*e + a*e)*d/(d*x \\
& + c))/(d*x + c)^6 - 126*(b*x*e + a*e)^6*B*a^5*b^2*c^2*d^11*g^2*i*e*\log(-b*e \\
& + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^6 + 42*(b*x*e + a*e)^6*B*a^6*b*c*d^ \\
& 12*g^2*i*e*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^6 - 6*(b*x*e + a \\
& *e)^6*B*a^7*d^13*g^2*i*e*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^6 \\
& + 120*(b*x*e + a*e)^3*B*b^10*c^7*d^3*g^2*i*e^4*\log((b*x*e + a*e)/(d*x + c)) \\
& /(d*x + c)^3 - 840*(b*x*e + a*e)^3*B*a*b^9*c^6*d^4*g^2*i*e^4*\log((b*x*e + a \\
& *e)/(d*x + c))/(d*x + c)^3 + 2520*(b*x*e + a*e)^3*B*a^2*b^8*c^5*d^5*g^2*i*e \\
& ^4*\log((b*x*e + a*e)/(d*x + c))/(d*x + c)^3 - 4200*(b*x*e + a*e)^3*B*a^3*b^ \\
& 7*c^4*d^6*g^2*i*e^4*\log((b*x*e + a*e)/(d*x + c))/(d*x + c)^3 + 4200*(b*x*e \\
& + a*e)^3*B*a^4*b^6*c^3*d^7*g^2*i*e^4*\log((b*x*e + a*e)/(d*x + c))/(d*x + c) \\
& ^3 - 2520*(b*x*e + a*e)^3*B*a^5*b^5*c^2*d^8*g^2*i*e^4*\log((b*x*e + a*e)/(d* \\
& x + c))/(d*x + c)^3 + 840*(b*x*e + a*e)^3*B*a^6*b^4*c*d^9*g^2*i*e^4*\log((b \\
& *x*e + a*e)/(d*x + c))/(d*x + c)^3 - 120*(b*x*e + a*e)^3*B*a^7*b^3*d^10*g^2*
\end{aligned}$$

$$\begin{aligned}
& i^e^4 \log((b*x*e + a*e)/(d*x + c))/(d*x + c)^3 - 90*(b*x*e + a*e)^4*B*b^9*c \\
& ^7*d^4*g^2*i^e^3 \log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 + 630*(b*x*e + a \\
& e)^4*B*a*b^8*c^6*d^5*g^2*i^e^3 \log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 - 1 \\
& 890*(b*x*e + a*e)^4*B*a^2*b^7*c^5*d^6*g^2*i^e^3 \log((b*x*e + a*e)/(d*x + c) \\
&)/(d*x + c)^4 + 3150*(b*x*e + a*e)^4*B*a^3*b^6*c^4*d^7*g^2*i^e^3 \log((b*x*e \\
& + a*e)/(d*x + c))/(d*x + c)^4 - 3150*(b*x*e + a*e)^4*B*a^4*b^5*c^3*d^8*g^2 \\
& *i^e^3 \log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 + 1890*(b*x*e + a*e)^4*B*a^ \\
& 5*b^4*c^2*d^9*g^2*i^e^3 \log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 - 630*(b*x \\
& *e + a*e)^4*B*a^6*b^3*c*d^10*g^2*i^e^3 \log((b*x*e + a*e)/(d*x + c))/(d*x + \\
& c)^4 + 90*(b*x*e + a*e)^4*B*a^7*b^2*d^11*g^2*i^e^3 \log((b*x*e + a*e)/(d*x + \\
& c))/(d*x + c)^4 + 36*(b*x*e + a*e)^5*B*b^8*c^7*d^5*g^2*i^e^2 \log((b*x*e + \\
& a*e)/(d*x + c))/(d*x + c)^5 - 252*(b*x*e + a*e)^5*B*a*b^7*c^6*d^6*g^2*i^e^2 \\
& * \log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 + 756*(b*x*e + a*e)^5*B*a^2*b^6*c \\
& ^5*d^7*g^2*i^e^2 \log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 - 1260*(b*x*e + a \\
& *e)^5*B*a^3*b^5*c^4*d^8*g^2*i^e^2 \log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 \\
& + 1260*(b*x*e + a*e)^5*B*a^4*b^4*c^3*d^9*g^2*i^e^2 \log((b*x*e + a*e)/(d*x + \\
& c))/(d*x + c)^5 - 756*(b*x*e + a*e)^5*B*a^5*b^3*c^2*d^10*g^2*i^e^2 \log((b* \\
& x*e + a*e)/(d*x + c))/(d*x + c)^5 + 252*(b*x*e + a*e)^5*B*a^6*b^2*c*d^11*g^ \\
& 2*i^e^2 \log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 - 36*(b*x*e + a*e)^5*B*a^7 \\
& *b*d^12*g^2*i^e^2 \log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 - 6*(b*x*e + a*e) \\
& ^6*B*b^7*c^7*d^6*g^2*i^e \log((b*x*e + a*e)/(d*x + c))/(d*x + c)^6 + 42*(b* \\
& x*e + a*e)^6*B*a*b^6*c^6*d^7*g^2*i^e \log((b*x*e + a*e)/(d*x + c))/(d*x + c) \\
& ^6 - 126*(b*x*e + a*e)^6*B*a^2*b^5*c^5*d^8*g^2*i^e \log((b*x*e + a*e)/(d*x + \\
& c))/(d*x + c)^6 + 210*(b*x*e + a*e)^6*B*a^3*b^4*c^4*d^9*g^2*i^e \log((b*x*e \\
& + a*e)/(d*x + c))/(d*x + c)^6 - 210*(b*x*e + a*e)^6*B*a^4*b^3*c^3*d^10*g^2 \\
& *i^e \log((b*x*e + a*e)/(d*x + c))/(d*x + c)^6 + 126*(b*x*e + a*e)^6*B*a^5*b \\
& ^2*c^2*d^11*g^2*i^e \log((b*x*e + a*e)/(d*x + c))/(d*x + c)^6 - 42*(b*x*e + \\
& a*e)^6*B*a^6*b*c*d^12*g^2*i^e \log((b*x*e + a*e)/(d*x + c))/(d*x + c)^6 + 6* \\
& (b*x*e + a*e)^6*B*a^7*d^13*g^2*i^e \log((b*x*e + a*e)/(d*x + c))/(d*x + c)^6 \\
& + 6*A*b^13*c^7*g^2*i^e^7 - 2*B*b^13*c^7*g^2*i^e^7 - 42*A*a*b^12*c^6*d*g^2* \\
& i^e^7 + 14*B*a*b^12*c^6*d*g^2*i^e^7 + 126*A*a^2*b^11*c^5*d^2*g^2*i^e^7 - 42 \\
& *B*a^2*b^11*c^5*d^2*g^2*i^e^7 - 210*A*a^3*b^10*c^4*d^3*g^2*i^e^7 + 70*B*a^3 \\
& *b^10*c^4*d^3*g^2*i^e^7 + 210*A*a^4*b^9*c^3*d^4*g^2*i^e^7 - 70*B*a^4*b^9*c^ \\
& 3*d^4*g^2*i^e^7 - 126*A*a^5*b^8*c^2*d^5*g^2*i^e^7 + 42*B*a^5*b^8*c^2*d^5*g^ \\
& 2*i^e^7 + 42*A*a^6*b^7*c*d^6*g^2*i^e^7 - 14*B*a^6*b^7*c*d^6*g^2*i^e^7 - 6*A \\
& *a^7*b^6*d^7*g^2*i^e^7 + 2*B*a^7*b^6*d^7*g^2*i^e^7 - 36*(b*x*e + a*e)*A*b^1 \\
& 2*c^7*d*g^2*i^e^6/(d*x + c) + 18*(b*x*e + a*e)*B*b^12*c^7*d*g^2*i^e^6/(d*x \\
& + c) + 252*(b*x*e + a*e)*A*a*b^11*c^6*d^2*g^2*i^e^6/(d*x + c) - 126*(b*x*e \\
& + a*e)*B*a*b^11*c^6*d^2*g^2*i^e^6/(d*x + c) - 756*(b*x*e + a*e)*A*a^2*b^10* \\
& c^5*d^3*g^2*i^e^6/(d*x + c) + 378*(b*x*e + a*e)*B*a^2*b^10*c^5*d^3*g^2*i^e^ \\
& 6/(d*x + c) + 1260*(b*x*e + a*e)*A*a^3*b^9*c^4*d^4*g^2*i^e^6/(d*x + c) - 63 \\
& 0*(b*x*e + a*e)*B*a^3*b^9*c^4*d^4*g^2*i^e^6/(d*x + c) - 1260*(b*x*e + a*e)* \\
& A*a^4*b^8*c^3*d^5*g^2*i^e^6/(d*x + c) + 630*(b*x*e + a*e)*B*a^4*b^8*c^3*d^5 \\
& *g^2*i^e^6/(d*x + c) + 756*(b*x*e + a*e)*A*a^5*b^7*c^2*d^6*g^2*i^e^6/(d*x + \\
& c) - 378*(b*x*e + a*e)*B*a^5*b^7*c^2*d^6*g^2*i^e^6/(d*x + c) - 252*(b*x*e
\end{aligned}$$

$$\begin{aligned}
& + a^6 e) A^6 b^6 c^6 d^7 g^2 i^6 / (d x + c) + 126 (b^6 x^6 e + a^6 e) B^6 a^6 b^6 c^6 d^7 g^2 i^6 / (d x + c) + 36 (b^6 x^6 e + a^6 e) A^7 b^5 d^8 g^2 i^6 / (d x + c) \\
&) - 18 (b^6 x^6 e + a^6 e) B^7 a^7 b^5 d^8 g^2 i^6 / (d x + c) + 90 (b^6 x^6 e + a^6 e)^2 A^6 b^11 c^7 d^2 g^2 i^5 / (d x + c)^2 - 63 (b^6 x^6 e + a^6 e)^2 B^6 b^11 c^7 d^2 g^2 i^5 / (d x + c)^2 - 630 (b^6 x^6 e + a^6 e)^2 A^6 a^6 b^10 c^6 d^3 g^2 i^5 / (d x + c)^2 + 441 (b^6 x^6 e + a^6 e)^2 B^6 a^6 b^10 c^6 d^3 g^2 i^5 / (d x + c)^2 + 1890 (b^6 x^6 e + a^6 e)^2 A^6 a^2 b^9 c^5 d^4 g^2 i^5 / (d x + c)^2 - 1323 (b^6 x^6 e + a^6 e)^2 B^6 a^2 b^9 c^5 d^4 g^2 i^5 / (d x + c)^2 - 3150 (b^6 x^6 e + a^6 e)^2 A^6 a^3 b^8 c^4 d^5 g^2 i^5 / (d x + c)^2 + 2205 (b^6 x^6 e + a^6 e)^2 B^6 a^3 b^8 c^4 d^5 g^2 i^5 / (d x + c)^2 + 3150 (b^6 x^6 e + a^6 e)^2 A^6 a^4 b^7 c^3 d^6 g^2 i^5 / (d x + c)^2 - 2205 (b^6 x^6 e + a^6 e)^2 B^6 a^4 b^7 c^3 d^6 g^2 i^5 / (d x + c)^2 - 1890 (b^6 x^6 e + a^6 e)^2 A^6 a^5 b^6 c^2 d^7 g^2 i^5 / (d x + c)^2 + 1323 (b^6 x^6 e + a^6 e)^2 B^6 a^5 b^6 c^2 d^7 g^2 i^5 / (d x + c)^2 + 630 (b^6 x^6 e + a^6 e)^2 A^6 a^6 b^5 c^2 d^8 g^2 i^5 / (d x + c)^2 - 441 (b^6 x^6 e + a^6 e)^2 B^6 a^6 b^5 c^2 d^8 g^2 i^5 / (d x + c)^2 - 90 (b^6 x^6 e + a^6 e)^2 A^6 a^7 b^4 d^9 g^2 i^5 / (d x + c)^2 + 63 (b^6 x^6 e + a^6 e)^2 B^6 a^7 b^4 d^9 g^2 i^5 / (d x + c)^2 + 74 (b^6 x^6 e + a^6 e)^3 B^6 b^10 c^7 d^3 g^2 i^4 / (d x + c)^3 - 518 (b^6 x^6 e + a^6 e)^3 B^6 a^6 b^9 c^6 d^4 g^2 i^4 / (d x + c)^3 + 1554 (b^6 x^6 e + a^6 e)^3 B^6 a^2 b^8 c^5 d^5 g^2 i^4 / (d x + c)^3 - 2590 (b^6 x^6 e + a^6 e)^3 B^6 a^3 b^7 c^4 d^6 g^2 i^4 / (d x + c)^3 + 2590 (b^6 x^6 e + a^6 e)^3 B^6 a^4 b^6 c^3 d^7 g^2 i^4 / (d x + c)^3 - 1554 (b^6 x^6 e + a^6 e)^3 B^6 a^5 b^5 c^2 d^8 g^2 i^4 / (d x + c)^3 + 518 (b^6 x^6 e + a^6 e)^3 B^6 a^6 b^4 c^2 d^9 g^2 i^4 / (d x + c)^3 - 74 (b^6 x^6 e + a^6 e)^3 B^6 a^7 b^3 d^10 g^2 i^4 / (d x + c)^3 - 33 (b^6 x^6 e + a^6 e)^4 B^6 b^9 c^7 d^4 g^2 i^3 / (d x + c)^4 + 231 (b^6 x^6 e + a^6 e)^4 B^6 a^6 b^8 c^6 d^5 g^2 i^3 / (d x + c)^4 - 693 (b^6 x^6 e + a^6 e)^4 B^6 a^2 b^7 c^5 d^6 g^2 i^3 / (d x + c)^4 + 1155 (b^6 x^6 e + a^6 e)^4 B^6 a^3 b^6 c^4 d^7 g^2 i^3 / (d x + c)^4 - 1155 (b^6 x^6 e + a^6 e)^4 B^6 a^4 b^5 c^3 d^8 g^2 i^3 / (d x + c)^4 + 693 (b^6 x^6 e + a^6 e)^4 B^6 a^5 b^4 c^2 d^9 g^2 i^3 / (d x + c)^4 - 231 (b^6 x^6 e + a^6 e)^4 B^6 a^6 b^3 c^2 d^10 g^2 i^3 / (d x + c)^4 + 33 (b^6 x^6 e + a^6 e)^4 B^6 a^7 b^2 d^11 g^2 i^3 / (d x + c)^4 + 6 (b^6 x^6 e + a^6 e)^5 B^6 b^8 c^7 d^5 g^2 i^2 / (d x + c)^5 - 42 (b^6 x^6 e + a^6 e)^5 B^6 a^6 b^7 c^6 d^6 g^2 i^2 / (d x + c)^5 + 126 (b^6 x^6 e + a^6 e)^5 B^6 a^2 b^6 c^5 d^7 g^2 i^2 / (d x + c)^5 - 210 (b^6 x^6 e + a^6 e)^5 B^6 a^3 b^5 c^4 d^8 g^2 i^2 / (d x + c)^5 + 210 (b^6 x^6 e + a^6 e)^5 B^6 a^4 b^4 c^3 d^9 g^2 i^2 / (d x + c)^5 - 126 (b^6 x^6 e + a^6 e)^5 B^6 a^5 b^3 c^2 d^10 g^2 i^2 / (d x + c)^5 + 42 (b^6 x^6 e + a^6 e)^5 B^6 a^6 b^2 c^2 d^11 g^2 i^2 / (d x + c)^5 - 6 (b^6 x^6 e + a^6 e)^5 B^6 a^7 b^2 d^12 g^2 i^2 / (d x + c)^5 * (b^6 c / ((b^6 c^6 e - a^6 d^6 e) * (b^6 c - a^6 d)) - a^6 d / ((b^6 c^6 e - a^6 d^6 e) * (b^6 c - a^6 d))) / (b^10 d^3 e^6 - 6 (b^6 x^6 e + a^6 e) * b^9 d^4 e^5 / (d x + c) + 15 (b^6 x^6 e + a^6 e)^2 b^8 d^5 e^4 / (d x + c)^2 - 20 (b^6 x^6 e + a^6 e)^3 b^7 d^6 e^3 / (d x + c)^3 + 15 (b^6 x^6 e + a^6 e)^4 b^6 d^7 e^2 / (d x + c)^4 - 6 (b^6 x^6 e + a^6 e)^5 b^5 d^8 e / (d x + c)^5 + (b^6 x^6 e + a^6 e)^6 b^4 d^9 / (d x + c)^6)
\end{aligned}$$

maple [B] time = 0.18, size = 7597, normalized size = 20.48

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{int}((b*gx+a*g)^2*(d*i*x+c*i)^3*(B*\ln((b*x+a)/(d*x+c)*e)+A), x)$

[Out] result too large to display

maxima [B] time = 1.51, size = 1789, normalized size = 4.82

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{integrate}((b*gx+a*g)^2*(d*i*x+c*i)^3*(A+B*\log(e*(b*x+a)/(d*x+c))), x, \text{algorithm}="maxima")$

[Out]
$$\begin{aligned} & 1/6*A*b^2*d^3*g^2*i^3*x^6 + 3/5*A*b^2*c*d^2*g^2*i^3*x^5 + 2/5*A*a*b*d^3*g^2 \\ & *i^3*x^5 + 3/4*A*b^2*c^2*d*g^2*i^3*x^4 + 3/2*A*a*b*c*d^2*g^2*i^3*x^4 + 1/4* \\ & A*a^2*d^3*g^2*i^3*x^4 + 1/3*A*b^2*c^3*g^2*i^3*x^3 + 2*A*a*b*c^2*d*g^2*i^3*x \\ & ^3 + A*a^2*c*d^2*g^2*i^3*x^3 + A*a*b*c^3*g^2*i^3*x^2 + 3/2*A*a^2*c^2*d*g^2* \\ & i^3*x^2 + (x*\log(b*e*x/(d*x + c) + a*e/(d*x + c)) + a*\log(b*x + a)/b - c*\log \\ & (d*x + c)/d)*B*a^2*c^3*g^2*i^3 + (x^2*\log(b*e*x/(d*x + c) + a*e/(d*x + c)) \\ & - a^2*\log(b*x + a)/b^2 + c^2*\log(d*x + c)/d^2 - (b*c - a*d)*x/(b*d))*B*a*b \\ & *c^3*g^2*i^3 + 1/6*(2*x^3*\log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 2*a^3*\log \\ & (b*x + a)/b^3 - 2*c^3*\log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c \\ & ^2 - a^2*d^2)*x)/(b^2*d^2))*B*b^2*c^3*g^2*i^3 + 3/2*(x^2*\log(b*e*x/(d*x + c) \\ &) + a*e/(d*x + c)) - a^2*\log(b*x + a)/b^2 + c^2*\log(d*x + c)/d^2 - (b*c - a \\ & *d)*x/(b*d))*B*a^2*c^2*d*g^2*i^3 + (2*x^3*\log(b*e*x/(d*x + c) + a*e/(d*x + \\ & c)) + 2*a^3*\log(b*x + a)/b^3 - 2*c^3*\log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2) \\ &)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*B*a*b*c^2*d*g^2*i^3 + 1/8*(6*x^ \\ & 4*\log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 6*a^4*\log(b*x + a)/b^4 + 6*c^4*\log \\ & (d*x + c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)* \\ & x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*B*b^2*c^2*d*g^2*i^3 + 1/2*(2*x^3* \\ & \log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 2*a^3*\log(b*x + a)/b^3 - 2*c^3*\log(d \\ & *x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2) \\ &)*B*a^2*c*d^2*g^2*i^3 + 1/4*(6*x^4*\log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 6 \\ & *a^4*\log(b*x + a)/b^4 + 6*c^4*\log(d*x + c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3) \\ &)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))* \\ & B*a*b*c*d^2*g^2*i^3 + 1/20*(12*x^5*\log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 1 \\ & 2*a^5*\log(b*x + a)/b^5 - 12*c^5*\log(d*x + c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^ \\ & 4)*x^4 - 4*(b^4*c^2*d^2 - a^2*b^2*d^4)*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 \\ & - 12*(b^4*c^4 - a^4*d^4)*x)/(b^4*d^4))*B*b^2*c*d^2*g^2*i^3 + 1/24*(6*x^4*\log \\ & (b*e*x/(d*x + c) + a*e/(d*x + c)) - 6*a^4*\log(b*x + a)/b^4 + 6*c^4*\log(d*x \\ & + c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 \\ & + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*B*a^2*d^3*g^2*i^3 + 1/30*(12*x^5*\log \\ & (b*e*x/(d*x + c) + a*e/(d*x + c)) + 12*a^5*\log(b*x + a)/b^5 - 12*c^5*\log(d*x \\ & + c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4*c^2*d^2 - a^2*b^2*d^4)* \\ & x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 - a^4*d^4)*x)/(b^4*d^4))* \\ & B*a*b*d^3*g^2*i^3 + 1/360*(60*x^6*\log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 60 \end{aligned}$$

$$*a^6*\log(b*x + a)/b^6 + 60*c^6*\log(d*x + c)/d^6 - (12*(b^5*c*d^4 - a*b^4*d^5)*x^5 - 15*(b^5*c^2*d^3 - a^2*b^3*d^5)*x^4 + 20*(b^5*c^3*d^2 - a^3*b^2*d^5)*x^3 - 30*(b^5*c^4*d - a^4*b*d^5)*x^2 + 60*(b^5*c^5 - a^5*d^5)*x)/(b^5*d^5)))*B*b^2*d^3*g^2*i^3 + A*a^2*c^3*g^2*i^3*x$$

mupad [B] time = 6.04, size = 2465, normalized size = 6.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)^2*(c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x))),x)
[Out] x^3*((g^2*i^3*(4*A*a^3*d^3 + 16*A*b^3*c^3 + B*a^3*d^3 - 3*B*b^3*c^3 + 72*A*a*b^2*c^2*d + 48*A*a^2*b*c*d^2 - 3*B*a*b^2*c^2*d + 5*B*a^2*b*c*d^2))/(12*b)
+ ((60*a*d + 60*b*c)*(((b*d^2*g^2*i^3*(18*A*a*d + 24*A*b*c + B*a*d - B*b*c))/6 - (A*b*d^2*g^2*i^3*(60*a*d + 60*b*c))/60)*(60*a*d + 60*b*c))/(60*b*d)
- (d*g^2*i^3*(15*A*a^2*d^2 + 30*A*b^2*c^2 + 2*B*a^2*d^2 - 3*B*b^2*c^2 + 60*A*a*b*c*d + B*a*b*c*d))/5 + A*a*b*c*d^2*g^2*i^3))/(180*b*d) - (a*c*((b*d^2*g^2*i^3*(18*A*a*d + 24*A*b*c + B*a*d - B*b*c))/6 - (A*b*d^2*g^2*i^3*(60*a*d + 60*b*c))/60))/(3*b*d) - x^4*(((b*d^2*g^2*i^3*(18*A*a*d + 24*A*b*c + B*a*d - B*b*c))/6 - (A*b*d^2*g^2*i^3*(60*a*d + 60*b*c))/60)*(60*a*d + 60*b*c))/(240*b*d) - (d*g^2*i^3*(15*A*a^2*d^2 + 30*A*b^2*c^2 + 2*B*a^2*d^2 - 3*B*b^2*c^2 + 60*A*a*b*c*d + B*a*b*c*d))/20 + (A*a*b*c*d^2*g^2*i^3)/4) + x^2*((a*c*(((b*d^2*g^2*i^3*(18*A*a*d + 24*A*b*c + B*a*d - B*b*c))/6 - (A*b*d^2*g^2*i^3*(60*a*d + 60*b*c))/60)*(60*a*d + 60*b*c))/(60*b*d) - (d*g^2*i^3*(15*A*a^2*d^2 + 30*A*b^2*c^2 + 2*B*a^2*d^2 - 3*B*b^2*c^2 + 60*A*a*b*c*d + B*a*b*c*d))/5 + A*a*b*c*d^2*g^2*i^3))/(2*b*d) - ((60*a*d + 60*b*c)*((g^2*i^3*(4*A*a^3*d^3 + 16*A*b^3*c^3 + B*a^3*d^3 - 3*B*b^3*c^3 + 72*A*a*b^2*c^2*d + 48*A*a^2*b*c*d^2 - 3*B*a*b^2*c^2*d + 5*B*a^2*b*c*d^2))/(4*b) + ((60*a*d + 60*b*c)*(((b*d^2*g^2*i^3*(18*A*a*d + 24*A*b*c + B*a*d - B*b*c))/6 - (A*b*d^2*g^2*i^3*(60*a*d + 60*b*c))/60)*(60*a*d + 60*b*c))/(60*b*d) - (d*g^2*i^3*(15*A*a^2*d^2 + 30*A*b^2*c^2 + 2*B*a^2*d^2 - 3*B*b^2*c^2 + 60*A*a*b*c*d + B*a*b*c*d))/5 + A*a*b*c*d^2*g^2*i^3))/(60*b*d) - (a*c*((b*d^2*g^2*i^3*(18*A*a*d + 24*A*b*c + B*a*d - B*b*c))/6 - (A*b*d^2*g^2*i^3*(60*a*d + 60*b*c))/60))/(b*d)))/(120*b*d) + (c*g^2*i^3*(12*A*a^3*d^3 + 3*A*b^3*c^3 + 3*B*a^3*d^3 - B*b^3*c^3 + 36*A*a*b^2*c^2*d + 54*A*a^2*b*c*d^2 - 5*B*a*b^2*c^2*d + 3*B*a^2*b*c*d^2))/(6*b*d) + log((e*(a + b*x))/(c + d*x))*(B*a^2*c^3*g^2*i^3*x + (B*c*g^2*i^3*x^3*(3*a^2*d^2 + b^2*c^2 + 6*a*b*c*d))/3 + (B*d*g^2*i^3*x^4*(a^2*d^2 + 3*b^2*c^2 + 6*a*b*c*d))/4 + (B*b^2*d^3*g^2*i^3*x^6)/6 + (B*a*c^2*g^2*i^3*x^2*(3*a*d + 2*b*c))/2 + (B*b*d^2*g^2*i^3*x^5*(2*a*d + 3*b*c))/5) + x^5*((b*d^2*g^2*i^3*(18*A*a*d + 24*A*b*c + B*a*d - B*b*c))/30 - (A*b*d^2*g^2*i^3*(60*a*d + 60*b*c))/300) - x*(((60*a*d + 60*b*c)*((a*c*(((b*d^2*g^2*i^3*(18*A*a*d + 24*A*b*c + B*a*d - B*b*c))/6 - (A*b*d^2*g^2*i^3*(60*a*d + 60*b*c))/60)*(60*a*d + 60*b*c))/(60*b*d) - (d*g^2*i^3*(15*A*a^2*d^2 + 30*A*b^2*c^2 + 2*B*a^2*d^2 - 3*B*b^2*c^2 + 60*A*a*b*c*d + B*a*b*c*d))/5 + A*a*b*c*d^2
```

$$\begin{aligned}
& 2*g^{2*i^3})/(b*d) - ((60*a*d + 60*b*c)*((g^{2*i^3}(4*A*a^3*d^3 + 16*A*b^3*c^3 \\
& + B*a^3*d^3 - 3*B*b^3*c^3 + 72*A*a*b^2*c^2*d + 48*A*a^2*b*c*d^2 - 3*B*a*b^2*c^2*d + 5*B*a^2*b*c*d^2)))/(4*b) + ((60*a*d + 60*b*c)*(((b*d^2*g^{2*i^3}(18*A*a*d + 24*A*b*c + B*a*d - B*b*c))/6 - (A*b*d^2*g^{2*i^3}(60*a*d + 60*b*c)))/60)*(60*a*d + 60*b*c))/(60*b*d) - (d*g^{2*i^3}(15*A*a^2*d^2 + 30*A*b^2*c^2 + 2*B*a^2*d^2 - 3*B*b^2*c^2 + 60*A*a*b*c*d + B*a*b*c*d))/5 + A*a*b*c*d^2*g^{2*i^3})/(60*b*d) - (a*c*((b*d^2*g^{2*i^3}(18*A*a*d + 24*A*b*c + B*a*d - B*b*c))/6 - (A*b*d^2*g^{2*i^3}(60*a*d + 60*b*c))/60))/(b*d)))/(60*b*d) + (c*g^{2*i^3}(12*A*a^3*d^3 + 3*A*b^3*c^3 + 3*B*a^3*d^3 - B*b^3*c^3 + 36*A*a*b^2*c^2*d + 54*A*a^2*b*c*d^2 - 5*B*a*b^2*c^2*d + 3*B*a^2*b*c*d^2))/(3*b*d)))/(60*b*d) + (a*c*((g^{2*i^3}(4*A*a^3*d^3 + 16*A*b^3*c^3 + B*a^3*d^3 - 3*B*b^3*c^3 + 72*A*a*b^2*c^2*d + 48*A*a^2*b*c*d^2 - 3*B*a*b^2*c^2*d + 5*B*a^2*b*c*d^2)))/(4*b) + ((60*a*d + 60*b*c)*(((b*d^2*g^{2*i^3}(18*A*a*d + 24*A*b*c + B*a*d - B*b*c))/6 - (A*b*d^2*g^{2*i^3}(60*a*d + 60*b*c))/60)*(60*a*d + 60*b*c))/(60*b*d) - (d*g^{2*i^3}(15*A*a^2*d^2 + 30*A*b^2*c^2 + 2*B*a^2*d^2 - 3*B*b^2*c^2 + 60*A*a*b*c*d + B*a*b*c*d))/5 + A*a*b*c*d^2*g^{2*i^3})/(60*b*d) - (a*c*((b*d^2*g^{2*i^3}(18*A*a*d + 24*A*b*c + B*a*d - B*b*c))/6 - (A*b*d^2*g^{2*i^3}(60*a*d + 60*b*c))/60))/(b*d)))/(b*d) - (a*c^2*g^{2*i^3}(12*A*a^2*d^2 + 6*A*b^2*c^2 + 3*B*a^2*d^2 - 2*B*b^2*c^2 + 24*A*a*b*c*d - B*a*b*c*d))/(2*b*d)) - (log(c + d*x)*(B*b^2*c^6*g^{2*i^3} + 15*B*a^2*c^4*d^2*g^{2*i^3} - 6*B*a*b*c^5*d*g^{2*i^3}))/60*d^3) - (log(a + b*x)*(B*a^6*d^3*g^{2*i^3} - 20*B*a^3*b^3*c^3*g^{2*i^3} - 6*B*a^5*b*c*d^2*g^{2*i^3} + 15*B*a^4*b^2*c^2*d*g^{2*i^3}))/60*b^4) + (A*b^2*d^3*g^{2*i^3}*x^6)/6
\end{aligned}$$

sympy [B] time = 12.21, size = 1727, normalized size = 4.65

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)**2*(d*i*x+c*i)**3*(A+B*ln(e*(b*x+a)/(d*x+c))),x)

[Out] A*b**2*d**3*g**2*i**3*x**6/6 - B*a**3*g**2*i**3*(a**3*d**3 - 6*a**2*b*c*d**2 + 15*a*b**2*c**2*d - 20*b**3*c**3)*log(x + (B*a**6*c*d**5*g**2*i**3 - 6*B*a**5*b*c**2*d**4*g**2*i**3 + 15*B*a**4*b**2*c**3*d**3*g**2*i**3 + B*a**4*d**3*g**2*i**3*(a**3*d**3 - 6*a**2*b*c*d**2 + 15*a*b**2*c**2*d - 20*b**3*c**3)/b - 35*B*a**3*b**3*c**4*d**2*g**2*i**3 - B*a**3*c*d**2*g**2*i**3*(a**3*d**3 - 6*a**2*b*c*d**2 + 15*a*b**2*c**2*d - 20*b**3*c**3) + 6*B*a**2*b**4*c**5*d*g**2*i**3 - B*a*b**5*c**6*g**2*i**3)/(B*a**6*d**6*g**2*i**3 - 6*B*a**5*b*c*d**5*g**2*i**3 + 15*B*a**4*b**2*c**2*d**4*g**2*i**3 - 20*B*a**3*b**3*c**3*d**3*g**2*i**3 - 15*B*a**2*b**4*c**4*d**2*g**2*i**3 + 6*B*a*b**5*c**5*d*g**2*i**3 - B*b**6*c**6*g**2*i**3))/(60*b**4) - B*c**4*g**2*i**3*(15*a**2*d**2 - 6*a*b*c*d + b**2*c**2)*log(x + (B*a**6*c*d**5*g**2*i**3 - 6*B*a**5*b*c**2*d**4*g**2*i**3 + 15*B*a**4*b**2*c**3*d**3*g**2*i**3 - 35*B*a**3*b**3*c**4*d**2*g**2*i**3 + 6*B*a**2*b**4*c**5*d*g**2*i**3 - B*a*b**5*c**6*g**2*i**3 + B*a*b**3*c**4*g**2*i**3*(15*a**2*d**2 - 6*a*b*c*d + b**2*c**2) - B*b

$$\begin{aligned}
& *4*c**5*g**2*i**3*(15*a**2*d**2 - 6*a*b*c*d + b**2*c**2)/d)/(B*a**6*d**6*g* \\
& *2*i**3 - 6*B*a**5*b*c*d**5*g**2*i**3 + 15*B*a**4*b**2*c**2*d**4*g**2*i**3 \\
& - 20*B*a**3*b**3*c**3*d**3*g**2*i**3 - 15*B*a**2*b**4*c**4*d**2*g**2*i**3 + \\
& 6*B*a*b**5*c**5*d*g**2*i**3 - B*b**6*c**6*g**2*i**3))/(60*d**3) + x**5*(2* \\
& A*a*b*d**3*g**2*i**3/5 + 3*A*b**2*c*d**2*g**2*i**3/5 + B*a*b*d**3*g**2*i**3 \\
& /30 - B*b**2*c*d**2*g**2*i**3/30) + x**4*(A*a**2*d**3*g**2*i**3/4 + 3*A*a*b \\
& *c*d**2*g**2*i**3/2 + 3*A*b**2*c**2*d*g**2*i**3/4 + 7*B*a**2*d**3*g**2*i**3 \\
& /120 + B*a*b*c*d**2*g**2*i**3/20 - 13*B*b**2*c**2*d*g**2*i**3/120) + x**3*(\\
& A*a**2*c*d**2*g**2*i**3 + 2*A*a*b*c**2*d*g**2*i**3 + A*b**2*c**3*g**2*i**3/ \\
& 3 + B*a**3*d**3*g**2*i**3/(180*b) + 13*B*a**2*c*d**2*g**2*i**3/60 - 7*B*a*b \\
& *c**2*d*g**2*i**3/60 - 19*B*b**2*c**3*g**2*i**3/180) + x**2*(3*A*a**2*c**2* \\
& d*g**2*i**3/2 + A*a*b*c**3*g**2*i**3 - B*a**4*d**3*g**2*i**3/(120*b**2) + B \\
& *a**3*c*d**2*g**2*i**3/(20*b) + B*a**2*c**2*d*g**2*i**3/4 - 17*B*a*b*c**3*g \\
& **2*i**3/60 - B*b**2*c**4*g**2*i**3/(120*d)) + x*(A*a**2*c**3*g**2*i**3 + B \\
& *a**5*d**3*g**2*i**3/(60*b**3) - B*a**4*c*d**2*g**2*i**3/(10*b**2) + B*a**3 \\
& *c**2*d*g**2*i**3/(4*b) - B*a**2*c**3*g**2*i**3/12 - B*a*b*c**4*g**2*i**3/(\\
& 10*d) + B*b**2*c**5*g**2*i**3/(60*d**2)) + (B*a**2*c**3*g**2*i**3*x + 3*B*a \\
& **2*c**2*d*g**2*i**3*x**2/2 + B*a**2*c*d**2*g**2*i**3*x**3 + B*a**2*d**3*g* \\
& *2*i**3*x**4/4 + B*a*b*c**3*g**2*i**3*x**2 + 2*B*a*b*c**2*d*g**2*i**3*x**3 \\
& + 3*B*a*b*c*d**2*g**2*i**3*x**4/2 + 2*B*a*b*d**3*g**2*i**3*x**5/5 + B*b**2* \\
& c**3*g**2*i**3*x**3/3 + 3*B*b**2*c**2*d*g**2*i**3*x**4/4 + 3*B*b**2*c*d**2* \\
& g**2*i**3*x**5/5 + B*b**2*d**3*g**2*i**3*x**6/6)*log(e*(a + b*x)/(c + d*x))
\end{aligned}$$

$$3.22 \quad \int (ag + bgx)(ci + dix)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) dx$$

Optimal. Leaf size=271

$$\frac{gi^3(c+dx)^4(bc-ad) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{4d^2} + \frac{bgi^3(c+dx)^5 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{5d^2} + \frac{Bgi^3(bc-ad)^5 \log \left(\frac{a+bx}{c+dx} \right)}{20b^4d^2} + \frac{Bgi^3}{20b^4d^2}$$

[Out] $1/20*B*(-a*d+b*c)^4*g*i^3*x/b^3/d+1/40*B*(-a*d+b*c)^3*g*i^3*(d*x+c)^2/b^2/d^2+1/60*B*(-a*d+b*c)^2*g*i^3*(d*x+c)^3/b/d^2-1/20*B*(-a*d+b*c)*g*i^3*(d*x+c)^4/d^2+1/20*B*(-a*d+b*c)^5*g*i^3*\ln((b*x+a)/(d*x+c))/b^4/d^2-1/4*(-a*d+b*c)*g*i^3*(d*x+c)^4*(A+B*\ln(e*(b*x+a)/(d*x+c)))/d^2+1/5*b*g*i^3*(d*x+c)^5*(A+B*\ln(e*(b*x+a)/(d*x+c)))/d^2+1/20*B*(-a*d+b*c)^5*g*i^3*\ln(d*x+c)/b^4/d^2$

Rubi [A] time = 0.34, antiderivative size = 232, normalized size of antiderivative = 0.86, number of steps used = 10, number of rules used = 4, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$, Rules used = {2528, 2525, 12, 43}

$$\frac{gi^3(c+dx)^4(bc-ad) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{4d^2} + \frac{bgi^3(c+dx)^5 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{5d^2} + \frac{Bgi^3(c+dx)^2(bc-ad)^3}{40b^2d^2} + \frac{Bgi^3}{40b^2d^2}$$

Antiderivative was successfully verified.

[In] Int[(a*g + b*g*x)*(c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]),x]

[Out] $(B*(b*c - a*d)^4*g*i^3*x)/(20*b^3*d) + (B*(b*c - a*d)^3*g*i^3*(c + d*x)^2)/(40*b^2*d^2) + (B*(b*c - a*d)^2*g*i^3*(c + d*x)^3)/(60*b*d^2) - (B*(b*c - a*d)*g*i^3*(c + d*x)^4)/(20*d^2) + (B*(b*c - a*d)^5*g*i^3*\text{Log}[a + b*x])/(20*b^4*d^2) - ((b*c - a*d)*g*i^3*(c + d*x)^4*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(4*d^2) + (b*g*i^3*(c + d*x)^5*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(5*d^2)$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 43

Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && (!IntegerQ[n] || (EqQ[c, 0] && LeQ[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])

Rule 2525

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_.))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned} \int (22c + 22dx)^3 (ag + bgx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) dx &= \int \left(\frac{(-bc + ad)g(22c + 22dx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{d} + \right. \\ &= \frac{(bg) \int (22c + 22dx)^4 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) dx}{22d} + \frac{((-bc + ad)g(22c + 22dx)^3 (A + B \log \left(\frac{e(a+bx)}{c+dx} \right)))}{22d} \\ &= -\frac{2662(bc - ad)g(c + dx)^4 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{d^2} + \frac{10312(bc - ad)g(c + dx)^3 (A + B \log \left(\frac{e(a+bx)}{c+dx} \right))}{d} \\ &= -\frac{2662(bc - ad)g(c + dx)^4 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{d^2} + \frac{10312(bc - ad)g(c + dx)^3 (A + B \log \left(\frac{e(a+bx)}{c+dx} \right))}{d} \\ &= -\frac{2662(bc - ad)g(c + dx)^4 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{d^2} + \frac{10312(bc - ad)g(c + dx)^3 (A + B \log \left(\frac{e(a+bx)}{c+dx} \right))}{d} \\ &= \frac{2662B(bc - ad)^4 gx}{5b^3 d} + \frac{1331B(bc - ad)^3 g(c + dx)^2}{5b^2 d^2} + \frac{10312(bc - ad)g(c + dx)^3 (A + B \log \left(\frac{e(a+bx)}{c+dx} \right))}{d} \end{aligned}$$

Mathematica [A] time = 0.20, size = 261, normalized size = 0.96

$$gi^3 \left(24b(c + dx)^5 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right) - 30(c + dx)^4 (bc - ad) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right) + \frac{5B(bc - ad)^2 (3b^2(c + dx)^2 (bc - ad) + 6b^2(c + dx)(bc - ad) + 3b^2(bc - ad)^2)}{5b^2 d^2} \right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)*(c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]),x]
```

```
[Out] (g*i^3*((5*B*(b*c - a*d)^2*(6*b*d*(b*c - a*d)^2*x + 3*b^2*(b*c - a*d)*(c + d*x)^2 + 2*b^3*(c + d*x)^3 + 6*(b*c - a*d)^3*Log[a + b*x]))/b^4 - (2*B*(b*c - a*d)*(12*b*d*(b*c - a*d)^3*x + 6*b^2*(b*c - a*d)^2*(c + d*x)^2 + 4*b^3*(b*c - a*d)*(c + d*x)^3 + 3*b^4*(c + d*x)^4 + 12*(b*c - a*d)^4*Log[a + b*x])/b^4 - 30*(b*c - a*d)*(c + d*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 24*b*(c + d*x)^5*(A + B*Log[(e*(a + b*x))/(c + d*x)])))/(120*d^2)
```

fricas [A] time = 0.96, size = 502, normalized size = 1.85

$$24 A b^5 d^5 g i^3 x^5 + 6 \left((15 A - B) b^5 c d^4 + (5 A + B) a b^4 d^5 \right) g i^3 x^4 + 2 \left((60 A - 11 B) b^5 c^2 d^3 + 10 (6 A + B) a b^4 c d^4 + B a^2 \right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorithm="fricas")
```

```
[Out] 1/120*(24*A*b^5*d^5*g*i^3*x^5 + 6*((15*A - B)*b^5*c*d^4 + (5*A + B)*a*b^4*d^5)*g*i^3*x^4 + 2*((60*A - 11*B)*b^5*c^2*d^3 + 10*(6*A + B)*a*b^4*c*d^4 + B*a^2*b^3*d^5)*g*i^3*x^3 + 3*((20*A - 9*B)*b^5*c^3*d^2 + 5*(12*A + B)*a*b^4*c^2*d^3 + 5*B*a^2*b^3*c*d^4 - B*a^3*b^2*d^5)*g*i^3*x^2 - 6*(B*b^5*c^4*d - 5*(4*A - B)*a*b^4*c^3*d^2 - 10*B*a^2*b^3*c^2*d^3 + 5*B*a^3*b^2*c*d^4 - B*a^4*b*d^5)*g*i^3*x + 6*(10*B*a^2*b^3*c^3*d^2 - 10*B*a^3*b^2*c^2*d^3 + 5*B*a^4*b*c*d^4 - B*a^5*d^5)*g*i^3*log(b*x + a) + 6*(B*b^5*c^5 - 5*B*a*b^4*c^4*d)*g*i^3*log(d*x + c) + 6*(4*B*b^5*d^5*g*i^3*x^5 + 20*B*a*b^4*c^3*d^2*g*i^3*x + 5*(3*B*b^5*c*d^4 + B*a*b^4*d^5)*g*i^3*x^4 + 20*(B*b^5*c^2*d^3 + B*a*b^4*c*d^4)*g*i^3*x^3 + 10*(B*b^5*c^3*d^2 + 3*B*a*b^4*c^2*d^3)*g*i^3*x^2)*log((b*x + a*e)/(d*x + c)))/(b^4*d^2)
```

giac [B] time = 1.44, size = 5710, normalized size = 21.07

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorithm="giac")
```

```
[Out] 1/120*(6*B*b^11*c^6*g*i*e^6*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 36*B*a*b^10*c^5*d*g*i*e^6*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 90*B*a^2*b^9*c^4*d^2*g*i*e^6*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 120*B*a^3*b^8*c^3*d^3
```

$$\begin{aligned}
& g*i*e^6*\log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 90*B*a^4*b^7*c^2*d^4*g*i*e^6 \\
& * \log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 36*B*a^5*b^6*c*d^5*g*i*e^6*\log(-b \\
& *e + (b*x*e + a*e)*d/(d*x + c)) + 6*B*a^6*b^5*d^6*g*i*e^6*\log(-b*e + (b*x*e \\
& + a*e)*d/(d*x + c)) - 30*(b*x*e + a*e)*B*b^10*c^6*d*g*i*e^5*\log(-b*e + (b* \\
& x*e + a*e)*d/(d*x + c))/(d*x + c) + 180*(b*x*e + a*e)*B*a*b^9*c^5*d^2*g*i*e \\
& ^5*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) - 450*(b*x*e + a*e)*B*a^ \\
& 2*b^8*c^4*d^3*g*i*e^5*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 600 \\
& *(b*x*e + a*e)*B*a^3*b^7*c^3*d^4*g*i*e^5*\log(-b*e + (b*x*e + a*e)*d/(d*x + \\
& c))/(d*x + c) - 450*(b*x*e + a*e)*B*a^4*b^6*c^2*d^5*g*i*e^5*\log(-b*e + (b*x \\
& *e + a*e)*d/(d*x + c))/(d*x + c) + 180*(b*x*e + a*e)*B*a^5*b^5*c*d^6*g*i*e^ \\
& 5*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) - 30*(b*x*e + a*e)*B*a^6* \\
& b^4*d^7*g*i*e^5*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 60*(b*x*e \\
& + a*e)^2*B*b^9*c^6*d^2*g*i*e^4*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x \\
& + c)^2 - 360*(b*x*e + a*e)^2*B*a*b^8*c^5*d^3*g*i*e^4*\log(-b*e + (b*x*e + a* \\
& e)*d/(d*x + c))/(d*x + c)^2 + 900*(b*x*e + a*e)^2*B*a^2*b^7*c^4*d^4*g*i*e^4 \\
& * \log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 1200*(b*x*e + a*e)^2*B \\
& *a^3*b^6*c^3*d^5*g*i*e^4*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 \\
& + 900*(b*x*e + a*e)^2*B*a^4*b^5*c^2*d^6*g*i*e^4*\log(-b*e + (b*x*e + a*e)*d/ \\
& (d*x + c))/(d*x + c)^2 - 360*(b*x*e + a*e)^2*B*a^5*b^4*c*d^7*g*i*e^4*\log(-b \\
& *e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 + 60*(b*x*e + a*e)^2*B*a^6*b^3* \\
& d^8*g*i*e^4*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 60*(b*x*e + \\
& a*e)^3*B*b^8*c^6*d^3*g*i*e^3*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + \\
& c)^3 + 360*(b*x*e + a*e)^3*B*a*b^7*c^5*d^4*g*i*e^3*\log(-b*e + (b*x*e + a*e) \\
& *d/(d*x + c))/(d*x + c)^3 - 900*(b*x*e + a*e)^3*B*a^2*b^6*c^4*d^5*g*i*e^3* \\
& \log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 + 1200*(b*x*e + a*e)^3*B*a \\
& ^3*b^5*c^3*d^6*g*i*e^3*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 - \\
& 900*(b*x*e + a*e)^3*B*a^4*b^4*c^2*d^7*g*i*e^3*\log(-b*e + (b*x*e + a*e)*d/(d \\
& *x + c))/(d*x + c)^3 + 360*(b*x*e + a*e)^3*B*a^5*b^3*c*d^8*g*i*e^3*\log(-b*e \\
& + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 - 60*(b*x*e + a*e)^3*B*a^6*b^2*d^ \\
& 9*g*i*e^3*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 + 30*(b*x*e + a \\
& *e)^4*B*b^7*c^6*d^4*g*i*e^2*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) \\
& ^4 - 180*(b*x*e + a*e)^4*B*a*b^6*c^5*d^5*g*i*e^2*\log(-b*e + (b*x*e + a*e)*d \\
& /(d*x + c))/(d*x + c)^4 + 450*(b*x*e + a*e)^4*B*a^2*b^5*c^4*d^6*g*i*e^2*\log \\
& (-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 - 600*(b*x*e + a*e)^4*B*a^3* \\
& b^4*c^3*d^7*g*i*e^2*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 + 450 \\
& *(b*x*e + a*e)^4*B*a^4*b^3*c^2*d^8*g*i*e^2*\log(-b*e + (b*x*e + a*e)*d/(d*x \\
& + c))/(d*x + c)^4 - 180*(b*x*e + a*e)^4*B*a^5*b^2*c*d^9*g*i*e^2*\log(-b*e + \\
& (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 + 30*(b*x*e + a*e)^4*B*a^6*b*d^10*g* \\
& i*e^2*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 - 6*(b*x*e + a*e)^5 \\
& *B*b^6*c^6*d^5*g*i*e*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^5 + 36 \\
& *(b*x*e + a*e)^5*B*a*b^5*c^5*d^6*g*i*e*\log(-b*e + (b*x*e + a*e)*d/(d*x + c) \\
&)/(d*x + c)^5 - 90*(b*x*e + a*e)^5*B*a^2*b^4*c^4*d^7*g*i*e*\log(-b*e + (b*x* \\
& e + a*e)*d/(d*x + c))/(d*x + c)^5 + 120*(b*x*e + a*e)^5*B*a^3*b^3*c^3*d^8*g \\
& *i*e*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^5 - 90*(b*x*e + a*e)^5 \\
& *B*a^4*b^2*c^2*d^9*g*i*e*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^5
\end{aligned}$$

$$\begin{aligned}
& + 36*(b*x*e + a*e)^5*B*a^5*b*c*d^10*g*i*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^5 - 6*(b*x*e + a*e)^5*B*a^6*d^11*g*i*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^5 - 60*(b*x*e + a*e)^2*B*b^9*c^6*d^2*g*i*e^4*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 + 360*(b*x*e + a*e)^2*B*a*b^8*c^5*d^3*g*i*e^4*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 - 900*(b*x*e + a*e)^2*B*a^2*b^7*c^4*d^4*g*i*e^4*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 + 1200*(b*x*e + a*e)^2*B*a^3*b^6*c^3*d^5*g*i*e^4*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 - 900*(b*x*e + a*e)^2*B*a^4*b^5*c^2*d^6*g*i*e^4*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 + 360*(b*x*e + a*e)^2*B*a^5*b^4*c*d^7*g*i*e^4*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 - 60*(b*x*e + a*e)^2*B*a^6*b^3*d^8*g*i*e^4*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 + 60*(b*x*e + a*e)^3*B*b^8*c^6*d^3*g*i*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^3 - 360*(b*x*e + a*e)^3*B*a*b^7*c^5*d^4*g*i*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^3 + 900*(b*x*e + a*e)^3*B*a^2*b^6*c^4*d^5*g*i*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^3 - 1200*(b*x*e + a*e)^3*B*a^3*b^5*c^3*d^6*g*i*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^3 + 900*(b*x*e + a*e)^3*B*a^4*b^4*c^2*d^7*g*i*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^3 - 360*(b*x*e + a*e)^3*B*a^5*b^3*c*d^8*g*i*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^3 + 60*(b*x*e + a*e)^3*B*a^6*b^2*d^9*g*i*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^3 - 30*(b*x*e + a*e)^4*B*b^7*c^6*d^4*g*i*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 + 180*(b*x*e + a*e)^4*B*a*b^6*c^5*d^5*g*i*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 - 450*(b*x*e + a*e)^4*B*a^2*b^5*c^4*d^6*g*i*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 + 600*(b*x*e + a*e)^4*B*a^3*b^4*c^3*d^7*g*i*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 - 450*(b*x*e + a*e)^4*B*a^4*b^3*c^2*d^8*g*i*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 + 180*(b*x*e + a*e)^4*B*a^5*b^2*c*d^9*g*i*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 - 30*(b*x*e + a*e)^4*B*a^6*b*d^10*g*i*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 + 6*(b*x*e + a*e)^5*B*b^6*c^6*d^5*g*i*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 - 36*(b*x*e + a*e)^5*B*a*b^5*c^5*d^6*g*i*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 + 900*(b*x*e + a*e)^5*B*a^2*b^4*c^4*d^7*g*i*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 - 120*(b*x*e + a*e)^5*B*a^3*b^3*c^3*d^8*g*i*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 + 90*(b*x*e + a*e)^5*B*a^4*b^2*c^2*d^9*g*i*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 - 36*(b*x*e + a*e)^5*B*a^5*b*c*d^10*g*i*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 + 6*(b*x*e + a*e)^5*B*a^6*d^11*g*i*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 + 6*A*b^11*c^6*g*i*e^6 - 5*B*b^11*c^6*g*i*e^6 - 36*A*a*b^10*c^5*d*g*i*e^6 + 30*B*a*b^10*c^5*d*g*i*e^6 + 90*A*a^2*b^9*c^4*d^2*g*i*e^6 - 75*B*a^2*b^9*c^4*d^2*g*i*e^6 - 120*A*a^3*b^8*c^3*d^3*g*i*e^6 + 100*B*a^3*b^8*c^3*d^3*g*i*e^6 + 90*A*a^4*b^7*c^2*d^4*g*i*e^6 - 75*B*a^4*b^7*c^2*d^4*g*i*e^6 - 36*A*a^5*b^6*c*d^5*g*i*e^6 + 30*B*a^5*b^6*c*d^5*g*i*e^6 + 6*A*a^6*b^5*d^6*g*i*e^6 - 5*B*a^6*b^5*d^6*g*i*e^6 - 30*(b*x*e + a*e)*A*b^10*c^6*d*g*i*e^5/(d*x + c) + 31*(b*x*e + a*e)*B*b^10*c^6*d*g*i*e^5/(d*x + c) + 180*(b*x*e + a*e)*A*a*b^9*c^5*d^2*g*i*e^5/(d*x + c) - 186*(b*x*e + a*e)*B*a*b^9*c^5*d^2*g*i*e^5/(d*x + c) - 450*(b*x*e + a*e)*A*a^2*b^8*c^4*d^3*g*i*e^5/(d*x + c) + 465*(b*x*e + a*e)*B*a^2*b^8*c^4*d^3*g*i*e^5/(d*x + c) + 600*(b*x*e + a*e)*A*a^3*b^7*c^3*d^4*g*i*e^5/(d*x + c) - 620*(
\end{aligned}$$

$$\begin{aligned}
& b*x*e + a*e)*B*a^3*b^7*c^3*d^4*g*i*e^5/(d*x + c) - 450*(b*x*e + a*e)*A*a^4* \\
& b^6*c^2*d^5*g*i*e^5/(d*x + c) + 465*(b*x*e + a*e)*B*a^4*b^6*c^2*d^5*g*i*e^5 \\
& / (d*x + c) + 180*(b*x*e + a*e)*A*a^5*b^5*c*d^6*g*i*e^5/(d*x + c) - 186*(b*x \\
& *e + a*e)*B*a^5*b^5*c*d^6*g*i*e^5/(d*x + c) - 30*(b*x*e + a*e)*A*a^6*b^4*d^ \\
& 7*g*i*e^5/(d*x + c) + 31*(b*x*e + a*e)*B*a^6*b^4*d^7*g*i*e^5/(d*x + c) - 47 \\
& *(b*x*e + a*e)^2*B*b^9*c^6*d^2*g*i*e^4/(d*x + c)^2 + 282*(b*x*e + a*e)^2*B* \\
& a*b^8*c^5*d^3*g*i*e^4/(d*x + c)^2 - 705*(b*x*e + a*e)^2*B*a^2*b^7*c^4*d^4*g \\
& *i*e^4/(d*x + c)^2 + 940*(b*x*e + a*e)^2*B*a^3*b^6*c^3*d^5*g*i*e^4/(d*x + c \\
&)^2 - 705*(b*x*e + a*e)^2*B*a^4*b^5*c^2*d^6*g*i*e^4/(d*x + c)^2 + 282*(b*x* \\
& e + a*e)^2*B*a^5*b^4*c*d^7*g*i*e^4/(d*x + c)^2 - 47*(b*x*e + a*e)^2*B*a^6*b \\
& ^3*d^8*g*i*e^4/(d*x + c)^2 + 27*(b*x*e + a*e)^3*B*b^8*c^6*d^3*g*i*e^3/(d*x \\
& + c)^3 - 162*(b*x*e + a*e)^3*B*a*b^7*c^5*d^4*g*i*e^3/(d*x + c)^3 + 405*(b*x \\
& *e + a*e)^3*B*a^2*b^6*c^4*d^5*g*i*e^3/(d*x + c)^3 - 540*(b*x*e + a*e)^3*B*a \\
& ^3*b^5*c^3*d^6*g*i*e^3/(d*x + c)^3 + 405*(b*x*e + a*e)^3*B*a^4*b^4*c^2*d^7* \\
& g*i*e^3/(d*x + c)^3 - 162*(b*x*e + a*e)^3*B*a^5*b^3*c*d^8*g*i*e^3/(d*x + c) \\
& ^3 + 27*(b*x*e + a*e)^3*B*a^6*b^2*d^9*g*i*e^3/(d*x + c)^3 - 6*(b*x*e + a*e) \\
& ^4*B*b^7*c^6*d^4*g*i*e^2/(d*x + c)^4 + 36*(b*x*e + a*e)^4*B*a*b^6*c^5*d^5*g \\
& *i*e^2/(d*x + c)^4 - 90*(b*x*e + a*e)^4*B*a^2*b^5*c^4*d^6*g*i*e^2/(d*x + c) \\
& ^4 + 120*(b*x*e + a*e)^4*B*a^3*b^4*c^3*d^7*g*i*e^2/(d*x + c)^4 - 90*(b*x*e \\
& + a*e)^4*B*a^4*b^3*c^2*d^8*g*i*e^2/(d*x + c)^4 + 36*(b*x*e + a*e)^4*B*a^5*b \\
& ^2*c*d^9*g*i*e^2/(d*x + c)^4 - 6*(b*x*e + a*e)^4*B*a^6*b*d^10*g*i*e^2/(d*x \\
& + c)^4*(b*c/((b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a* \\
& d)))/(b^9*d^2*e^5 - 5*(b*x*e + a*e)*b^8*d^3*e^4/(d*x + c) + 10*(b*x*e + a*e) \\
& ^2*b^7*d^4*e^3/(d*x + c)^2 - 10*(b*x*e + a*e)^3*b^6*d^5*e^2/(d*x + c)^3 + \\
& 5*(b*x*e + a*e)^4*b^5*d^6*e/(d*x + c)^4 - (b*x*e + a*e)^5*b^4*d^7/(d*x + c) \\
& ^5)
\end{aligned}$$

maple [B] time = 0.16, size = 4481, normalized size = 16.54

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{int}((b*g*x+a*g)*(d*i*x+c*i)^3*(B*\ln((b*x+a)/(d*x+c)*e)+A), x)$

[Out] $9e^5Bgi^3b^4\ln(b/de+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^5a^2c^8/(d*x+c)^5+9e^4Bgi^3\ln(b/de+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4c^7/(d*x+c)^4a^2b^3+1/d*e^5Bgi^3\ln(b/de+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^5a^4b^5-1/2e*Bgi^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)a^2c^3-d^2e^5Bgi^3b^2*\ln(b/de+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^5a^4c-5/4d^2e^4Bgi^3\ln(b/de+(a*d-b*c)/(d*x+c)/d*e)*b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4a^4c+5/2d*e^4Bgi^3\ln(b/de+(a*d-b*c)/(d*x+c)/d*e)*b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4a^3c^2+42d^4e^5Bgi^3\ln(b/de+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^5a^6c^4/(d*x+c)^5+1/4d*Bgi^3\ln(-b*e+(b/de+(a*d-b*c)/(d*x+c)/d*e)*d)*c^4a-1/20/d^2Bgi^3$

$$\begin{aligned}
& i^3 \ln(-b^*e + (b/d^*e + (a*d - b^*c)/(d^*x + c)/d^*e) * d) * c^5 * b^{-1/20} / d^2 * e * B^*g^*i^3 * b^2 / (\\
& 1/(d^*x + c) * a^*d^*e - 1/(d^*x + c) * b^*c^*e) * c^5 - 1/12 * d^2 * e^3 * B^*g^*i^3 / (1/(d^*x + c) * a^*d^*e - \\
& 1/(d^*x + c) * b^*c^*e)^3 * a^4 * c + 1/2 * d * B^*g^*i^3 / b^2 * \ln(-b^*e + (b/d^*e + (a*d - b^*c)/(d^*x + c) \\
& /d^*e) * d) * a^3 * c^2 - 1/4 * d^2 * B^*g^*i^3 / b^3 * \ln(-b^*e + (b/d^*e + (a*d - b^*c)/(d^*x + c)/d^*e) * \\
& d) * a^4 * c - 1/2 * B^*g^*i^3 / b * \ln(-b^*e + (b/d^*e + (a*d - b^*c)/(d^*x + c)/d^*e) * d) * a^2 * c^3 + 1/2 \\
& 0 * d^3 * B^*g^*i^3 / b^4 * \ln(-b^*e + (b/d^*e + (a*d - b^*c)/(d^*x + c)/d^*e) * d) * a^5 + 1/4 * d^3 * e^4 * \\
& A^*g^*i^3 / (1/(d^*x + c) * a^*d^*e - 1/(d^*x + c) * b^*c^*e)^4 * a^5 + 1/20 * d^3 * e^4 * B^*g^*i^3 / (1/(d^* \\
& x + c) * a^*d^*e - 1/(d^*x + c) * b^*c^*e)^4 * a^5 + 2 * d * e^5 * A^*g^*i^3 * b^3 / (1/(d^*x + c) * a^*d^*e - 1/(d \\
& *x + c) * b^*c^*e)^5 * a^3 * c^2 + 5/2 * d * e^4 * A^*g^*i^3 / (1/(d^*x + c) * a^*d^*e - 1/(d^*x + c) * b^*c^*e)^ \\
& 4 * a^3 * b^2 * c^2 + 1/12 / d * e^3 * B^*g^*i^3 * b^3 / (1/(d^*x + c) * a^*d^*e - 1/(d^*x + c) * b^*c^*e)^3 * c^ \\
& 4 * a - 5/4 * d^2 * e^4 * A^*g^*i^3 / (1/(d^*x + c) * a^*d^*e - 1/(d^*x + c) * b^*c^*e)^4 * a^4 * b * c + 1/8 * d^2 \\
& * e^2 * B^*g^*i^3 / b / (1/(d^*x + c) * a^*d^*e - 1/(d^*x + c) * b^*c^*e)^2 * a^4 * c - 1/8 / d * e^2 * B^*g^*i^3 * \\
& b^2 / (1/(d^*x + c) * a^*d^*e - 1/(d^*x + c) * b^*c^*e)^2 * a * c^4 + 1/6 * d * e^3 * B^*g^*i^3 / (1/(d^*x + c) * \\
& a^*d^*e - 1/(d^*x + c) * b^*c^*e)^3 * a^3 * c^2 * b - d^2 * e^5 * A^*g^*i^3 * b^2 / (1/(d^*x + c) * a^*d^*e - 1/(\\
& d^*x + c) * b^*c^*e)^5 * a^4 * c - 1/4 * d^2 * e * B^*g^*i^3 / b^2 / (1/(d^*x + c) * a^*d^*e - 1/(d^*x + c) * b^*c^* \\
& e) * a^4 * c + 1/2 * d * e * B^*g^*i^3 / b / (1/(d^*x + c) * a^*d^*e - 1/(d^*x + c) * b^*c^*e) * a^3 * c^2 + 1/d * e^ \\
& 5 * A^*g^*i^3 * b^5 / (1/(d^*x + c) * a^*d^*e - 1/(d^*x + c) * b^*c^*e)^5 * c^4 * a + 5/4 / d * e^4 * A^*g^*i^3 / (\\
& 1/(d^*x + c) * a^*d^*e - 1/(d^*x + c) * b^*c^*e)^4 * b^4 * c^4 * a - 1/4 * d^2 * e^4 * B^*g^*i^3 / (1/(d^*x + c) \\
& * a^*d^*e - 1/(d^*x + c) * b^*c^*e)^4 * a^4 * b * c + 1/2 * d * e^4 * B^*g^*i^3 / (1/(d^*x + c) * a^*d^*e - 1/(d^*x \\
& + c) * b^*c^*e)^4 * a^3 * b^2 * c^2 + 1/4 / d * e^4 * B^*g^*i^3 / (1/(d^*x + c) * a^*d^*e - 1/(d^*x + c) * b^*c^*e \\
&)^4 * b^4 * c^4 * a + 1/4 / d * e * B^*g^*i^3 * b / (1/(d^*x + c) * a^*d^*e - 1/(d^*x + c) * b^*c^*e) * c^4 * a - 1/5 \\
& / d^2 * e^5 * B^*g^*i^3 * b^6 * \ln(b/d^*e + (a*d - b^*c)/(d^*x + c)/d^*e) / (1/(d^*x + c) * a^*d^*e - 1/(d^* \\
& x + c) * b^*c^*e)^5 * c^5 - 1/4 / d^2 * e^4 * B^*g^*i^3 * \ln(b/d^*e + (a*d - b^*c)/(d^*x + c)/d^*e) / (1/(d \\
& *x + c) * a^*d^*e - 1/(d^*x + c) * b^*c^*e)^4 * c^5 * b^5 + 1/5 * d^3 * e^5 * B^*g^*i^3 * b * \ln(b/d^*e + (a*d - \\
& b^*c)/(d^*x + c)/d^*e) / (1/(d^*x + c) * a^*d^*e - 1/(d^*x + c) * b^*c^*e)^5 * a^5 - 5/2 * e^4 * B^*g^*i^3 * \ln \\
& (b/d^*e + (a*d - b^*c)/(d^*x + c)/d^*e) * b^3 / (1/(d^*x + c) * a^*d^*e - 1/(d^*x + c) * b^*c^*e)^4 * a^2 * \\
& c^3 - 2 * e^5 * B^*g^*i^3 * b^4 * \ln(b/d^*e + (a*d - b^*c)/(d^*x + c)/d^*e) / (1/(d^*x + c) * a^*d^*e - 1/(d \\
& *x + c) * b^*c^*e)^5 * a^2 * c^3 - 9 * d^5 * e^4 * B^*g^*i^3 * \ln(b/d^*e + (a*d - b^*c)/(d^*x + c)/d^*e) / b^ \\
& 2 / (1/(d^*x + c) * a^*d^*e - 1/(d^*x + c) * b^*c^*e)^4 * a^7 * c^2 / (d^*x + c)^4 - 24 * d * e^5 * B^*g^*i^3 * b^ \\
& 3 * \ln(b/d^*e + (a*d - b^*c)/(d^*x + c)/d^*e) / (1/(d^*x + c) * a^*d^*e - 1/(d^*x + c) * b^*c^*e)^5 * a^3 * c \\
& ^7 / (d^*x + c)^5 - 2 / d * e^5 * B^*g^*i^3 * b^5 * \ln(b/d^*e + (a*d - b^*c)/(d^*x + c)/d^*e) / (1/(d^*x + c) \\
& * a^*d^*e - 1/(d^*x + c) * b^*c^*e)^5 * a * c^9 / (d^*x + c)^5 - 2 * d^7 * e^5 * B^*g^*i^3 / b^3 * \ln(b/d^*e + (a \\
& *d - b^*c)/(d^*x + c)/d^*e) / (1/(d^*x + c) * a^*d^*e - 1/(d^*x + c) * b^*c^*e)^5 * a^9 * c / (d^*x + c)^5 + 9 * \\
& d^6 * e^5 * B^*g^*i^3 / b^2 * \ln(b/d^*e + (a*d - b^*c)/(d^*x + c)/d^*e) / (1/(d^*x + c) * a^*d^*e - 1/(d^*x \\
& + c) * b^*c^*e)^5 * a^8 * c^2 / (d^*x + c)^5 + 42 * d^2 * e^5 * B^*g^*i^3 * b^2 * \ln(b/d^*e + (a*d - b^*c)/(d \\
& *x + c)/d^*e) / (1/(d^*x + c) * a^*d^*e - 1/(d^*x + c) * b^*c^*e)^5 * a^4 * c^6 / (d^*x + c)^5 - 24 * d^5 * e^5 \\
& * B^*g^*i^3 / b * \ln(b/d^*e + (a*d - b^*c)/(d^*x + c)/d^*e) / (1/(d^*x + c) * a^*d^*e - 1/(d^*x + c) * b^*c^*e \\
&)^5 * a^7 * c^3 / (d^*x + c)^5 - 252 / 5 * d^3 * e^5 * B^*g^*i^3 * \ln(b/d^*e + (a*d - b^*c)/(d^*x + c)/d^*e) \\
& / (1/(d^*x + c) * a^*d^*e - 1/(d^*x + c) * b^*c^*e)^5 * a^5 * c^5 / (d^*x + c)^5 * b + 63 / 2 * d^2 * e^4 * B^*g^*i \\
& ^3 * \ln(b/d^*e + (a*d - b^*c)/(d^*x + c)/d^*e) / (1/(d^*x + c) * a^*d^*e - 1/(d^*x + c) * b^*c^*e)^4 * c^5 / \\
& (d^*x + c)^4 * a^4 * b - 21 * d * e^4 * B^*g^*i^3 * \ln(b/d^*e + (a*d - b^*c)/(d^*x + c)/d^*e) / (1/(d^*x + c) \\
& * a^*d^*e - 1/(d^*x + c) * b^*c^*e)^4 * c^6 / (d^*x + c)^4 * a^3 * b^2 - 9 / 4 / d * e^4 * B^*g^*i^3 * \ln(b/d^*e + \\
& (a*d - b^*c)/(d^*x + c)/d^*e) / (1/(d^*x + c) * a^*d^*e - 1/(d^*x + c) * b^*c^*e)^4 * c^8 / (d^*x + c)^4 * a * \\
& b^4 + 21 * d^4 * e^4 * B^*g^*i^3 * \ln(b/d^*e + (a*d - b^*c)/(d^*x + c)/d^*e) / b / (1/(d^*x + c) * a^*d^*e - 1 \\
& / (d^*x + c) * b^*c^*e)^4 * a^6 * c^3 / (d^*x + c)^4 + 9 / 4 * d^6 * e^4 * B^*g^*i^3 * \ln(b/d^*e + (a*d - b^*c) /
\end{aligned}$$

$$\begin{aligned} & (d*x+c)/d*e)/b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^8/(d*x+c)^4*c-1/4*d^7 \\ & *e^4*B*g*i^3*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/b^4/(1/(d*x+c)*a*d*e-1/(d*x+c) \\ &)*b*c*e)^4*a^9/(d*x+c)^4+5/4/d*e^4*B*g*i^3*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)* \\ & b^4/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a*c^4+2*d*e^5*B*g*i^3*b^3*\ln(b/d*e+ \\ & (a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^5*a^3*c^2+1/5/d^2* \\ & e^5*B*g*i^3*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c* \\ & e)^5*c^10/(d*x+c)^5*b^6+1/4/d^2*e^4*B*g*i^3*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e) \\ & /(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*c^9/(d*x+c)^4*b^5-63/2*d^3*e^4*B*g*i^3 \\ & *\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^5*c^ \\ & 4/(d*x+c)^4+1/5*d^8*e^5*B*g*i^3/b^4*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x \\ & +c)*a*d*e-1/(d*x+c)*b*c*e)^5*a^10/(d*x+c)^5-1/4/d^2*e^4*A*g*i^3/(1/(d*x+c)* \\ & a*d*e-1/(d*x+c)*b*c*e)^4*b^5*c^5-1/5/d^2*e^5*A*g*i^3*b^6/(1/(d*x+c)*a*d*e-1 \\ & /(d*x+c)*b*c*e)^5*c^5-2*e^5*A*g*i^3*b^4/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^5 \\ & *a^2*c^3-5/2*e^4*A*g*i^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^2*b^3*c^3+1/ \\ & 4*e^2*B*g*i^3*b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^2*c^3-1/2*e^4*B*g*i^3 \\ & /(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^2*b^3*c^3-1/6*e^3*B*g*i^3*b^2/(1/(d* \\ & x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^2*c^3+1/20*d^3*e*B*g*i^3/b^3/(1/(d*x+c)*a*d \\ & *e-1/(d*x+c)*b*c*e)*a^5+1/40/d^2*e^2*B*g*i^3*b^3/(1/(d*x+c)*a*d*e-1/(d*x+c) \\ &)*b*c*e)^2*c^5-1/4*d*e^2*B*g*i^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^3*c^2 \\ & -1/60/d^2*e^3*B*g*i^3*b^4/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*c^5-1/40*d^3* \\ & e^2*B*g*i^3/b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^5+1/4*d^3*e^4*B*g*i^3 \\ & *\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^5+1/ \\ & 60*d^3*e^3*B*g*i^3/b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^5+1/5*d^3*e^5*A* \\ & g*i^3*b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^5*a^5-1/20/d^2*e^4*B*g*i^3/(1/(d* \\ & x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*b^5*c^5 \end{aligned}$$

maxima [B] time = 1.34, size = 1022, normalized size = 3.77

$$\frac{1}{5} Abd^3 gi^3 x^5 + \frac{3}{4} Abcd^2 gi^3 x^4 + \frac{1}{4} Aad^3 gi^3 x^4 + Abc^2 d gi^3 x^3 + Aacd^2 gi^3 x^3 + \frac{1}{2} Abc^3 gi^3 x^2 + \frac{3}{2} Aac^2 d gi^3 x^2 + \left(x \log \left(\frac{be}{dx} \right) \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorithm="maxima")

[Out] $1/5*A*b*d^3*g*i^3*x^5 + 3/4*A*b*c*d^2*g*i^3*x^4 + 1/4*A*a*d^3*g*i^3*x^4 + A*b*c^2*d*g*i^3*x^3 + A*a*c*d^2*g*i^3*x^3 + 1/2*A*b*c^3*g*i^3*x^2 + 3/2*A*a*c^2*d*g*i^3*x^2 + (x*\log(b*e*x/(d*x + c) + a*e/(d*x + c)) + a*\log(b*x + a)/b - c*\log(d*x + c)/d)*B*a*c^3*g*i^3 + 1/2*(x^2*\log(b*e*x/(d*x + c) + a*e/(d*x + c)) - a^2*\log(b*x + a)/b^2 + c^2*\log(d*x + c)/d^2 - (b*c - a*d)*x/(b*d))*B*b*c^3*g*i^3 + 3/2*(x^2*\log(b*e*x/(d*x + c) + a*e/(d*x + c)) - a^2*\log(b*x + a)/b^2 + c^2*\log(d*x + c)/d^2 - (b*c - a*d)*x/(b*d))*B*a*c^2*d*g*i^3 + 1/2*(2*x^3*\log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 2*a^3*\log(b*x + a)/b^3 - 2*c^3*\log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2))$

$$\begin{aligned} & *x)/(b^2*d^2))*B*b*c^2*d*g*i^3 + 1/2*(2*x^3*log(b*e*x/(d*x + c) + a*e/(d*x \\ & + c)) + 2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d \\ & ^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*B*a*c*d^2*g*i^3 + 1/8*(6*x^4* \\ & log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 6*a^4*log(b*x + a)/b^4 + 6*c^4*log(d \\ & *x + c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 \\ & + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*B*b*c*d^2*g*i^3 + 1/24*(6*x^4*log(b \\ & *e*x/(d*x + c) + a*e/(d*x + c)) - 6*a^4*log(b*x + a)/b^4 + 6*c^4*log(d*x + \\ & c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6 \\ & *(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*B*a*d^3*g*i^3 + 1/60*(12*x^5*log(b*e*x/(\\ & d*x + c) + a*e/(d*x + c)) + 12*a^5*log(b*x + a)/b^5 - 12*c^5*log(d*x + c)/d \\ & ^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4*c^2*d^2 - a^2*b^2*d^4)*x^3 + 6 \\ & *(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 - a^4*d^4)*x)/(b^4*d^4))*B*b*d^3 \\ & *g*i^3 + A*a*c^3*g*i^3*x \end{aligned}$$

mupad [B] time = 5.44, size = 1192, normalized size = 4.40

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)*(c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x))),x)
[Out] x^4*((d^2*g*i^3*(10*A*a*d + 20*A*b*c + B*a*d - B*b*c))/20 - (A*d^2*g*i^3*(2
0*a*d + 20*b*c))/80) + x*((a*c*((20*a*d + 20*b*c)*((d^2*g*i^3*(10*A*a*d +
20*A*b*c + B*a*d - B*b*c))/5 - (A*d^2*g*i^3*(20*a*d + 20*b*c))/20))/(20*b*d
) - (d*g*i^3*(4*A*a^2*d^2 + 24*A*b^2*c^2 + B*a^2*d^2 - 3*B*b^2*c^2 + 32*A*a
*b*c*d + 2*B*a*b*c*d))/(4*b) + A*a*c*d^2*g*i^3))/(b*d) - ((20*a*d + 20*b*c)
*((20*a*d + 20*b*c)*((20*a*d + 20*b*c)*((d^2*g*i^3*(10*A*a*d + 20*A*b*c +
B*a*d - B*b*c))/5 - (A*d^2*g*i^3*(20*a*d + 20*b*c))/20))/(20*b*d) - (d*g*i
^3*(4*A*a^2*d^2 + 24*A*b^2*c^2 + B*a^2*d^2 - 3*B*b^2*c^2 + 32*A*a*b*c*d + 2
*B*a*b*c*d))/(4*b) + A*a*c*d^2*g*i^3))/(20*b*d) - (a*c*((d^2*g*i^3*(10*A*a
d + 20*A*b*c + B*a*d - B*b*c))/5 - (A*d^2*g*i^3*(20*a*d + 20*b*c))/20))/(b*
d) + (c*g*i^3*(4*A*a^2*d^2 + 4*A*b^2*c^2 + B*a^2*d^2 - B*b^2*c^2 + 12*A*a*b
*c*d))/b))/(20*b*d) + (c^2*g*i^3*(12*A*a^2*d^2 + 2*A*b^2*c^2 + 3*B*a^2*d^2
- B*b^2*c^2 + 16*A*a*b*c*d - 2*B*a*b*c*d))/(2*b*d) - x^3*((20*a*d + 20*b*
c)*((d^2*g*i^3*(10*A*a*d + 20*A*b*c + B*a*d - B*b*c))/5 - (A*d^2*g*i^3*(20*
a*d + 20*b*c))/20))/(60*b*d) - (d*g*i^3*(4*A*a^2*d^2 + 24*A*b^2*c^2 + B*a^2
*d^2 - 3*B*b^2*c^2 + 32*A*a*b*c*d + 2*B*a*b*c*d))/(12*b) + (A*a*c*d^2*g*i^3
)/3) + x^2*((20*a*d + 20*b*c)*((20*a*d + 20*b*c)*((d^2*g*i^3*(10*A*a*d +
20*A*b*c + B*a*d - B*b*c))/5 - (A*d^2*g*i^3*(20*a*d + 20*b*c))/20))/(20*b*d
) - (d*g*i^3*(4*A*a^2*d^2 + 24*A*b^2*c^2 + B*a^2*d^2 - 3*B*b^2*c^2 + 32*A*a
*b*c*d + 2*B*a*b*c*d))/(4*b) + A*a*c*d^2*g*i^3))/(40*b*d) - (a*c*((d^2*g*i^
3*(10*A*a*d + 20*A*b*c + B*a*d - B*b*c))/5 - (A*d^2*g*i^3*(20*a*d + 20*b*c)
)/20))/(2*b*d) + (c*g*i^3*(4*A*a^2*d^2 + 4*A*b^2*c^2 + B*a^2*d^2 - B*b^2*c^
2 + 12*A*a*b*c*d))/(2*b)) + log((e*(a + b*x))/(c + d*x))*((B*c^2*g*i^3*x^2*
(3*a*d + b*c))/2 + (B*d^2*g*i^3*x^4*(a*d + 3*b*c))/4 + B*a*c^3*g*i^3*x + (B
```

$*b*d^3*g*i^3*x^5)/5 + B*c*d*g*i^3*x^3*(a*d + b*c)) + (\log(c + d*x)*(B*b*c^5 *g*i^3 - 5*B*a*c^4*d*g*i^3))/(20*d^2) - (\log(a + b*x)*(B*a^5*d^3*g*i^3 - 10 *B*a^2*b^3*c^3*g*i^3 - 5*B*a^4*b*c*d^2*g*i^3 + 10*B*a^3*b^2*c^2*d*g*i^3))/(20*b^4) + (A*b*d^3*g*i^3*x^5)/5$

sympy [B] time = 7.31, size = 1158, normalized size = 4.27

$$\frac{Abd^3gi^3x^5}{5} - \frac{Ba^2gi^3(a^3d^3 - 5a^2bcd^2 + 10ab^2c^2d - 10b^3c^3) \log\left(x + \frac{Ba^5cd^4gi^3 - 5Ba^4bc^2d^3gi^3 + 10Ba^3b^2c^3d^2gi^3 + \frac{Ba^3d^2gi^3(a^3d^3 - 10Ba^2b^3c^3gi^3 - 5Ba^4b*c*d^2gi^3 + 10Ba^3b^2c^2dgi^3)}{Ba^5d^5gi^3 - 5Ba^4bcd^4gi^3}}{Ba^5d^5gi^3 - 5Ba^4bcd^4gi^3}\right)}{20b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(d*i*x+c*i)**3*(A+B*ln(e*(b*x+a)/(d*x+c))),x)

[Out] $A*b*d**3*g*i**3*x**5/5 - B*a**2*g*i**3*(a**3*d**3 - 5*a**2*b*c*d**2 + 10*a*b**2*c**2*d - 10*b**3*c**3)*\log(x + (B*a**5*c*d**4*g*i**3 - 5*B*a**4*b*c**2*d**3*g*i**3 + 10*B*a**3*b**2*c**3*d**2*g*i**3 + B*a**3*d**2*g*i**3*(a**3*d**3 - 5*a**2*b*c*d**2 + 10*a*b**2*c**2*d - 10*b**3*c**3)/b - 15*B*a**2*b**3*c**4*d*g*i**3 - B*a**2*c*d*g*i**3*(a**3*d**3 - 5*a**2*b*c*d**2 + 10*a*b**2*c**2*d - 10*b**3*c**3) + B*a*b**4*c**5*g*i**3)/(B*a**5*d**5*g*i**3 - 5*B*a**4*b*c*d**4*g*i**3 + 10*B*a**3*b**2*c**2*d**3*g*i**3 - 10*B*a**2*b**3*c**3*d**2*g*i**3 - 5*B*a*b**4*c**4*d*g*i**3 + B*b**5*c**5*g*i**3))/(20*b**4) - B*c**4*g*i**3*(5*a*d - b*c)*\log(x + (B*a**5*c*d**4*g*i**3 - 5*B*a**4*b*c**2*d**3*g*i**3 + 10*B*a**3*b**2*c**3*d**2*g*i**3 - 15*B*a**2*b**3*c**4*d*g*i**3 + B*a*b**4*c**5*g*i**3 + B*a*b**3*c**4*g*i**3*(5*a*d - b*c) - B*b**4*c**5*g*i**3*(5*a*d - b*c)/d)/(B*a**5*d**5*g*i**3 - 5*B*a**4*b*c*d**4*g*i**3 + 10*B*a**3*b**2*c**2*d**3*g*i**3 - 10*B*a**2*b**3*c**3*d**2*g*i**3 - 5*B*a*b**4*c**4*d*g*i**3 + B*b**5*c**5*g*i**3))/(20*d**2) + x**4*(A*a*d**3*g*i**3/4 + 3*A*b*c*d**2*g*i**3/4 + B*a*d**3*g*i**3/20 - B*b*c*d**2*g*i**3/20) + x**3*(A*a*c*d**2*g*i**3 + A*b*c**2*d*g*i**3 + B*a**2*d**3*g*i**3/(60*b) + B*a*c*d**2*g*i**3/6 - 11*B*b*c**2*d*g*i**3/60) + x**2*(3*A*a*c**2*d*g*i**3/2 + A*b*c**3*g*i**3/2 - B*a**3*d**3*g*i**3/(40*b**2) + B*a**2*c*d**2*g*i**3/(8*b) + B*a*c**2*d*g*i**3/8 - 9*B*b*c**3*g*i**3/40) + x*(A*a*c**3*g*i**3 + B*a**4*d**3*g*i**3/(20*b**3) - B*a**3*c*d**2*g*i**3/(4*b**2) + B*a**2*c**2*d*g*i**3/(2*b) - B*a*c**3*g*i**3/4 - B*b*c**4*g*i**3/(20*d)) + (B*a*c**3*g*i**3*x + 3*B*a*c**2*d*g*i**3*x**2/2 + B*a*c*d**2*g*i**3*x**3 + B*a*d**3*g*i**3*x**4/4 + B*b*c**3*g*i**3*x**2/2 + B*b*c**2*d*g*i**3*x**3 + 3*B*b*c*d**2*g*i**3*x**4/4 + B*b*d**3*g*i**3*x**5/5)*\log(e*(a + b*x)/(c + d*x))$

3.23 $\int (ci + dix)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) dx$

Optimal. Leaf size=149

$$\frac{i^3(c+dx)^4 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{4d} - \frac{Bi^3(bc-ad)^4 \log(a+bx)}{4b^4d} - \frac{Bi^3x(bc-ad)^3}{4b^3} - \frac{Bi^3(c+dx)^2(bc-ad)^2}{8b^2d} - \frac{Bi^3(c+dx)}{12b}$$

[Out] $-1/4*B*(-a*d+b*c)^3*i^3*x/b^3-1/8*B*(-a*d+b*c)^2*i^3*(d*x+c)^2/b^2/d-1/12*B*(-a*d+b*c)*i^3*(d*x+c)^3/b/d-1/4*B*(-a*d+b*c)^4*i^3*\ln(b*x+a)/b^4/d+1/4*i^3*(d*x+c)^4*(A+B*\ln(e*(b*x+a)/(d*x+c)))/d$

Rubi [A] time = 0.08, antiderivative size = 149, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.100$, Rules used = {2525, 12, 43}

$$\frac{i^3(c+dx)^4 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{4d} - \frac{Bi^3x(bc-ad)^3}{4b^3} - \frac{Bi^3(c+dx)^2(bc-ad)^2}{8b^2d} - \frac{Bi^3(bc-ad)^4 \log(a+bx)}{4b^4d} - \frac{Bi^3(c+dx)}{12b}$$

Antiderivative was successfully verified.

[In] $\text{Int}[(c*i + d*i*x)^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]), x]$

[Out] $-(B*(b*c - a*d)^3*i^3*x)/(4*b^3) - (B*(b*c - a*d)^2*i^3*(c + d*x)^2)/(8*b^2*d) - (B*(b*c - a*d)*i^3*(c + d*x)^3)/(12*b*d) - (B*(b*c - a*d)^4*i^3*\text{Log}[a + b*x])/(4*b^4*d) + (i^3*(c + d*x)^4*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(4*d)$

Rule 12

$\text{Int}[(a_*)(u_), x_Symbol] := \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \ \&\& \ !\text{MatchQ}[u, (b_*)(v_)] /; \text{FreeQ}[b, x]$

Rule 43

$\text{Int}[(a_.) + (b_.)*(x_)^(m_.)*((c_.) + (d_.)*(x_)^(n_.)), x_Symbol] := \text{Int}[\text{ExpandIntegrand}[(a + b*x)^m*(c + d*x)^n, x], x] /; \text{FreeQ}\{a, b, c, d, n\}, x \ \&\& \ \text{NeQ}[b*c - a*d, 0] \ \&\& \ \text{IGtQ}[m, 0] \ \&\& \ (!\text{IntegerQ}[n] \ || \ (\text{EqQ}[c, 0] \ \&\& \ \text{LeQ}[7*m + 4*n + 4, 0]) \ || \ \text{LtQ}[9*m + 5*(n + 1), 0] \ || \ \text{GtQ}[m + n + 2, 0])$

Rule 2525

$\text{Int}[(a_.) + \text{Log}[(c_.)*(RFX_)^(p_.)]*(b_.)]^(n_.)*((d_.) + (e_.)*(x_)^(m_.)), x_Symbol] := \text{Simp}[(d + e*x)^(m + 1)*(a + b*\text{Log}[c*RFX^p])^n/(e*(m + 1)), x] - \text{Dist}[(b*n*p)/(e*(m + 1)), \text{Int}[\text{SimplifyIntegrand}[(d + e*x)^(m + 1)*$

$a + b \cdot \text{Log}[c \cdot \text{RFx}^p]^{(n-1) \cdot D[\text{RFx}, x]} / \text{RFx}, x], x] / ; \text{FreeQ}[\{a, b, c, d, e, m, p\}, x] \ \&\& \ \text{RationalFunctionQ}[\text{RFx}, x] \ \&\& \ \text{IGtQ}[n, 0] \ \&\& \ (\text{EqQ}[n, 1] \ || \ \text{IntegerQ}[m]) \ \&\& \ \text{NeQ}[m, -1]$

Rubi steps

$$\begin{aligned} \int (23c + 23dx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) dx &= \frac{12167(c+dx)^4 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{4d} - \frac{B \int \frac{279841(bc-ad)(c+dx)^3}{a+bx} dx}{92d} \\ &= \frac{12167(c+dx)^4 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{4d} - \frac{(12167B(bc-ad)) \int \frac{(c+dx)^3}{a+bx} dx}{4d} \\ &= \frac{12167(c+dx)^4 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{4d} - \frac{(12167B(bc-ad)) \int \left(\frac{d}{a+bx} \right) dx}{4d} \\ &= -\frac{12167B(bc-ad)^3 x}{4b^3} - \frac{12167B(bc-ad)^2 (c+dx)^2}{8b^2 d} - \frac{12167B(bc-ad)}{4b} \end{aligned}$$

Mathematica [A] time = 0.06, size = 120, normalized size = 0.81

$$\frac{i^3 \left((c+dx)^4 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right) - \frac{B(bc-ad)(3b^2(c+dx)^2(bc-ad) + 6bdx(bc-ad)^2 + 6(bc-ad)^3 \log(a+bx) + 2b^3(c+dx)^3)}{6b^4} \right)}{4d}$$

Antiderivative was successfully verified.

[In] Integrate[(c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]),x]

[Out] (i^3*(-1/6*(B*(b*c - a*d))*(6*b*d*(b*c - a*d)^2*x + 3*b^2*(b*c - a*d)*(c + d*x)^2 + 2*b^3*(c + d*x)^3 + 6*(b*c - a*d)^3*Log[a + b*x]))/b^4 + (c + d*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(4*d)

fricas [B] time = 0.80, size = 322, normalized size = 2.16

$$\frac{6Ab^4d^4i^3x^4 - 6Bb^4c^4i^3 \log(dx+c) + 2((12A-B)b^4cd^3 + Bab^3d^4)i^3x^3 + 3(3(4A-B)b^4c^2d^2 + 4Bab^3cd^3 - B^2b^4c^2d^2)}{4d}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorithm="fricas")

[Out] 1/24*(6*A*b^4*d^4*i^3*x^4 - 6*B*b^4*c^4*i^3*log(d*x + c) + 2*((12*A - B)*b^4*c*d^3 + B*a*b^3*d^4)*i^3*x^3 + 3*(3*(4*A - B)*b^4*c^2*d^2 + 4*B*a*b^3*c*d^2 - B^2*b^4*c^2*d^2))

$$\begin{aligned} &^3 - B*a^2*b^2*d^4)*i^3*x^2 + 6*((4*A - 3*B)*b^4*c^3*d + 6*B*a*b^3*c^2*d^2 \\ &- 4*B*a^2*b^2*c*d^3 + B*a^3*b*d^4)*i^3*x + 6*(4*B*a*b^3*c^3*d - 6*B*a^2*b^2 \\ &*c^2*d^2 + 4*B*a^3*b*c*d^3 - B*a^4*d^4)*i^3*\log(b*x + a) + 6*(B*b^4*d^4*i^3 \\ &*x^4 + 4*B*b^4*c*d^3*i^3*x^3 + 6*B*b^4*c^2*d^2*i^3*x^2 + 4*B*b^4*c^3*d*i^3*x \\ &x)*\log((b*e*x + a*e)/(d*x + c)))/(b^4*d) \end{aligned}$$

giac [B] time = 1.09, size = 3969, normalized size = 26.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorithm="giac")

[Out]
$$\begin{aligned} &-1/24*(6*B*b^9*c^5*i^5*\log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 30*B*a*b^8 \\ &*c^4*d*i^5*\log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 60*B*a^2*b^7*c^3*d^2*i \\ &*e^5*\log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 60*B*a^3*b^6*c^2*d^3*i^5*\log \\ &(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 30*B*a^4*b^5*c*d^4*i^5*\log(-b*e + (b \\ &*x*e + a*e)*d/(d*x + c)) - 6*B*a^5*b^4*d^5*i^5*\log(-b*e + (b*x*e + a*e)*d \\ &/d/(d*x + c)) - 24*(b*x*e + a*e)*B*b^8*c^5*d*i^4*\log(-b*e + (b*x*e + a*e)*d \\ &/d/(d*x + c))/d/(d*x + c) + 120*(b*x*e + a*e)*B*a*b^7*c^4*d^2*i^4*\log(-b*e + \\ &(b*x*e + a*e)*d/(d*x + c))/d/(d*x + c) - 240*(b*x*e + a*e)*B*a^2*b^6*c^3*d^3* \\ &i^4*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/d/(d*x + c) + 240*(b*x*e + a*e)*B \\ &*a^3*b^5*c^2*d^4*i^4*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/d/(d*x + c) - 12 \\ &0*(b*x*e + a*e)*B*a^4*b^4*c*d^5*i^4*\log(-b*e + (b*x*e + a*e)*d/(d*x + c)) \\ &/d/(d*x + c) + 24*(b*x*e + a*e)*B*a^5*b^3*d^6*i^4*\log(-b*e + (b*x*e + a*e)* \\ &d/(d*x + c))/d/(d*x + c) + 36*(b*x*e + a*e)^2*B*b^7*c^5*d^2*i^3*\log(-b*e + \\ &(b*x*e + a*e)*d/(d*x + c))/d/(d*x + c)^2 - 180*(b*x*e + a*e)^2*B*a*b^6*c^4*d^ \\ &3*i^3*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/d/(d*x + c)^2 + 360*(b*x*e + a \\ &e)^2*B*a^2*b^5*c^3*d^4*i^3*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/d/(d*x + c \\ &)^2 - 360*(b*x*e + a*e)^2*B*a^3*b^4*c^2*d^5*i^3*\log(-b*e + (b*x*e + a*e)* \\ &d/(d*x + c))/d/(d*x + c)^2 + 180*(b*x*e + a*e)^2*B*a^4*b^3*c*d^6*i^3*\log(-b \\ &*e + (b*x*e + a*e)*d/(d*x + c))/d/(d*x + c)^2 - 36*(b*x*e + a*e)^2*B*a^5*b^2* \\ &d^7*i^3*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/d/(d*x + c)^2 - 24*(b*x*e + a \\ &e)^3*B*b^6*c^5*d^3*i^2*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/d/(d*x + c)^3 \\ &+ 120*(b*x*e + a*e)^3*B*a*b^5*c^4*d^4*i^2*\log(-b*e + (b*x*e + a*e)*d/(d \\ &x + c))/d/(d*x + c)^3 - 240*(b*x*e + a*e)^3*B*a^2*b^4*c^3*d^5*i^2*\log(-b*e \\ &+ (b*x*e + a*e)*d/(d*x + c))/d/(d*x + c)^3 + 240*(b*x*e + a*e)^3*B*a^3*b^3*c^ \\ &2*d^6*i^2*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/d/(d*x + c)^3 - 120*(b*x*e \\ &+ a*e)^3*B*a^4*b^2*c*d^7*i^2*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/d/(d*x + \\ &c)^3 + 24*(b*x*e + a*e)^3*B*a^5*b*d^8*i^2*\log(-b*e + (b*x*e + a*e)*d/(d \\ &x + c))/d/(d*x + c)^3 + 6*(b*x*e + a*e)^4*B*b^5*c^5*d^4*i^2*\log(-b*e + (b*x*e \\ &+ a*e)*d/(d*x + c))/d/(d*x + c)^4 - 30*(b*x*e + a*e)^4*B*a*b^4*c^4*d^5*i^2* \\ &\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/d/(d*x + c)^4 + 60*(b*x*e + a*e)^4*B*a^2 \\ &*b^3*c^3*d^6*i^2*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/d/(d*x + c)^4 - 60*(b \\ &x*e + a*e)^4*B*a^3*b^2*c^2*d^7*i^2*\log(-b*e + (b*x*e + a*e)*d/(d*x + c))/d \end{aligned}$$

$$\begin{aligned}
& *x + c)^4 + 30*(b*x*e + a*e)^4*B*a^4*b*c*d^8*i*e*log(-b*e + (b*x*e + a*e)*d \\
& /((d*x + c))/(d*x + c)^4 - 6*(b*x*e + a*e)^4*B*a^5*d^9*i*e*log(-b*e + (b*x*e \\
& + a*e)*d/(d*x + c))/(d*x + c)^4 + 24*(b*x*e + a*e)*B*b^8*c^5*d*i*e^4*log((\\
& b*x*e + a*e)/(d*x + c))/(d*x + c) - 120*(b*x*e + a*e)*B*a*b^7*c^4*d^2*i*e^4 \\
& *log((b*x*e + a*e)/(d*x + c))/(d*x + c) + 240*(b*x*e + a*e)*B*a^2*b^6*c^3*d \\
& ^3*i*e^4*log((b*x*e + a*e)/(d*x + c))/(d*x + c) - 240*(b*x*e + a*e)*B*a^3*b \\
& ^5*c^2*d^4*i*e^4*log((b*x*e + a*e)/(d*x + c))/(d*x + c) + 120*(b*x*e + a*e) \\
& *B*a^4*b^4*c*d^5*i*e^4*log((b*x*e + a*e)/(d*x + c))/(d*x + c) - 24*(b*x*e + \\
& a*e)*B*a^5*b^3*d^6*i*e^4*log((b*x*e + a*e)/(d*x + c))/(d*x + c) - 36*(b*x* \\
& e + a*e)^2*B*b^7*c^5*d^2*i*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 + 1 \\
& 80*(b*x*e + a*e)^2*B*a*b^6*c^4*d^3*i*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x \\
& + c)^2 - 360*(b*x*e + a*e)^2*B*a^2*b^5*c^3*d^4*i*e^3*log((b*x*e + a*e)/(d*x \\
& + c))/(d*x + c)^2 + 360*(b*x*e + a*e)^2*B*a^3*b^4*c^2*d^5*i*e^3*log((b*x*e \\
& + a*e)/(d*x + c))/(d*x + c)^2 - 180*(b*x*e + a*e)^2*B*a^4*b^3*c*d^6*i*e^3* \\
& log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 + 36*(b*x*e + a*e)^2*B*a^5*b^2*d^7 \\
& *i*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 + 24*(b*x*e + a*e)^3*B*b^6* \\
& c^5*d^3*i*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^3 - 120*(b*x*e + a*e)^ \\
& 3*B*a*b^5*c^4*d^4*i*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^3 + 240*(b*x \\
& *e + a*e)^3*B*a^2*b^4*c^3*d^5*i*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^ \\
& 3 - 240*(b*x*e + a*e)^3*B*a^3*b^3*c^2*d^6*i*e^2*log((b*x*e + a*e)/(d*x + c) \\
&)/(d*x + c)^3 + 120*(b*x*e + a*e)^3*B*a^4*b^2*c*d^7*i*e^2*log((b*x*e + a*e) \\
& /((d*x + c))/(d*x + c)^3 - 24*(b*x*e + a*e)^3*B*a^5*b*d^8*i*e^2*log((b*x*e + \\
& a*e)/(d*x + c))/(d*x + c)^3 - 6*(b*x*e + a*e)^4*B*b^5*c^5*d^4*i*e*log((b*x \\
& *e + a*e)/(d*x + c))/(d*x + c)^4 + 30*(b*x*e + a*e)^4*B*a*b^4*c^4*d^5*i*e*log \\
& ((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 - 60*(b*x*e + a*e)^4*B*a^2*b^3*c^3* \\
& d^6*i*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 + 60*(b*x*e + a*e)^4*B*a^3 \\
& *b^2*c^2*d^7*i*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 - 30*(b*x*e + a*e) \\
&)^4*B*a^4*b*c*d^8*i*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 + 6*(b*x*e + \\
& a*e)^4*B*a^5*d^9*i*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 + 6*A*b^9*c^ \\
& 5*i*e^5 - 11*B*b^9*c^5*i*e^5 - 30*A*a*b^8*c^4*d*i*e^5 + 55*B*a*b^8*c^4*d*i* \\
& e^5 + 60*A*a^2*b^7*c^3*d^2*i*e^5 - 110*B*a^2*b^7*c^3*d^2*i*e^5 - 60*A*a^3*b \\
& ^6*c^2*d^3*i*e^5 + 110*B*a^3*b^6*c^2*d^3*i*e^5 + 30*A*a^4*b^5*c*d^4*i*e^5 - \\
& 55*B*a^4*b^5*c*d^4*i*e^5 - 6*A*a^5*b^4*d^5*i*e^5 + 11*B*a^5*b^4*d^5*i*e^5 \\
& + 26*(b*x*e + a*e)*B*b^8*c^5*d*i*e^4/(d*x + c) - 130*(b*x*e + a*e)*B*a*b^7* \\
& c^4*d^2*i*e^4/(d*x + c) + 260*(b*x*e + a*e)*B*a^2*b^6*c^3*d^3*i*e^4/(d*x + \\
& c) - 260*(b*x*e + a*e)*B*a^3*b^5*c^2*d^4*i*e^4/(d*x + c) + 130*(b*x*e + a*e) \\
&)*B*a^4*b^4*c*d^5*i*e^4/(d*x + c) - 26*(b*x*e + a*e)*B*a^5*b^3*d^6*i*e^4/(d \\
& *x + c) - 21*(b*x*e + a*e)^2*B*b^7*c^5*d^2*i*e^3/(d*x + c)^2 + 105*(b*x*e + \\
& a*e)^2*B*a*b^6*c^4*d^3*i*e^3/(d*x + c)^2 - 210*(b*x*e + a*e)^2*B*a^2*b^5*c \\
& ^3*d^4*i*e^3/(d*x + c)^2 + 210*(b*x*e + a*e)^2*B*a^3*b^4*c^2*d^5*i*e^3/(d*x \\
& + c)^2 - 105*(b*x*e + a*e)^2*B*a^4*b^3*c*d^6*i*e^3/(d*x + c)^2 + 21*(b*x*e \\
& + a*e)^2*B*a^5*b^2*d^7*i*e^3/(d*x + c)^2 + 6*(b*x*e + a*e)^3*B*b^6*c^5*d^3 \\
& *i*e^2/(d*x + c)^3 - 30*(b*x*e + a*e)^3*B*a*b^5*c^4*d^4*i*e^2/(d*x + c)^3 + \\
& 60*(b*x*e + a*e)^3*B*a^2*b^4*c^3*d^5*i*e^2/(d*x + c)^3 - 60*(b*x*e + a*e)^ \\
& 3*B*a^3*b^3*c^2*d^6*i*e^2/(d*x + c)^3 + 30*(b*x*e + a*e)^3*B*a^4*b^2*c*d^7*
\end{aligned}$$

c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^3*c+1/4/d*e^4*A*i^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*b^4*c^4+1/12/d*e^3*B*i^3*b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*c^4+2*d^6*e^4*B*i^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^7/(d*x+c)^4*c-7*d^5*e^4*B*i^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^6/(d*x+c)^4*c^2-7*d*e^4*B*i^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*c^6/(d*x+c)^4*a^2

maxima [B] time = 1.15, size = 439, normalized size = 2.95

$$\frac{1}{4} Ad^3 i^3 x^4 + Acd^2 i^3 x^3 + \frac{3}{2} Ac^2 d i^3 x^2 + \left(x \log \left(\frac{bex}{dx+c} + \frac{ae}{dx+c} \right) + \frac{a \log(bx+a)}{b} - \frac{c \log(dx+c)}{d} \right) Bc^3 i^3 + \frac{3}{2} \left(x^2 \log \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorithm="maxima")

[Out] 1/4*A*d^3*i^3*x^4 + A*c*d^2*i^3*x^3 + 3/2*A*c^2*d*i^3*x^2 + (x*log(b*e*x/(d*x+c) + a*e/(d*x+c)) + a*log(b*x+a)/b - c*log(d*x+c)/d)*B*c^3*i^3 + 3/2*(x^2*log(b*e*x/(d*x+c) + a*e/(d*x+c)) - a^2*log(b*x+a)/b^2 + c^2*log(d*x+c)/d^2 - (b*c - a*d)*x/(b*d))*B*c^2*d*i^3 + 1/2*(2*x^3*log(b*e*x/(d*x+c) + a*e/(d*x+c)) + 2*a^3*log(b*x+a)/b^3 - 2*c^3*log(d*x+c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*B*c*d^2*i^3 + 1/24*(6*x^4*log(b*e*x/(d*x+c) + a*e/(d*x+c)) - 6*a^4*log(b*x+a)/b^4 + 6*c^4*log(d*x+c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*B*d^3*i^3 + A*c^3*i^3*x

mupad [B] time = 4.80, size = 566, normalized size = 3.80

$$x \left(\frac{(4ad+4bc) \left(\frac{\left(\frac{d^2 i^3 (4Ad+16Abc+Bad-Bbc) - Ad^2 i^3 (4ad+4bc)}{4b} \right) (4ad+4bc)}{4bd} - \frac{cd i^3 (4Ad+6Abc+Bad-Bbc)}{b} + \frac{Aacd^2 i^3}{b} \right)}{4bd} \right) + \frac{c^2 i^3}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x))),x)

[Out] x*(((4*a*d + 4*b*c)*(((d^2*i^3*(4*A*a*d + 16*A*b*c + B*a*d - B*b*c))/(4*b) - (A*d^2*i^3*(4*a*d + 4*b*c))/(4*b))*((4*a*d + 4*b*c))/(4*b*d) - (c*d*i^3*(4*A*a*d + 6*A*b*c + B*a*d - B*b*c))/b + (A*a*c*d^2*i^3)/b))/(4*b*d) + (c^2*i^3*(12*A*a*d + 8*A*b*c + 3*B*a*d - 3*B*b*c))/(2*b) - (a*c*((d^2*i^3*(4*A*a

$$\begin{aligned} & *d + 16*A*b*c + B*a*d - B*b*c))/(4*b) - (A*d^2*i^3*(4*a*d + 4*b*c))/(4*b)) \\ & / (b*d)) - x^2*(((d^2*i^3*(4*A*a*d + 16*A*b*c + B*a*d - B*b*c))/(4*b) - (A* \\ & d^2*i^3*(4*a*d + 4*b*c))/(4*b))*(4*a*d + 4*b*c))/(8*b*d) - (c*d*i^3*(4*A*a* \\ & d + 6*A*b*c + B*a*d - B*b*c))/(2*b) + (A*a*c*d^2*i^3)/(2*b)) + \log((e*(a + \\ & b*x))/(c + d*x))*((B*d^3*i^3*x^4)/4 + B*c^3*i^3*x + (3*B*c^2*d*i^3*x^2)/2 + \\ & B*c*d^2*i^3*x^3) + x^3*((d^2*i^3*(4*A*a*d + 16*A*b*c + B*a*d - B*b*c))/(12 \\ & *b) - (A*d^2*i^3*(4*a*d + 4*b*c))/(12*b)) - (\log(a + b*x)*(B*a^4*d^3*i^3 - \\ & 4*B*a*b^3*c^3*i^3 + 6*B*a^2*b^2*c^2*d*i^3 - 4*B*a^3*b*c*d^2*i^3))/(4*b^4) + \\ & (A*d^3*i^3*x^4)/4 - (B*c^4*i^3*\log(c + d*x))/(4*d) \end{aligned}$$

sympy [B] time = 4.12, size = 706, normalized size = 4.74

$$\frac{Ad^3i^3x^4}{4} \frac{Bai^3(ad-2bc)(a^2d^2-2abcd+2b^2c^2) \log\left(x + \frac{Ba^4cd^3i^3-4Ba^3bc^2d^2i^3+6Ba^2b^2c^3di^3+\frac{Ba^2di^3(ad-2bc)(a^2d^2-2abcd+2b^2c^2)}{b}-5}{Ba^4d^4i^3-4Ba^3bcd^3i^3+6Ba^2b^2c^2d^2i^3-4Bab^3i^3}\right)}{4b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*(b*x+a)/(d*x+c))),x)

[Out] A*d**3*i**3*x**4/4 - B*a*i**3*(a*d - 2*b*c)*(a**2*d**2 - 2*a*b*c*d + 2*b**2*c**2)*log(x + (B*a**4*c*d**3*i**3 - 4*B*a**3*b*c**2*d**2*i**3 + 6*B*a**2*b**2*c**3*d*i**3 + B*a**2*d*i**3*(a*d - 2*b*c)*(a**2*d**2 - 2*a*b*c*d + 2*b**2*c**2)/b - 5*B*a*b**3*c**4*i**3 - B*a*c*i**3*(a*d - 2*b*c)*(a**2*d**2 - 2*a*b*c*d + 2*b**2*c**2)))/(B*a**4*d**4*i**3 - 4*B*a**3*b*c*d**3*i**3 + 6*B*a**2*b**2*c**2*d**2*i**3 - 4*B*a*b**3*c**3*d*i**3 - B*b**4*c**4*i**3))/(4*b**4) - B*c**4*i**3*log(x + (B*a**4*c*d**3*i**3 - 4*B*a**3*b*c**2*d**2*i**3 + 6*B*a**2*b**2*c**3*d*i**3 - 4*B*a*b**3*c**4*i**3 - B*b**4*c**5*i**3/d)/(B*a**4*d**4*i**3 - 4*B*a**3*b*c*d**3*i**3 + 6*B*a**2*b**2*c**2*d**2*i**3 - 4*B*a*b**3*c**3*d*i**3 - B*b**4*c**4*i**3))/(4*d) + x**3*(A*c*d**2*i**3 + B*a*d**3*i**3/(12*b) - B*c*d**2*i**3/12) + x**2*(3*A*c**2*d*i**3/2 - B*a**2*d**3*i**3/(8*b**2) + B*a*c*d**2*i**3/(2*b) - 3*B*c**2*d*i**3/8) + x*(A*c**3*i**3 + B*a**3*d**3*i**3/(4*b**3) - B*a**2*c*d**2*i**3/b**2 + 3*B*a*c**2*d*i**3/(2*b) - 3*B*c**3*i**3/4) + (B*c**3*i**3*x + 3*B*c**2*d*i**3*x**2/2 + B*c*d**2*i**3*x**3 + B*d**3*i**3*x**4/4)*log(e*(a + b*x)/(c + d*x))

$$3.24 \quad \int \frac{(ci+dx)^3 \left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{ag+bgx} dx$$

Optimal. Leaf size=356

$$\frac{di^3(a+bx)(bc-ad)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{b^4g} - \frac{i^3(bc-ad)^3 \log\left(1 - \frac{b(c+dx)}{d(a+bx)}\right) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{b^4g} + \frac{i^3(c+dx)^2(bc-ad)}{b^4g}$$

[Out] $-5/6*B*d*(-a*d+b*c)^2*i^3*x/b^3/g-1/6*B*(-a*d+b*c)*i^3*(d*x+c)^2/b^2/g-5/6*B*(-a*d+b*c)^3*i^3*\ln((b*x+a)/(d*x+c))/b^4/g+d*(-a*d+b*c)^2*i^3*(b*x+a)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^4/g+1/2*(-a*d+b*c)*i^3*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^2/g+1/3*i^3*(d*x+c)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b/g-11/6*B*(-a*d+b*c)^3*i^3*\ln(d*x+c)/b^4/g-(-a*d+b*c)^3*i^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))*\ln(1-b*(d*x+c)/d/(b*x+a))/b^4/g+B*(-a*d+b*c)^3*i^3*\text{polylog}(2,b*(d*x+c)/d/(b*x+a))/b^4/g$

Rubi [A] time = 0.60, antiderivative size = 436, normalized size of antiderivative = 1.22, number of steps used = 23, number of rules used = 13, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.325$, Rules used = {2528, 2486, 31, 2524, 12, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 43}

$$\frac{Bi^3(bc-ad)^3 \text{PolyLog}\left(2, -\frac{d(a+bx)}{bc-ad}\right)}{b^4g} + \frac{i^3(c+dx)^2(bc-ad) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{2b^2g} + \frac{i^3(bc-ad)^3 \log(ag+bgx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{b^4g}$$

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x])))/(a*g + b*g*x), x]

[Out] $(A*d*(b*c - a*d)^2*i^3*x)/(b^3*g) - (5*B*d*(b*c - a*d)^2*i^3*x)/(6*b^3*g) - (B*(b*c - a*d)*i^3*(c + d*x)^2)/(6*b^2*g) - (5*B*(b*c - a*d)^3*i^3*\text{Log}[a + b*x])/(6*b^4*g) - (B*(b*c - a*d)^3*i^3*\text{Log}[g*(a + b*x)]^2)/(2*b^4*g) + (B*d*(b*c - a*d)^2*i^3*(a + b*x)*\text{Log}[(e*(a + b*x))/(c + d*x])/(b^4*g) + ((b*c - a*d)*i^3*(c + d*x)^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]))/(2*b^2*g) + (i^3*(c + d*x)^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]))/(3*b*g) - (B*(b*c - a*d)^3*i^3*\text{Log}[c + d*x])/(b^4*g) + ((b*c - a*d)^3*i^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]))/(c + d*x)*\text{Log}[a*g + b*g*x])/(b^4*g) + (B*(b*c - a*d)^3*i^3*\text{Log}[(b*(c + d*x))/(b*c - a*d)]*\text{Log}[a*g + b*g*x])/(b^4*g) + (B*(b*c - a*d)^3*i^3*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))])/(b^4*g)$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_) /; FreeQ[b, x]]

Rule 31

Int[((a_) + (b_)*(x_))⁽⁻¹⁾, x_Symbol] := Simp[Log[RemoveContent[a + b*x, x]]/b, x] /; FreeQ[{a, b}, x]

Rule 43

Int[((a_) + (b_)*(x_))^(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)ⁿ, x], x] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && (!IntegerQ[n] || (EqQ[c, 0] && LeQ[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])

Rule 2301

Int[((a_) + Log[(c_)*(x_)^(n_)]*(b_))/(x_), x_Symbol] := Simp[(a + b*Log[c*xⁿ])²/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2390

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)]*(b_))^(p_)*((f_) + (g_)*(x_))^(q_), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*xⁿ])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_)*((d_) + (e_)*(x_))^(n_)]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*xⁿ)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))]*(b_))/((f_) + (g_)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)]*(b_))/((f_) + (g_)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)ⁿ])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol]
:> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n]]^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q]^r]^s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[
RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(24c + 24dx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{ag + bgx} dx &= \int \left(\frac{13824d(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3g} + \frac{576d(bc - ad)(24c + 24dx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{bg} \right) dx \\
&= \frac{(13824(bc - ad)^3) \int \frac{A+B \log \left(\frac{e(a+bx)}{c+dx} \right)}{ag+bgx} dx}{b^3} + \frac{(24d) \int (24c + 24dx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) dx}{bg} \\
&= \frac{13824Ad(bc - ad)^2x}{b^3g} + \frac{6912(bc - ad)(c + dx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g} \\
&= \frac{13824Ad(bc - ad)^2x}{b^3g} + \frac{13824Bd(bc - ad)^2(a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{b^4g} + \frac{6912Bd(bc - ad)(c + dx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{b^4g} \\
&= \frac{13824Ad(bc - ad)^2x}{b^3g} + \frac{13824Bd(bc - ad)^2(a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{b^4g} + \frac{6912Bd(bc - ad)(c + dx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{b^4g} \\
&= \frac{13824Ad(bc - ad)^2x}{b^3g} - \frac{11520Bd(bc - ad)^2x}{b^3g} - \frac{2304B(bc - ad)(c + dx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{b^2g} \\
&= \frac{13824Ad(bc - ad)^2x}{b^3g} - \frac{11520Bd(bc - ad)^2x}{b^3g} - \frac{2304B(bc - ad)(c + dx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{b^2g} \\
&= \frac{13824Ad(bc - ad)^2x}{b^3g} - \frac{11520Bd(bc - ad)^2x}{b^3g} - \frac{2304B(bc - ad)(c + dx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{b^2g} \\
&= \frac{13824Ad(bc - ad)^2x}{b^3g} - \frac{11520Bd(bc - ad)^2x}{b^3g} - \frac{2304B(bc - ad)(c + dx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{b^2g}
\end{aligned}$$

Mathematica [A] time = 0.27, size = 352, normalized size = 0.99

$$\frac{i^3 \left(2b^3(c + dx)^3 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right) + 3b^2(c + dx)^2(bc - ad) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right) + 6(bc - ad)^3 \log(g(a + bx)) \right)}{b^3g}$$

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])/(a*g + b*g*x), x]


```
[Out] (i^3*(6*A*b*d*(b*c - a*d)^2*x - 3*B*(b*c - a*d)^2*(b*d*x + (b*c - a*d)*Log[
a + b*x]) - B*(b*c - a*d)*(2*b*d*(b*c - a*d)*x + b^2*(c + d*x)^2 + 2*(b*c -
a*d)^2*Log[a + b*x]) + 6*B*d*(b*c - a*d)^2*(a + b*x)*Log[(e*(a + b*x))/(c
+ d*x)] + 3*b^2*(b*c - a*d)*(c + d*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]
) + 2*b^3*(c + d*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 6*(b*c - a*d)^
3*Log[g*(a + b*x)]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 6*B*(b*c - a*d)^3
*Log[c + d*x] - 3*B*(b*c - a*d)^3*(Log[g*(a + b*x)]*(Log[g*(a + b*x)] - 2*L
og[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-b*c + a*d)]
)))/(6*b^4*g)
```

fricas [F] time = 0.93, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{Ad^3i^3x^3 + 3Acd^2i^3x^2 + 3Ac^2di^3x + Ac^3i^3 + (Bd^3i^3x^3 + 3Bcd^2i^3x^2 + 3Bc^2di^3x + Bc^3i^3) \log\left(\frac{bex+ae}{dx+c}\right)}{bgx + ag} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g),x, algorit
hm="fricas")
```

```
[Out] integral((A*d^3*i^3*x^3 + 3*A*c*d^2*i^3*x^2 + 3*A*c^2*d*i^3*x + A*c^3*i^3 +
(B*d^3*i^3*x^3 + 3*B*c*d^2*i^3*x^2 + 3*B*c^2*d*i^3*x + B*c^3*i^3)*log((b*e
*x + a*e)/(d*x + c)))/(b*g*x + a*g), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g),x, algorit
hm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.16, size = 4594, normalized size = 12.90

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g),x)
```

```
[Out] -A*i^3/g/b*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c^3+11/6*B*i^3/g/b*ln(-
b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c^3-B*i^3/g/b*dilog(-(-b*e+(b/d*e+(a*d
-b*c)/(d*x+c)/d*e)*d)/b/e)*c^3+A*i^3/g/b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c^
```

$$\begin{aligned}
& 3+5/6*e*B^i^3/g/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*c^3-e*A^i^3/g/(1/(d*x+c)* \\
& a*d*e-1/(d*x+c)*b*c*e)*c^3+1/2*B^i^3/g*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/b* \\
& c^3+d^3*B^i^3/g/b^4*d\log(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a^3- \\
& 1/2*d^3*B^i^3/g*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/b^4*a^3-e*B^i^3/g*\ln(b/d* \\
& e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*c^3-5/2*d^4*e^2* \\
& B^i^3/g/b^3*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c* \\
& e)^2*a^4*c/(d*x+c)^2+5*d^3*e^2*B^i^3/g/b^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/ \\
& (1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^3*c^2/(d*x+c)^2-2*d^5*e^3*B^i^3/g/b^3 \\
& *\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^5*c/ \\
& (d*x+c)^3+5*d^4*e^3*B^i^3/g/b^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)* \\
& a*d*e-1/(d*x+c)*b*c*e)^3*a^4*c^2/(d*x+c)^3-20/3*d^3*e^3*B^i^3/g/b*\ln(b/d*e+ \\
& (a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^3*c^3/(d*x+c)^ \\
& 3-4*d^3*e*B^i^3/g/b^3*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d \\
& *x+c)*b*c*e)*a^3*c/(d*x+c)+6*d^2*e*B^i^3/g/b^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d \\
& *e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^2*c^2/(d*x+c)^4*d*e*B^i^3/g/b*\ln(b/ \\
& d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a*c^3/(d*x+c)- \\
& 5*d^2*e^2*B^i^3/g/b*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x \\
& +c)*b*c*e)^2*a^2*c^3/(d*x+c)^2-2*d*e^3*B^i^3/g*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d \\
& *e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a*c^5/(d*x+c)^3*b+1/2*d^5*e^2*B^i^3 \\
& /g/b^4*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2* \\
& a^5/(d*x+c)^2+3/2*d^2*e^2*B^i^3/g/b*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x \\
& +c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^2*c+d^4*e*B^i^3/g/b^4*\ln(b/d*e+(a*d-b*c)/(d* \\
& x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^4/(d*x+c)+5/2*d*e^2*B^i^3/g*l \\
& n(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a*c^4/(d \\
& *x+c)^2+5*d^2*e^3*B^i^3/g*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e- \\
& 1/(d*x+c)*b*c*e)^3*a^2*c^4/(d*x+c)^3+d*e^3*B^i^3/g*b*\ln(b/d*e+(a*d-b*c)/(d* \\
& x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*c^2*a+1/3*d^6*e^3*B^i^3/g/b^4 \\
& *\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^6/(d \\
& *x+c)^3-3*d^2*e*B^i^3/g/b^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d* \\
& e-1/(d*x+c)*b*c*e)*a^2*c-d^3*A^i^3/g/b^4*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a^ \\
& 3-11/6*d^3*B^i^3/g/b^4*\ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a^3-B^i^3/g \\
& /b*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*\ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)* \\
& d)/b/e)*c^3+d^3*A^i^3/g/b^4*\ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a^3-1/ \\
& 6*e^2*B^i^3/g/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*c^3*b-1/3*e^3*A^i^3/g*b^2 \\
& /(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*c^3+1/2*e^2*A^i^3/g/(1/(d*x+c)*a*d*e-1 \\
& /d*x+c)*b*c*e)^2*c^3*b-5/2*d*e*B^i^3/g/b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e) \\
& *a*c^2-3*d^2*e*A^i^3/g/b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^2*c+3*d*e*A^ \\
& i^3/g/b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a*c^2-1/2*d^2*e^2*B^i^3/g/b/(1/(d \\
& *x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^2*c+d*e^3*A^i^3/g/(1/(d*x+c)*a*d*e-1/(d*x+ \\
& c)*b*c*e)^3*a*c^2*b+3/2*d^2*e^2*A^i^3/g/b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e) \\
& ^2*a^2*c-1/2*e^2*B^i^3/g*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1 \\
& /d*x+c)*b*c*e)^2*c^5/(d*x+c)^2*b-1/2*d^3*e^2*B^i^3/g/b^2*\ln(b/d*e+(a*d-b*c \\
&)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^3+1/3*d^3*e^3*B^i^3/g/ \\
& b*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^3-3 \\
& /2*d*e^2*B^i^3/g*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)
\end{aligned}$$

```

*b*c*e)^2*c^2*a-d^2*e^3*B*i^3/g*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*
a*d*e-1/(d*x+c)*b*c*e)^3*a^2*c-3*d^2*B*i^3/g/b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)
/d*e)*ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a^2*c+3*d*B*i^3/g/b^2
*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)
/b/e)*a*c^2+1/3*e^3*B*i^3/g*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*
a*d*e-1/(d*x+c)*b*c*e)^3*c^6/(d*x+c)^3+d^3*e*B*i^3/g/b^3*ln(b/d*e+(a*d-b*c)
/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^3-11/2*d*B*i^3/g/b^2*ln(-
b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c^2*a+11/2*d^2*B*i^3/g/b^3*ln(-b*e+(b/
d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a^2*c-1/3*e^3*B*i^3/g*b^2*ln(b/d*e+(a*d-b*c)/
(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*c^3+1/2*e^2*B*i^3/g*ln(b/d
*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*c^3*b+d^3*B*i
^3/g/b^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)
/d*e)*d)/b/e)*a^3-3*d^2*A*i^3/g/b^3*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d
)*a^2*c+3*d*e*B*i^3/g/b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/
(d*x+c)*b*c*e)*a*c^2+5/2*d^2*e*B*i^3/g/b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e
)*a^2*c-d^2*e^3*A*i^3/g/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^2*c+d^3*e*A*i
^3/g/b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^3-5/6*d^3*e*B*i^3/g/b^3/(1/(d*
x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^3+1/6*d^3*e^2*B*i^3/g/b^2/(1/(d*x+c)*a*d*e-1/
(d*x+c)*b*c*e)^2*a^3-3/2*d*B*i^3/g*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/b^2*c^
2*a+1/3*d^3*e^3*A*i^3/g/b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^3-1/2*d^3*e
^2*A*i^3/g/b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^3+1/2*d*e^2*B*i^3/g/(1
/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*c^2*a-3/2*d*e^2*A*i^3/g/(1/(d*x+c)*a*d*e-
1/(d*x+c)*b*c*e)^2*c^2*a+3/2*d^2*B*i^3/g*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/
b^3*a^2*c+e*B*i^3/g*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x
+c)*b*c*e)*c^4/(d*x+c)+3*d^2*A*i^3/g/b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a^
2*c+3*d*A*i^3/g/b^2*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c^2*a+3*d*B*i^
3/g/b^2*dilog(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*c^2*a-3*d^2*B*i^
3/g/b^3*dilog(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a^2*c-3*d*A*i^3/
g/b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c^2*a

```

maxima [B] time = 1.85, size = 850, normalized size = 2.39

$$3 A c^2 d i^3 \left(\frac{x}{b g} - \frac{a \log(b x + a)}{b^2 g} \right) - \frac{1}{6} A d^3 i^3 \left(\frac{6 a^3 \log(b x + a)}{b^4 g} - \frac{2 b^2 x^3 - 3 a b x^2 + 6 a^2 x}{b^3 g} \right) + \frac{3}{2} A c d^2 i^3 \left(\frac{2 a^2 \log(b x + a)}{b^3 g} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

```

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g),x, algorit
hm="maxima")

```

```

[Out] 3*A*c^2*d*i^3*(x/(b*g) - a*log(b*x + a)/(b^2*g)) - 1/6*A*d^3*i^3*(6*a^3*log
(b*x + a)/(b^4*g) - (2*b^2*x^3 - 3*a*b*x^2 + 6*a^2*x)/(b^3*g)) + 3/2*A*c*d^
2*i^3*(2*a^2*log(b*x + a)/(b^3*g) + (b*x^2 - 2*a*x)/(b^2*g)) + A*c^3*i^3*lo
g(b*g*x + a*g)/(b*g) - 1/6*(11*b^2*c^3*i^3 - 15*a*b*c^2*d*i^3 + 6*a^2*c*d^2
*i^3)*B*log(d*x + c)/(b^3*g) + (b^3*c^3*i^3 - 3*a*b^2*c^2*d*i^3 + 3*a^2*b*c

```

```

*d^2*i^3 - a^3*d^3*i^3)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) +
dilog(-(b*d*x + a*d)/(b*c - a*d))*B/(b^4*g) + 1/6*(2*B*b^3*d^3*i^3*x^3*log
(e) + ((9*i^3*log(e) - i^3)*b^3*c*d^2 - (3*i^3*log(e) - i^3)*a*b^2*d^3)*B*x
^2 + 3*(b^3*c^3*i^3 - 3*a*b^2*c^2*d*i^3 + 3*a^2*b*c*d^2*i^3 - a^3*d^3*i^3)*
B*log(b*x + a)^2 + ((18*i^3*log(e) - 7*i^3)*b^3*c^2*d - 6*(3*i^3*log(e) - 2
*i^3)*a*b^2*c*d^2 + (6*i^3*log(e) - 5*i^3)*a^2*b*d^3)*B*x + (2*B*b^3*d^3*i^
3*x^3 + 3*(3*b^3*c*d^2*i^3 - a*b^2*d^3*i^3)*B*x^2 + 6*(3*b^3*c^2*d*i^3 - 3*
a*b^2*c*d^2*i^3 + a^2*b*d^3*i^3)*B*x + (6*b^3*c^3*i^3*log(e) - 18*(i^3*log(
e) - i^3)*a*b^2*c^2*d + 9*(2*i^3*log(e) - 3*i^3)*a^2*b*c*d^2 - (6*i^3*log(e
) - 11*i^3)*a^3*d^3)*B)*log(b*x + a) - (2*B*b^3*d^3*i^3*x^3 + 3*(3*b^3*c*d^
2*i^3 - a*b^2*d^3*i^3)*B*x^2 + 6*(3*b^3*c^2*d*i^3 - 3*a*b^2*c*d^2*i^3 + a^2
*b*d^3*i^3)*B*x + 6*(b^3*c^3*i^3 - 3*a*b^2*c^2*d*i^3 + 3*a^2*b*c*d^2*i^3 -
a^3*d^3*i^3)*B*log(b*x + a))*log(d*x + c))/(b^4*g)

```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ci + dix)^3 \left(A + B \ln \left(\frac{e(a+bx)}{c+dx} \right) \right)}{ag + bgx} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x),x)
```

```
[Out] int(((c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x), x
)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g),x)
```

```
[Out] Timed out
```

$$3.25 \quad \int \frac{(ci+dx)^3 \left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{(ag+bgx)^2} dx$$

Optimal. Leaf size=373

$$\frac{2d^2i^3(a+bx)(bc-ad) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{b^4g^2} - \frac{3di^3(bc-ad)^2 \log\left(1 - \frac{b(c+dx)}{d(a+bx)}\right) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{b^4g^2} - \frac{i^3(c+dx)(b^2x^2+2cdx+ad^2)}{b^4g^2}$$

[Out] $-1/2*B*d^2*(-a*d+b*c)*i^3*x/b^3/g^2-B*(-a*d+b*c)^2*i^3*(d*x+c)/b^3/g^2/(b*x+a)-1/2*B*d*(-a*d+b*c)^2*i^3*\ln((b*x+a)/(d*x+c))/b^4/g^2+2*d^2*(-a*d+b*c)*i^3*(b*x+a)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^4/g^2-(-a*d+b*c)^2*i^3*(d*x+c)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^3/g^2/(b*x+a)+1/2*d*i^3*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^2/g^2-5/2*B*d*(-a*d+b*c)^2*i^3*\ln(d*x+c)/b^4/g^2-3*d*(-a*d+b*c)^2*i^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))*\ln(1-b*(d*x+c)/d/(b*x+a))/b^4/g^2+3*B*d*(-a*d+b*c)^2*i^3*polylog(2,b*(d*x+c)/d/(b*x+a))/b^4/g^2$

Rubi [A] time = 0.70, antiderivative size = 521, normalized size of antiderivative = 1.40, number of steps used = 22, number of rules used = 14, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.350$, Rules used = {2528, 2486, 31, 2525, 12, 72, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{3Bdi^3(bc-ad)^2 \text{PolyLog}\left(2, -\frac{d(a+bx)}{bc-ad}\right)}{b^4g^2} - \frac{a^2Bd^3i^3 \log(a+bx)}{2b^4g^2} + \frac{d^3i^3x^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{2b^2g^2} + \frac{3di^3(bc-ad)^2 \log(a+bx)}{b^4g^2}$$

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(a*g + b*g*x)^2, x]

[Out] $(A*d^2*(3*b*c - 2*a*d)*i^3*x)/(b^3*g^2) - (B*d^2*(b*c - a*d)*i^3*x)/(2*b^3*g^2) - (B*(b*c - a*d)^3*i^3)/(b^4*g^2*(a + b*x)) - (a^2*B*d^3*i^3*\text{Log}[a + b*x])/(2*b^4*g^2) - (B*d*(b*c - a*d)^2*i^3*\text{Log}[a + b*x])/(b^4*g^2) - (3*B*d*(b*c - a*d)^2*i^3*\text{Log}[a + b*x]^2)/(2*b^4*g^2) + (B*d^2*(3*b*c - 2*a*d)*i^3*(a + b*x)*\text{Log}[(e*(a + b*x))/(c + d*x]])/(b^4*g^2) + (d^3*i^3*x^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]]))/(2*b^2*g^2) - ((b*c - a*d)^3*i^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]]))/(b^4*g^2*(a + b*x)) + (3*d*(b*c - a*d)^2*i^3*\text{Log}[a + b*x]*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]]))/(b^4*g^2) + (B*c^2*d*i^3*\text{Log}[c + d*x])/(2*b^2*g^2) - (B*d*(3*b*c - 2*a*d)*(b*c - a*d)*i^3*\text{Log}[c + d*x])/(b^4*g^2) + (B*d*(b*c - a*d)^2*i^3*\text{Log}[c + d*x])/(b^4*g^2) + (3*B*d*(b*c - a*d)^2*i^3*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)]/(b^4*g^2) + (3*B*d*(b*c - a*d)^2*i^3*\text{PolyLog}[2, -(d*(a + b*x))/(b*c - a*d)]/(b^4*g^2)$

Rule 12

`Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]`

Rule 31

`Int[((a_) + (b_.)*(x_))^-1, x_Symbol] := Simp[Log[RemoveContent[a + b*x, x]]/b, x] /; FreeQ[{a, b}, x]`

Rule 44

`Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])`

Rule 72

`Int[((e_.) + (f_.)*(x_))^(p_.)/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] := Int[ExpandIntegrand[(e + f*x)^p/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IntegerQ[p]`

Rule 2301

`Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]`

Rule 2390

`Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]`

Rule 2391

`Int[Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]`

Rule 2393

`Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]`

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n]]^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)]^(r_.)]^(s_.), x_Symbol] := Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.))/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.))*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(25c + 25dx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{(ag + bgx)^2} dx &= \int \left(\frac{15625d^2(3bc - 2ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3g^2} + \frac{15625d^3x \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g^2} \right) dx \\
&= \frac{(15625d^3) \int x \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) dx}{b^2g^2} + \frac{(15625d^2(3bc - 2ad)) \int \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) dx}{b^3g^2} \\
&= \frac{15625Ad^2(3bc - 2ad)x}{b^3g^2} + \frac{15625d^3x^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{2b^2g^2} - \frac{15625Bd^2(3bc - 2ad)x \log \left(\frac{e(a+bx)}{c+dx} \right)}{b^4g^2} \\
&= \frac{15625Ad^2(3bc - 2ad)x}{b^3g^2} + \frac{15625Bd^2(3bc - 2ad)(a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{b^4g^2} \\
&= \frac{15625Ad^2(3bc - 2ad)x}{b^3g^2} + \frac{15625Bd^2(3bc - 2ad)(a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{b^4g^2} \\
&= \frac{15625Ad^2(3bc - 2ad)x}{b^3g^2} - \frac{15625Bd^2(bc - ad)x}{2b^3g^2} - \frac{15625B(bc - ad)^3}{b^4g^2(a + bx)} \\
&= \frac{15625Ad^2(3bc - 2ad)x}{b^3g^2} - \frac{15625Bd^2(bc - ad)x}{2b^3g^2} - \frac{15625B(bc - ad)^3}{b^4g^2(a + bx)} \\
&= \frac{15625Ad^2(3bc - 2ad)x}{b^3g^2} - \frac{15625Bd^2(bc - ad)x}{2b^3g^2} - \frac{15625B(bc - ad)^3}{b^4g^2(a + bx)} \\
&= \frac{15625Ad^2(3bc - 2ad)x}{b^3g^2} - \frac{15625Bd^2(bc - ad)x}{2b^3g^2} - \frac{15625B(bc - ad)^3}{b^4g^2(a + bx)}
\end{aligned}$$

Mathematica [A] time = 0.39, size = 374, normalized size = 1.00

$$i^3 \left(-a^2Bd^3 \log(a + bx) + b^2d^3x^2 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right) + 6d(bc - ad)^2 \log(a + bx) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right) - \frac{2(bc-ad)^3}{b^4g^2(a+bx)} \right)$$

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a*g + b*g*x)^2,x]

[Out] (i^3*(2*A*b*d^2*(3*b*c - 2*a*d)*x - b*B*d^2*(b*c - a*d)*x - (2*B*(b*c - a*d)^3)/(a + b*x) - a^2*B*d^3*Log[a + b*x] - 2*B*d*(b*c - a*d)^2*Log[a + b*x] + 2*B*d^2*(3*b*c - 2*a*d)*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)] + b^2*d^3*x^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - (2*(b*c - a*d)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a + b*x) + 6*d*(b*c - a*d)^2*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + b^2*B*c^2*d*Log[c + d*x] + 2*B*d*(b*c - a*d)^2*Log[c + d*x] - 2*B*d*(-(b*c) + a*d)*(-3*b*c + 2*a*d)*Log[c + d*x] - 3*B*d*(b*c - a*d)^2*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)])) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]))/(2*b^4*g^2)

fricas [F] time = 0.62, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{Ad^3i^3x^3 + 3Acd^2i^3x^2 + 3Ac^2di^3x + Ac^3i^3 + (Bd^3i^3x^3 + 3Bcd^2i^3x^2 + 3Bc^2di^3x + Bc^3i^3) \log\left(\frac{bex+ae}{dx+c}\right)}{b^2g^2x^2 + 2abg^2x + a^2g^2} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^2,x, algorithm="fricas")

[Out] integral((A*d^3*i^3*x^3 + 3*A*c*d^2*i^3*x^2 + 3*A*c^2*d*i^3*x + A*c^3*i^3 + (B*d^3*i^3*x^3 + 3*B*c*d^2*i^3*x^2 + 3*B*c^2*d*i^3*x + B*c^3*i^3)*log((b*e*x + a*e)/(d*x + c)))/(b^2*g^2*x^2 + 2*a*b*g^2*x + a^2*g^2), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^2,x, algorithm="giac")

[Out] Timed out

maple [B] time = 0.15, size = 3141, normalized size = 8.42

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^2,x)

[Out] $2*d^4*e^2*B^i^3/g^2/b^3*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*c/(d*x+c)^2*a^3-3*d^3*e^2*B^i^3/g^2/b^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*c^2/(d*x+c)^2*a^2+2*d^2*e^2*B^i^3/g^2/b*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*c^3/(d*x+c)^2*a+6*d^3*e*B^i^3/g^2/b^3*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^2/(d*x+c)*c-6*d^2*e*B^i^3/g^2/b^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a/(d*x+c)*c^2-6*d^2*A^i^3/g^2/b^3*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c*a+6*d^2*A^i^3/g^2/b^3*\ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c*a-5*d^2*B^i^3/g^2/b^3*\ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a*c-3*d^2*B^i^3/g^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/b^3*a*c+1/2*d^3*e^2*A^i^3/g^2/b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^2-2*d^3*e*A^i^3/g^2/b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^2+1/2*d^2*e^2*B^i^3/g^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*c^2-3*d^3*B^i^3/g^2/b^4*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*\ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a^2-e*B^i^3/g^2/b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c^2+6*d^2*B^i^3/g^2/b^3*dilog(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*c*a-3*d*B^i^3/g^2/b^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*\ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*c^2+6*d^2*B^i^3/g^2/b^3*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*\ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a*c-2*d*e*B^i^3/g^2/b*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*c^2-1/2*d^2*e^2*B^i^3/g^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*c^4/(d*x+c)^2+1/2*d^3*e^2*B^i^3/g^2/b^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^2-d^2*e*B^i^3/g^2/b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a^2-d^2*e^2*A^i^3/g^2/b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a*c+4*d^2*e*A^i^3/g^2/b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a*c+2*d*e*B^i^3/g^2/b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c*a-2*d^3*e*B^i^3/g^2/b^3*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^2+1/2*d^2*e^2*A^i^3/g^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*c^2-3*d*B^i^3/g^2/b^2*dilog(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*c^2+3*d*A^i^3/g^2/b^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c^2-3*d^3*B^i^3/g^2/b^4*dilog(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a^2+3/2*d^3*B^i^3/g^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/b^4*a^2-3*d^3*A^i^3/g^2/b^4*\ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a^2+3/2*d*B^i^3/g^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/b^2*c^2+5/2*d*B^i^3/g^2/b^2*\ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c^2-3*d*A^i^3/g^2/b^2*\ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c^2+5/2*d^3*B^i^3/g^2/b^4*\ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a^2-e*B^i^3/g^2/b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c^2-e*A^i^3/g^2/b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c^2+3*d^3*A^i^3/g^2/b^4*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a^2+1/2*d^2*e*B^i^3/g^2/b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*c^2-2*d^2*e*A^i^3/g^2/b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*c^2-d^2*e*A^i^3/g^2/b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a^2+1/2*d^3*e*B^i^3/g^2/b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^2-d^2*e*B^i^3/g^2/b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a^2-1/2*d^5*e^2*B^i^3/g^2/b^4*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^4/(d*x+c)^2+2*d^2*e*B^i^3/g^2/b^2/(1/(d$

$$x+c)*a*e^{-1/(d*x+c)}*b*c/d*e+b/d*e)*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a*c-d^2*e^2*B*i^3/g^2/b*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e^{-1/(d*x+c)}*b*c*e)^2*c*a+2*d*e*B*i^3/g^2/b*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e^{-1/(d*x+c)}*b*c*e)*c^3/(d*x+c)+4*d^2*e*B*i^3/g^2/b^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e^{-1/(d*x+c)}*b*c*e)*a*c-2*d^4*e*B*i^3/g^2/b^4*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e^{-1/(d*x+c)}*b*c*e)*a^3/(d*x+c)-d^2*e*B*i^3/g^2/b^2/(1/(d*x+c)*a*d*e^{-1/(d*x+c)}*b*c*e)*c*a+2*d*e*A*i^3/g^2/b^2/(1/(d*x+c)*a*e^{-1/(d*x+c)}*b*c/d*e+b/d*e)*a*c$$

maxima [B] time = 1.84, size = 1501, normalized size = 4.02

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^2,x, algorithm="maxima")

[Out]
$$\begin{aligned} & -3*A*(a^2/(b^4*g^2*x + a*b^3*g^2) - x/(b^2*g^2) + 2*a*\log(b*x + a)/(b^3*g^2)) * c*d^2*i^3 + 1/2*(2*a^3/(b^5*g^2*x + a*b^4*g^2) + 6*a^2*\log(b*x + a)/(b^4*g^2) + (b*x^2 - 4*a*x)/(b^3*g^2))*A*d^3*i^3 + 3*A*c^2*d*i^3*(a/(b^3*g^2*x + a*b^2*g^2) + \log(b*x + a)/(b^2*g^2)) - B*c^3*i^3*(\log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^2*g^2*x + a*b*g^2) + 1/(b^2*g^2*x + a*b*g^2) + d*\log(b*x + a)/((b^2*c - a*b*d)*g^2) - d*\log(d*x + c)/((b^2*c - a*b*d)*g^2)) - A*c^3*i^3/(b^2*g^2*x + a*b*g^2) - 1/2*(5*b^3*c^3*d*i^3 - 3*a*b^2*c^2*d^2*i^3 - 2*a^2*b*c*d^3*i^3 + 2*a^3*d^4*i^3)*B*\log(d*x + c)/(b^5*c*g^2 - a*b^4*d*g^2) + 1/2*((b^4*c*d^3*i^3*\log(e) - a*b^3*d^4*i^3*\log(e))*B*x^3 + ((6*i^3*\log(e) - i^3)*b^4*c^2*d^2 - (9*i^3*\log(e) - 2*i^3)*a*b^3*c*d^3 + (3*i^3*\log(e) - i^3)*a^2*b^2*d^4)*B*x^2 + ((6*i^3*\log(e) - i^3)*a*b^3*c^2*d^2 - 2*(5*i^3*\log(e) - i^3)*a^2*b^2*c*d^3 + (4*i^3*\log(e) - i^3)*a^3*b*d^4)*B*x + 3*((b^4*c^3*d*i^3 - 3*a*b^3*c^2*d^2*i^3 + 3*a^2*b^2*c*d^3*i^3 - a^3*b*d^4*i^3)*B*x + (a*b^3*c^3*d*i^3 - 3*a^2*b^2*c^2*d^2*i^3 + 3*a^3*b*c*d^3*i^3 - a^4*d^4*i^3)*B)*\log(b*x + a)^2 + 2*(3*(i^3*\log(e) + i^3)*a*b^3*c^3*d - 6*(i^3*\log(e) + i^3)*a^2*b^2*c^2*d^2 + 4*(i^3*\log(e) + i^3)*a^3*b*c*d^3 - (i^3*\log(e) + i^3)*a^4*d^4)*B + ((b^4*c*d^3*i^3 - a*b^3*d^4*i^3)*B*x^3 + 3*(2*b^4*c^2*d^2*i^3 - 3*a*b^3*c*d^3*i^3 + a^2*b^2*d^4*i^3)*B*x^2 + (6*b^4*c^3*d*i^3*\log(e) - 18*(i^3*\log(e) - i^3)*a*b^3*c^2*d^2 + 9*(2*i^3*\log(e) - 3*i^3)*a^2*b^2*c*d^3 - (6*i^3*\log(e) - 11*i^3)*a^3*b*d^4)*B*x - (18*a^2*b^2*c^2*d^2*i^3*\log(e) - 6*(i^3*\log(e) + i^3)*a*b^3*c^3*d - 9*(2*i^3*\log(e) - i^3)*a^3*b*c*d^3 + (6*i^3*\log(e) - 5*i^3)*a^4*d^4)*B)*\log(b*x + a) - ((b^4*c*d^3*i^3 - a*b^3*d^4*i^3)*B*x^3 + 3*(2*b^4*c^2*d^2*i^3 - 3*a*b^3*c*d^3*i^3 + a^2*b^2*d^4*i^3)*B*x^2 + 2*(3*a*b^3*c^2*d^2*i^3 - 5*a^2*b^2*c*d^3*i^3 + 2*a^3*b*d^4*i^3)*B*x + 2*(3*a*b^3*c^3*d*i^3 - 6*a^2*b^2*c^2*d^2*i^3 + 4*a^3*b*c*d^3*i^3 - a^4*d^4*i^3)*B + 6*((b^4*c^3*d*i^3 - 3*a*b^3*c^2*d^2*i^3 + 3*a^2*b^2*c*d^3*i^3 - a^3*b*d^4*i^3)*B*x + (a*b^3*c^3*d*i^3 - 3*a^2*b^2*c^2*d^2*i^3 + 3*a^3*b*c*d^3*i^3 - a^4*d^4*i^3)*B)*\log(b*x + a))*\log(d*x + c))/(a*b^5*c*g^2 - a^2*b^4*d^2)$$

$4*d*g^2 + (b^6*c*g^2 - a*b^5*d*g^2)*x) + 3*(b^2*c^2*d*i^3 - 2*a*b*c*d^2*i^3 + a^2*d^3*i^3)*(\log(b*x + a)*\log((b*d*x + a*d)/(b*c - a*d) + 1) + \text{dilog}(-(b*d*x + a*d)/(b*c - a*d)))*B/(b^4*g^2)$

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ci + dix)^3 \left(A + B \ln \left(\frac{e(a+bx)}{c+dx} \right) \right)}{(ag + bgx)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x)^2, x)

[Out] int(((c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x)^2, x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)**2,x)

[Out] Timed out

$$3.26 \quad \int \frac{(ci+dx)^3 \left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{(ag+bgx)^3} dx$$

Optimal. Leaf size=345

$$\frac{d^3 i^3 (a+bx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{b^4 g^3} - \frac{3d^2 i^3 (bc-ad) \log\left(1 - \frac{b(c+dx)}{d(a+bx)}\right) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{b^4 g^3} - \frac{2di^3 (c+dx)(bc-ad)}{b^3 g^3 (a+bx)}$$

[Out] $-2*B*d*(-a*d+b*c)*i^3*(d*x+c)/b^3/g^3/(b*x+a)-1/4*B*(-a*d+b*c)*i^3*(d*x+c)^2/b^2/g^3/(b*x+a)^2+d^3*i^3*(b*x+a)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^4/g^3-2*d*(-a*d+b*c)*i^3*(d*x+c)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^3/g^3/(b*x+a)-1/2*(-a*d+b*c)*i^3*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^2/g^3/(b*x+a)^2-B*d^2*(-a*d+b*c)*i^3*\ln(d*x+c)/b^4/g^3-3*d^2*(-a*d+b*c)*i^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))*\ln(1-b*(d*x+c)/d/(b*x+a))/b^4/g^3+3*B*d^2*(-a*d+b*c)*i^3*\text{polylog}(2,b*(d*x+c)/d/(b*x+a))/b^4/g^3$

Rubi [A] time = 0.72, antiderivative size = 442, normalized size of antiderivative = 1.28, number of steps used = 22, number of rules used = 13, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.325$, Rules used = {2528, 2486, 31, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{3Bd^2 i^3 (bc-ad) \text{PolyLog}\left(2, -\frac{d(a+bx)}{bc-ad}\right)}{b^4 g^3} + \frac{3d^2 i^3 (bc-ad) \log(a+bx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{b^4 g^3} - \frac{3di^3 (bc-ad)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{b^4 g^3 (a+bx)}$$

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(a*g + b*g*x)^3, x]

[Out] $(A*d^3*i^3*x)/(b^3*g^3) - (B*(b*c - a*d)^3*i^3)/(4*b^4*g^3*(a + b*x)^2) - (5*B*d*(b*c - a*d)^2*i^3)/(2*b^4*g^3*(a + b*x)) - (5*B*d^2*(b*c - a*d)*i^3*\text{Log}[a + b*x])/(2*b^4*g^3) - (3*B*d^2*(b*c - a*d)*i^3*\text{Log}[a + b*x]^2)/(2*b^4*g^3) + (B*d^3*i^3*(a + b*x)*\text{Log}[(e*(a + b*x))/(c + d*x]])/(b^4*g^3) - ((b*c - a*d)^3*i^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]]))/(2*b^4*g^3*(a + b*x)^2) - (3*d*(b*c - a*d)^2*i^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]]))/(b^4*g^3*(a + b*x)) + (3*d^2*(b*c - a*d)*i^3*\text{Log}[a + b*x]*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]]))/(b^4*g^3) + (3*B*d^2*(b*c - a*d)*i^3*\text{Log}[c + d*x])/(2*b^4*g^3) + (3*B*d^2*(b*c - a*d)*i^3*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)]/(b^4*g^3) + (3*B*d^2*(b*c - a*d)*i^3*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))])/(b^4*g^3)$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 31

Int[((a_) + (b_.)*(x_))⁽⁻¹⁾, x_Symbol] := Simp[Log[RemoveContent[a + b*x, x]]/b, x] /; FreeQ[{a, b}, x]

Rule 44

Int[((a_) + (b_.)*(x_))^{(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)ⁿ, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])}

Rule 2301

Int[((a_.) + Log[(c_.)*(x_)^(n_.)])*(b_.)/(x_), x_Symbol] := Simp[(a + b*Log[c*xⁿ])²/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.)])*(b_.))^{(p_.)*((f_) + (g_.)*(x_)^(q_.))}, x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*xⁿ])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*xⁿ)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))])*(b_.)/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.)])*(b_.)/((f_.) + (g_.)*(x_))), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)ⁿ]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)

, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2418

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]

Rule 2486

Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]

Rule 2524

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]

Rule 2525

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]

Rule 2528

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]

Rubi steps

$$\begin{aligned}
\int \frac{(26c + 26dx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{(ag + bgx)^3} dx &= \int \left(\frac{17576d^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3g^3} + \frac{17576(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3g^3(a + bx)^3} \right) dx \\
&= \frac{(17576d^3) \int \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) dx}{b^3g^3} + \frac{(52728d^2(bc - ad)) \int \frac{A+B \log \left(\frac{e(a+bx)}{c+dx} \right)}{a+bx} dx}{b^3g^3} \\
&= \frac{17576Ad^3x}{b^3g^3} - \frac{8788(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^4g^3(a + bx)^2} - \frac{52728d(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^4g^3(a + bx)^2} \\
&= \frac{17576Ad^3x}{b^3g^3} + \frac{17576Bd^3(a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{b^4g^3} - \frac{8788(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^4g^3(a + bx)^2} \\
&= \frac{17576Ad^3x}{b^3g^3} + \frac{17576Bd^3(a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{b^4g^3} - \frac{8788(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^4g^3(a + bx)^2} \\
&= \frac{17576Ad^3x}{b^3g^3} - \frac{4394B(bc - ad)^3}{b^4g^3(a + bx)^2} - \frac{43940Bd(bc - ad)^2}{b^4g^3(a + bx)} - \frac{43940Bd^2(bc - ad)}{b^4g^3(a + bx)} \\
&= \frac{17576Ad^3x}{b^3g^3} - \frac{4394B(bc - ad)^3}{b^4g^3(a + bx)^2} - \frac{43940Bd(bc - ad)^2}{b^4g^3(a + bx)} - \frac{43940Bd^2(bc - ad)}{b^4g^3(a + bx)} \\
&= \frac{17576Ad^3x}{b^3g^3} - \frac{4394B(bc - ad)^3}{b^4g^3(a + bx)^2} - \frac{43940Bd(bc - ad)^2}{b^4g^3(a + bx)} - \frac{43940Bd^2(bc - ad)}{b^4g^3(a + bx)} \\
&= \frac{17576Ad^3x}{b^3g^3} - \frac{4394B(bc - ad)^3}{b^4g^3(a + bx)^2} - \frac{43940Bd(bc - ad)^2}{b^4g^3(a + bx)} - \frac{43940Bd^2(bc - ad)}{b^4g^3(a + bx)}
\end{aligned}$$

Mathematica [A] time = 0.41, size = 314, normalized size = 0.91

$$i^3 \left(12d^2(bc - ad) \log(a + bx) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right) - \frac{12d(bc-ad)^2 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{a+bx} - \frac{2(bc-ad)^3 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{(a+bx)^2} + 4Bd^3(a + bx) \right)$$

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a*g + b*g*x)^3,x]


```
[Out] (i^3*(4*A*b*d^3*x - (B*(b*c - a*d)^3)/(a + b*x)^2 - (10*B*d*(b*c - a*d)^2)/(a + b*x) + 10*B*d^2*(-(b*c) + a*d)*Log[a + b*x] + 4*B*d^3*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)] - (2*(b*c - a*d)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])))/(a + b*x)^2 - (12*d*(b*c - a*d)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a + b*x) + 12*d^2*(b*c - a*d)*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 6*B*d^2*(b*c - a*d)*Log[c + d*x] + 6*B*d^2*(-(b*c) + a*d)*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)])))/(4*b^4*g^3)
```

fricas [F] time = 0.77, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{Ad^3i^3x^3 + 3Acd^2i^3x^2 + 3Ac^2di^3x + Ac^3i^3 + (Bd^3i^3x^3 + 3Bcd^2i^3x^2 + 3Bc^2di^3x + Bc^3i^3) \log\left(\frac{bex+ae}{dx+c}\right)}{b^3g^3x^3 + 3ab^2g^3x^2 + 3a^2bg^3x + a^3g^3} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^3,x, algorithm="fricas")
```

```
[Out] integral((A*d^3*i^3*x^3 + 3*A*c*d^2*i^3*x^2 + 3*A*c^2*d*i^3*x + A*c^3*i^3 + (B*d^3*i^3*x^3 + 3*B*c*d^2*i^3*x^2 + 3*B*c^2*d*i^3*x + B*c^3*i^3)*log((b*e*x + a*e)/(d*x + c)))/(b^3*g^3*x^3 + 3*a*b^2*g^3*x^2 + 3*a^2*b*g^3*x + a^3*g^3), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^3,x, algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.14, size = 1855, normalized size = 5.38

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^3,x)
```

```
[Out] -2*d^3*e*i^3/g^3*B/b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)/(d*x+c)*a*c+d^2*e*i^3/g^3*B/b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)/(d*x+c)*c^2-1/4*e^2*i^3/g^3*B/b/(1/(d*
```

$$\begin{aligned}
& x+c) * a * e^{-1} / (d * x+c) * b * c / d * e + b / d * e)^2 * c + d^2 * i^3 / g^3 * B / b^3 * \ln(-b * e + (b / d * e + (a * d \\
& - b * c) / (d * x+c) / d * e) * d) * c + 3 * d^3 * i^3 / g^3 * B / b^4 * \operatorname{dilog}(-(-b * e + (b / d * e + (a * d - b * c) / \\
& (d * x+c) / d * e) * d) / b / e) * a - 3 * d^3 * i^3 / g^3 * A / b^4 * \ln(b / d * e + (a * d - b * c) / (d * x+c) / d * e) * a \\
& + 3 * d^2 * i^3 / g^3 * A / b^3 * \ln(b / d * e + (a * d - b * c) / (d * x+c) / d * e) * c - d^3 * i^3 / g^3 * B / b^4 * \ln \\
& (-b * e + (b / d * e + (a * d - b * c) / (d * x+c) / d * e) * d) * a + 3 * d^3 * i^3 / g^3 * A / b^4 * \ln(-b * e + (b / d * e \\
& + (a * d - b * c) / (d * x+c) / d * e) * d) * a - 3 * d^2 * i^3 / g^3 * A / b^3 * \ln(-b * e + (b / d * e + (a * d - b * c) / \\
& (d * x+c) / d * e) * d) * c + d^4 * e * i^3 / g^3 * B / b^4 * \ln(b / d * e + (a * d - b * c) / (d * x+c) / d * e) / (1 / (d * \\
& x+c) * a * d * e^{-1} / (d * x+c) * b * c * e) / (d * x+c) * a^2 + 1 / 2 * d * e^2 * i^3 / g^3 * A / b^2 / (1 / (d * x+c) * \\
& a * e^{-1} / (d * x+c) * b * c / d * e + b / d * e)^2 * a + 1 / 4 * d * e^2 * i^3 / g^3 * B / b^2 / (1 / (d * x+c) * a * e^{-1} / (\\
& d * x+c) * b * c / d * e + b / d * e)^2 * a - d^2 * e * i^3 / g^3 * A / b^2 / (1 / (d * x+c) * a * d * e^{-1} / (d * x+c) * b * \\
& c * e) * c + 2 * d^2 * e * i^3 / g^3 * A / b^3 / (1 / (d * x+c) * a * e^{-1} / (d * x+c) * b * c / d * e + b / d * e) * a - 2 * d * \\
& e * i^3 / g^3 * A / b^2 / (1 / (d * x+c) * a * e^{-1} / (d * x+c) * b * c / d * e + b / d * e) * c + 2 * d^2 * e * i^3 / g^3 * B \\
& / b^3 / (1 / (d * x+c) * a * e^{-1} / (d * x+c) * b * c / d * e + b / d * e) * a - 2 * d * e * i^3 / g^3 * B / b^2 / (1 / (d * x+ \\
& c) * a * e^{-1} / (d * x+c) * b * c / d * e + b / d * e) * c + d^3 * e * i^3 / g^3 * A / b^3 / (1 / (d * x+c) * a * d * e^{-1} / (d \\
& * x+c) * b * c * e) * a + 3 * d^3 * i^3 / g^3 * B / b^4 * \ln(b / d * e + (a * d - b * c) / (d * x+c) / d * e) * \ln(-(-b * \\
& e + (b / d * e + (a * d - b * c) / (d * x+c) / d * e) * d) / b / e) * a - 3 * d^2 * i^3 / g^3 * B / b^3 * \ln(b / d * e + (a * d \\
& - b * c) / (d * x+c) / d * e) * \ln(-(-b * e + (b / d * e + (a * d - b * c) / (d * x+c) / d * e) * d) / b / e) * c - 1 / 2 * e^ \\
& 2 * i^3 / g^3 * B / b / (1 / (d * x+c) * a * e^{-1} / (d * x+c) * b * c / d * e + b / d * e)^2 * \ln(b / d * e + (a * d - b * c) / \\
& (d * x+c) / d * e) * c + 2 * d^2 * e * i^3 / g^3 * B / b^3 / (1 / (d * x+c) * a * e^{-1} / (d * x+c) * b * c / d * e + b / d * e \\
&) * \ln(b / d * e + (a * d - b * c) / (d * x+c) / d * e) * a + d^3 * e * i^3 / g^3 * B / b^3 * \ln(b / d * e + (a * d - b * c) / \\
& (d * x+c) / d * e) / (1 / (d * x+c) * a * d * e^{-1} / (d * x+c) * b * c * e) * a - 1 / 2 * e^2 * i^3 / g^3 * A / b / (1 / (d * \\
& x+c) * a * e^{-1} / (d * x+c) * b * c / d * e + b / d * e)^2 * c - 2 * d * e * i^3 / g^3 * B / b^2 / (1 / (d * x+c) * a * e^{-1} / \\
& (d * x+c) * b * c / d * e + b / d * e) * \ln(b / d * e + (a * d - b * c) / (d * x+c) / d * e) * c - d^2 * e * i^3 / g^3 * B / b^ \\
& 2 * \ln(b / d * e + (a * d - b * c) / (d * x+c) / d * e) / (1 / (d * x+c) * a * d * e^{-1} / (d * x+c) * b * c * e) * c + 1 / 2 * d \\
& * e^2 * i^3 / g^3 * B / b^2 / (1 / (d * x+c) * a * e^{-1} / (d * x+c) * b * c / d * e + b / d * e)^2 * \ln(b / d * e + (a * d - \\
& b * c) / (d * x+c) / d * e) * a - 3 * d^2 * i^3 / g^3 * B / b^3 * \operatorname{dilog}(-(-b * e + (b / d * e + (a * d - b * c) / (d * x+ \\
& c) / d * e) * d) / b / e) * c - 3 / 2 * d^3 * i^3 / g^3 * B * \ln(b / d * e + (a * d - b * c) / (d * x+c) / d * e)^2 / b^4 * a \\
& + 3 / 2 * d^2 * i^3 / g^3 * B * \ln(b / d * e + (a * d - b * c) / (d * x+c) / d * e)^2 / b^3 * c
\end{aligned}$$

maxima [B] time = 2.51, size = 2302, normalized size = 6.67

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^3,x, algorith="maxima")

[Out]
$$\begin{aligned}
& -3/4 * B * c^2 * d * i^3 * (2 * (2 * b * x + a) * \log(b * e * x / (d * x + c) + a * e / (d * x + c)) / (b^4 * g \\
& ^3 * x^2 + 2 * a * b^3 * g^3 * x + a^2 * b^2 * g^3) + (3 * a * b * c - a^2 * d + 2 * (2 * b^2 * c - a * b \\
& * d) * x) / ((b^5 * c - a * b^4 * d) * g^3 * x^2 + 2 * (a * b^4 * c - a^2 * b^3 * d) * g^3 * x + (a^2 * b^ \\
& 3 * c - a^3 * b^2 * d) * g^3) + 2 * (2 * b * c * d - a * d^2) * \log(b * x + a) / ((b^4 * c^2 - 2 * a * b^ \\
& 3 * c * d + a^2 * b^2 * d^2) * g^3) - 2 * (2 * b * c * d - a * d^2) * \log(d * x + c) / ((b^4 * c^2 - 2 * \\
& a * b^3 * c * d + a^2 * b^2 * d^2) * g^3)) - 1/2 * A * d^3 * i^3 * ((6 * a^2 * b * x + 5 * a^3) / (b^6 * g^ \\
& 3 * x^2 + 2 * a * b^5 * g^3 * x + a^2 * b^4 * g^3) - 2 * x / (b^3 * g^3) + 6 * a * \log(b * x + a) / (b^ \\
& 4 * g^3)) + 3/2 * A * c * d^2 * i^3 * ((4 * a * b * x + 3 * a^2) / (b^5 * g^3 * x^2 + 2 * a * b^4 * g^3 * x +
\end{aligned}$$

$$\begin{aligned}
& a^2 b^3 g^3) + 2 \log(bx + a)/(b^3 g^3)) + 1/4 B c^3 i^3 ((2 b d x - b c + \\
& 3 a d)/(b^4 c - a b^3 d) g^3 x^2 + 2(a b^3 c - a^2 b^2 d) g^3 x + (a^2 b \\
& ^2 c - a^3 b d) g^3) - 2 \log(b e x/(d x + c) + a e/(d x + c))/(b^3 g^3 x^2 \\
& + 2 a b^2 g^3 x + a^2 b g^3) + 2 d^2 \log(b x + a)/((b^3 c^2 - 2 a b^2 c d + \\
& a^2 b d^2) g^3) - 2 d^2 \log(d x + c)/((b^3 c^2 - 2 a b^2 c d + a^2 b d^2) * \\
& g^3) - 3/2 (2 b x + a) A c^2 d i^3/(b^4 g^3 x^2 + 2 a b^3 g^3 x + a^2 b^2 g^3) \\
& - 1/2 A c^3 i^3/(b^3 g^3 x^2 + 2 a b^2 g^3 x + a^2 b g^3) - 1/2 (2 b^3 \\
& * c^3 d^2 i^3 + 8 a b^2 c^2 d^3 i^3 - 13 a^2 b c d^4 i^3 + 5 a^3 d^5 i^3) B \\
& \log(d x + c)/(b^6 c^2 g^3 - 2 a b^5 c d g^3 + a^2 b^4 d^2 g^3) + 1/4 (4 (b^ \\
& 5 c^2 d^3 i^3 \log(e) - 2 a b^4 c d^4 i^3 \log(e) + a^2 b^3 d^5 i^3 \log(e)) B \\
& * x^3 + 8 (a b^4 c^2 d^3 i^3 \log(e) - 2 a^2 b^3 c d^4 i^3 \log(e) + a^3 b^2 d \\
& ^5 i^3 \log(e)) B * x^2 + 2 (12 (i^3 \log(e) + i^3) a b^4 c^3 d^2 - (28 i^3 \log \\
& (e) + 27 i^3) a^2 b^3 c^2 d^3 + 20 (i^3 \log(e) + i^3) a^3 b^2 c d^4 - (4 i^ \\
& 3 \log(e) + 5 i^3) a^4 b d^5) B * x + 6 ((b^5 c^3 d^2 i^3 - 3 a b^4 c^2 d^3 i^ \\
& 3 + 3 a^2 b^3 c d^4 i^3 - a^3 b^2 d^5 i^3) B * x^2 + 2 (a b^4 c^3 d^2 i^3 - 3 \\
& a^2 b^3 c^2 d^3 i^3 + 3 a^3 b^2 c d^4 i^3 - a^4 b d^5 i^3) B * x + (a^2 b^3 c \\
& ^3 d^2 i^3 - 3 a^3 b^2 c^2 d^3 i^3 + 3 a^4 b c d^4 i^3 - a^5 d^5 i^3) B) * l \\
& \log(b x + a)^2 + (3 (6 i^3 \log(e) + 7 i^3) a^2 b^3 c^3 d^2 - (46 i^3 \log(e) \\
& + 47 i^3) a^3 b^2 c^2 d^3 + (38 i^3 \log(e) + 35 i^3) a^4 b c d^4 - (10 i^3 \\
& \log(e) + 9 i^3) a^5 d^5) B + 2 (2 (b^5 c^2 d^3 i^3 - 2 a b^4 c d^4 i^3 + a^ \\
& 2 b^3 d^5 i^3) B * x^3 + (6 b^5 c^3 d^2 i^3 \log(e) - 18 (i^3 \log(e) - i^3) a \\
& b^4 c^2 d^3 + 9 (2 i^3 \log(e) - 3 i^3) a^2 b^3 c d^4 - (6 i^3 \log(e) - 11 i \\
& ^3) a^3 b^2 d^5) B * x^2 - 2 (18 a^2 b^3 c^2 d^3 i^3 \log(e) - 6 (i^3 \log(e) + \\
& i^3) a b^4 c^3 d^2 - 9 (2 i^3 \log(e) - i^3) a^3 b^2 c d^4 + (6 i^3 \log(e) \\
& - 5 i^3) a^4 b d^5) B * x + (18 a^4 b c d^4 i^3 \log(e) + 3 (2 i^3 \log(e) + 3 i \\
& ^3) a^2 b^3 c^3 d^2 - 9 (2 i^3 \log(e) + i^3) a^3 b^2 c^2 d^3 - 2 (3 i^3 \lo \\
& g(e) - i^3) a^5 d^5) B) * \log(b x + a) - 2 (2 (b^5 c^2 d^3 i^3 - 2 a b^4 c d^ \\
& 4 i^3 + a^2 b^3 d^5 i^3) B * x^3 + 4 (a b^4 c^2 d^3 i^3 - 2 a^2 b^3 c d^4 i^3 \\
& + a^3 b^2 d^5 i^3) B * x^2 + 4 (3 a b^4 c^3 d^2 i^3 - 7 a^2 b^3 c^2 d^3 i^3 \\
& + 5 a^3 b^2 c d^4 i^3 - a^4 b d^5 i^3) B * x + (9 a^2 b^3 c^3 d^2 i^3 - 23 a^ \\
& 3 b^2 c^2 d^3 i^3 + 19 a^4 b c d^4 i^3 - 5 a^5 d^5 i^3) B + 6 ((b^5 c^3 d^2 \\
& * i^3 - 3 a b^4 c^2 d^3 i^3 + 3 a^2 b^3 c d^4 i^3 - a^3 b^2 d^5 i^3) B * x^2 + \\
& 2 (a b^4 c^3 d^2 i^3 - 3 a^2 b^3 c^2 d^3 i^3 + 3 a^3 b^2 c d^4 i^3 - a^4 b \\
& * d^5 i^3) B * x + (a^2 b^3 c^3 d^2 i^3 - 3 a^3 b^2 c^2 d^3 i^3 + 3 a^4 b c d^ \\
& 4 i^3 - a^5 d^5 i^3) B) * \log(b x + a) * \log(d x + c))/(a^2 b^6 c^2 g^3 - 2 a^ \\
& 3 b^5 c d g^3 + a^4 b^4 d^2 g^3 + (b^8 c^2 g^3 - 2 a b^7 c d g^3 + a^2 b^6 \\
& d^2 g^3) * x^2 + 2 (a b^7 c^2 g^3 - 2 a^2 b^6 c d g^3 + a^3 b^5 d^2 g^3) * x) + \\
& 3 (b c d^2 i^3 - a d^3 i^3) * (\log(b x + a) * \log((b d x + a d)/(b c - a d) + \\
& 1) + \operatorname{dilog}(-(b d x + a d)/(b c - a d))) * B/(b^4 g^3)
\end{aligned}$$

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ci + dix)^3 \left(A + B \ln \left(\frac{e(a+bx)}{c+dx} \right) \right)}{(ag + bgx)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x)^3,
x)
```

```
[Out] int(((c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x)^3,
x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)**3,x)
```

```
[Out] Timed out
```

$$3.27 \quad \int \frac{(ci+dx)^3 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{(ag+bgx)^4} dx$$

Optimal. Leaf size=310

$$\frac{d^3 i^3 \log\left(1 - \frac{b(c+dx)}{d(a+bx)}\right) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{b^4 g^4} - \frac{d^2 i^3 (c + dx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{b^3 g^4 (a + bx)} - \frac{d i^3 (c + dx)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{2b^2 g^4 (a + bx)^2} +$$

[Out] $-B*d^2*i^3*(d*x+c)/b^3/g^4/(b*x+a)-1/4*B*d*i^3*(d*x+c)^2/b^2/g^4/(b*x+a)^2-1/9*B*i^3*(d*x+c)^3/b/g^4/(b*x+a)^3-d^2*i^3*(d*x+c)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^3/g^4/(b*x+a)-1/2*d*i^3*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^2/g^4/(b*x+a)^2-1/3*i^3*(d*x+c)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b/g^4/(b*x+a)^3-d^3*i^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))*\ln(1-b*(d*x+c)/d/(b*x+a))/b^4/g^4+B*d^3*i^3*polylog(2,b*(d*x+c)/d/(b*x+a))/b^4/g^4$

Rubi [A] time = 0.78, antiderivative size = 424, normalized size of antiderivative = 1.37, number of steps used = 23, number of rules used = 11, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.275$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{Bd^3 i^3 \text{PolyLog}\left(2, -\frac{d(a+bx)}{bc-ad}\right)}{b^4 g^4} + \frac{d^3 i^3 \log(a + bx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{b^4 g^4} - \frac{3d^2 i^3 (bc - ad) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{b^4 g^4 (a + bx)} - \frac{3d i^3 (c + dx)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{2b^2 g^4 (a + bx)^2} +$$

Antiderivative was successfully verified.

[In] $\text{Int}[\frac{(c*i + d*i*x)^3*(A + B*\text{Log}[\frac{e*(a + b*x)}{c + d*x}])}{(a*g + b*g*x)^4}, x]$

[Out] $-(B*(b*c - a*d)^3*i^3)/(9*b^4*g^4*(a + b*x)^3) - (7*B*d*(b*c - a*d)^2*i^3)/(12*b^4*g^4*(a + b*x)^2) - (11*B*d^2*(b*c - a*d)*i^3)/(6*b^4*g^4*(a + b*x)) - (11*B*d^3*i^3*\text{Log}[a + b*x])/(6*b^4*g^4) - (B*d^3*i^3*\text{Log}[a + b*x]^2)/(2*b^4*g^4) - ((b*c - a*d)^3*i^3*(A + B*\text{Log}[\frac{e*(a + b*x)}{c + d*x}]))/(3*b^4*g^4*(a + b*x)^3) - (3*d*(b*c - a*d)^2*i^3*(A + B*\text{Log}[\frac{e*(a + b*x)}{c + d*x}]))/(2*b^4*g^4*(a + b*x)^2) - (3*d^2*(b*c - a*d)*i^3*(A + B*\text{Log}[\frac{e*(a + b*x)}{c + d*x}]))/(b^4*g^4*(a + b*x)) + (d^3*i^3*\text{Log}[a + b*x]*(A + B*\text{Log}[\frac{e*(a + b*x)}{c + d*x}]))/(b^4*g^4) + (11*B*d^3*i^3*\text{Log}[c + d*x])/(6*b^4*g^4) + (B*d^3*i^3*\text{Log}[a + b*x]*\text{Log}[\frac{b*(c + d*x)}{b*c - a*d}])/(b^4*g^4) + (B*d^3*i^3*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))])/(b^4*g^4)$

Rule 12

$\text{Int}[(a_*)*(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \&\& !\text{MatchQ}[u, (b_*)*(v_) /; \text{FreeQ}[b, x]]$

Rule 44

```
Int[((a_) + (b_)*(x_))^(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_))/(x_), x_Symbol] := Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)])*(b_)^(p_)*((f_) + (g_
)*(x_))^(q_), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_)*((d_) + (e_)*(x_))^(n_)])/(x_), x_Symbol] := -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))])*(b_))/((f_) + (g_)*(x_)), x_
Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)])*(b_))/((f_) + (g_)*(x_
)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x
), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)])*(b_)^(p_)*(RFx_), x_Sy
mbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol]
:> Simp[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol]
:> With[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(27c + 27dx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{(ag + bgx)^4} dx &= \int \left(\frac{19683(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3 g^4 (a + bx)^4} + \frac{59049d(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3 g^4 (a + bx)^3} \right) dx \\
&= \frac{(19683d^3) \int \frac{A+B \log \left(\frac{e(a+bx)}{c+dx} \right)}{a+bx} dx}{b^3 g^4} + \frac{(59049d^2(bc - ad)) \int \frac{A+B \log \left(\frac{e(a+bx)}{c+dx} \right)}{(a+bx)^2} dx}{b^3 g^4} \\
&= -\frac{6561(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^4 g^4 (a + bx)^3} - \frac{59049d(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{2b^4 g^4 (a + bx)^2} \\
&= -\frac{6561(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^4 g^4 (a + bx)^3} - \frac{59049d(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{2b^4 g^4 (a + bx)^2} \\
&= -\frac{6561(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^4 g^4 (a + bx)^3} - \frac{59049d(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{2b^4 g^4 (a + bx)^2} \\
&= -\frac{2187B(bc - ad)^3}{b^4 g^4 (a + bx)^3} - \frac{45927Bd(bc - ad)^2}{4b^4 g^4 (a + bx)^2} - \frac{72171Bd^2(bc - ad)}{2b^4 g^4 (a + bx)} - \frac{72171Bd^2}{2b^4 g^4} \\
&= -\frac{2187B(bc - ad)^3}{b^4 g^4 (a + bx)^3} - \frac{45927Bd(bc - ad)^2}{4b^4 g^4 (a + bx)^2} - \frac{72171Bd^2(bc - ad)}{2b^4 g^4 (a + bx)} - \frac{72171Bd^2}{2b^4 g^4} \\
&= -\frac{2187B(bc - ad)^3}{b^4 g^4 (a + bx)^3} - \frac{45927Bd(bc - ad)^2}{4b^4 g^4 (a + bx)^2} - \frac{72171Bd^2(bc - ad)}{2b^4 g^4 (a + bx)} - \frac{72171Bd^2}{2b^4 g^4} \\
&= -\frac{2187B(bc - ad)^3}{b^4 g^4 (a + bx)^3} - \frac{45927Bd(bc - ad)^2}{4b^4 g^4 (a + bx)^2} - \frac{72171Bd^2(bc - ad)}{2b^4 g^4 (a + bx)} - \frac{72171Bd^2}{2b^4 g^4}
\end{aligned}$$

Mathematica [A] time = 0.45, size = 308, normalized size = 0.99

$$i^3 \left(36d^3 \log(a + bx) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right) + \frac{108d^2(ad-bc) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{a+bx} - \frac{54d(bc-ad)^2 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{(a+bx)^2} - \frac{12(bc-ad)^3 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{(a+bx)^3} \right)$$

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])/(a*g + b*g*x)^4,x]


```
[Out] (i^3*((-4*B*(b*c - a*d)^3)/(a + b*x)^3 - (21*B*d*(b*c - a*d)^2)/(a + b*x)^2
+ (66*B*d^2*(-(b*c) + a*d))/(a + b*x) - 66*B*d^3*Log[a + b*x] - (12*(b*c -
a*d)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a + b*x)^3 - (54*d*(b*c - a*
d)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a + b*x)^2 + (108*d^2*(-(b*c) +
a*d)*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a + b*x) + 36*d^3*Log[a + b*x]
*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 66*B*d^3*Log[c + d*x] - 18*B*d^3*(L
og[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2
, (d*(a + b*x))/(-(b*c) + a*d)])))/(36*b^4*g^4)
```

fricas [F] time = 0.68, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{Ad^3i^3x^3 + 3Acd^2i^3x^2 + 3Ac^2di^3x + Ac^3i^3 + (Bd^3i^3x^3 + 3Bcd^2i^3x^2 + 3Bc^2di^3x + Bc^3i^3) \log\left(\frac{bex+ae}{dx+c}\right)}{b^4g^4x^4 + 4ab^3g^4x^3 + 6a^2b^2g^4x^2 + 4a^3bg^4x + a^4g^4} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^4,x, algo
rithm="fricas")
```

```
[Out] integral((A*d^3*i^3*x^3 + 3*A*c*d^2*i^3*x^2 + 3*A*c^2*d*i^3*x + A*c^3*i^3 +
(B*d^3*i^3*x^3 + 3*B*c*d^2*i^3*x^2 + 3*B*c^2*d*i^3*x + B*c^3*i^3)*log((b*e
*x + a*e)/(d*x + c)))/(b^4*g^4*x^4 + 4*a*b^3*g^4*x^3 + 6*a^2*b^2*g^4*x^2 +
4*a^3*b*g^4*x + a^4*g^4), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^4,x, algo
rithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.07, size = 1929, normalized size = 6.22

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^4,x)
```

```
[Out] -1/4*d^2*e^2*i^3/(a*d-b*c)/g^4*B/b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e
)^2*a+1/9*e^3*i^3/(a*d-b*c)/g^4*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3
*c+1/3*e^3*i^3/(a*d-b*c)/g^4*A/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*c-
```

$$\begin{aligned} & 1/2*d^2*e^2*i^3/(a*d-b*c)/g^4*B/b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e) \\ & ^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+1/2*d^2*e^2*i^3/(a*d-b*c)/g^4*B/b/(1/(d* \\ & x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-1/3*d \\ & *e^3*i^3/(a*d-b*c)/g^4*B/b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*\ln(b/d \\ & *e+(a*d-b*c)/(d*x+c)/d*e)*a+1/3*e^3*i^3/(a*d-b*c)/g^4*B/(1/(d*x+c)*a*e-1/(d \\ & *x+c)*b*c/d*e+b/d*e)^3*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-d^4*i^3/(a*d-b*c)/ \\ & g^4*A/b^4*\ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a+d^3*i^3/(a*d-b*c)/g^4* \\ & A/b^3*\ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c+d^4*i^3/(a*d-b*c)/g^4*A/b^ \\ & 4*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+1/2*d^4*i^3/(a*d-b*c)/g^4*B*\ln(b/d*e+(a \\ & *d-b*c)/(d*x+c)/d*e)^2/b^4*a-d^3*i^3/(a*d-b*c)/g^4*A/b^3*\ln(b/d*e+(a*d-b*c) \\ & /(d*x+c)/d*e)*c-d^4*i^3/(a*d-b*c)/g^4*B/b^4*dilog(-(-b*e+(b/d*e+(a*d-b*c)/(\\ & d*x+c)/d*e)*d)/b/e)*a-1/2*d^3*i^3/(a*d-b*c)/g^4*B*\ln(b/d*e+(a*d-b*c)/(d*x+c \\ &)/d*e)^2/b^3*c+d^3*i^3/(a*d-b*c)/g^4*B/b^3*dilog(-(-b*e+(b/d*e+(a*d-b*c)/(d \\ & *x+c)/d*e)*d)/b/e)*c-1/2*d^2*e^2*i^3/(a*d-b*c)/g^4*A/b^2/(1/(d*x+c)*a*e-1/(\\ & d*x+c)*b*c/d*e+b/d*e)^2*a-d^3*e*i^3/(a*d-b*c)/g^4*B/b^3/(1/(d*x+c)*a*e-1/(d \\ & *x+c)*b*c/d*e+b/d*e)*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+d^2*e*i^3/(a*d-b*c)/ \\ & g^4*B/b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*\ln(b/d*e+(a*d-b*c)/(d*x+c \\ &)/d*e)*c-1/3*d^2*e^3*i^3/(a*d-b*c)/g^4*A/b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b \\ & /d*e)^3*a-d^4*i^3/(a*d-b*c)/g^4*B/b^4*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*\ln(- \\ & -b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a+d^3*i^3/(a*d-b*c)/g^4*B/b^3*\ln \\ & (b/d*e+(a*d-b*c)/(d*x+c)/d*e)*\ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/ \\ & e)*c+1/4*d^2*e^2*i^3/(a*d-b*c)/g^4*B/b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e \\ &)^2*c-1/9*d^2*e^3*i^3/(a*d-b*c)/g^4*B/b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d* \\ & e)^3*a-d^3*e*i^3/(a*d-b*c)/g^4*A/b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e \\ &)*a+d^2*e*i^3/(a*d-b*c)/g^4*A/b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c \\ & -d^3*e*i^3/(a*d-b*c)/g^4*B/b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a+d^ \\ & 2*e*i^3/(a*d-b*c)/g^4*B/b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c+1/2*d \\ & *e^2*i^3/(a*d-b*c)/g^4*A/b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*c \end{aligned}$$

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^4,x, algorith="maxima")

[Out]
$$\begin{aligned} & -1/6*B*d^3*i^3*((18*a*b^2*x^2 + 27*a^2*b*x + 11*a^3 + 6*(b^3*x^3 + 3*a*b^2* \\ & x^2 + 3*a^2*b*x + a^3)*\log(b*x + a))*\log(d*x + c)/(b^7*g^4*x^3 + 3*a*b^6*g^ \\ & 4*x^2 + 3*a^2*b^5*g^4*x + a^3*b^4*g^4) - 6*\integrate(1/6*(6*b^4*d*x^4*\log(e \\ &) + 45*a^2*b^2*d*x^2 + 38*a^3*b*d*x + 11*a^4*d + 6*(b^4*c*\log(e) + 3*a*b^3* \\ & d)*x^3 + 6*(2*b^4*d*x^4 + 6*a^2*b^2*d*x^2 + 4*a^3*b*d*x + a^4*d + (b^4*c + \\ & 4*a*b^3*d)*x^3)*\log(b*x + a))/(b^8*d*g^4*x^5 + a^4*b^4*c*g^4 + (b^8*c*g^4 + \\ & 4*a*b^7*d*g^4)*x^4 + 2*(2*a*b^7*c*g^4 + 3*a^2*b^6*d*g^4)*x^3 + 2*(3*a^2*b^ \\ & 6*c*g^4 + 2*a^3*b^5*d*g^4)*x^2 + (4*a^3*b^5*c*g^4 + a^4*b^4*d*g^4)*x), x) \end{aligned}$$

$$\begin{aligned}
& - 1/6*B*c*d^2*i^3*(6*(3*b^2*x^2 + 3*a*b*x + a^2)*\log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^6*g^4*x^3 + 3*a*b^5*g^4*x^2 + 3*a^2*b^4*g^4*x + a^3*b^3*g^4) \\
& + (11*a^2*b^2*c^2 - 7*a^3*b*c*d + 2*a^4*d^2 + 6*(3*b^4*c^2 - 3*a*b^3*c*d + a^2*b^2*d^2)*x^2 + 3*(9*a*b^3*c^2 - 7*a^2*b^2*c*d + 2*a^3*b*d^2)*x)/((b^8*c^2 - 2*a*b^7*c*d + a^2*b^6*d^2)*g^4*x^3 + 3*(a*b^7*c^2 - 2*a^2*b^6*c*d + a^3*b^5*d^2)*g^4*x^2 + 3*(a^2*b^6*c^2 - 2*a^3*b^5*c*d + a^4*b^4*d^2)*g^4*x + (a^3*b^5*c^2 - 2*a^4*b^4*c*d + a^5*b^3*d^2)*g^4) + 6*(3*b^2*c^2*d - 3*a*b*c*d^2 + a^2*d^3)*\log(b*x + a)/((b^6*c^3 - 3*a*b^5*c^2*d + 3*a^2*b^4*c*d^2 - a^3*b^3*d^3)*g^4) - 6*(3*b^2*c^2*d - 3*a*b*c*d^2 + a^2*d^3)*\log(d*x + c)/((b^6*c^3 - 3*a*b^5*c^2*d + 3*a^2*b^4*c*d^2 - a^3*b^3*d^3)*g^4) - 1/12*B*c^2*d*i^3*(6*(3*b*x + a)*\log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^5*g^4*x^3 + 3*a*b^4*g^4*x^2 + 3*a^2*b^3*g^4*x + a^3*b^2*g^4) + (5*a*b^2*c^2 - 22*a^2*b*c*d + 5*a^3*d^2 - 6*(3*b^3*c*d - a*b^2*d^2)*x^2 + 3*(3*b^3*c^2 - 16*a*b^2*c*d + 5*a^2*b*d^2)*x)/((b^7*c^2 - 2*a*b^6*c*d + a^2*b^5*d^2)*g^4*x^3 + 3*(a*b^6*c^2 - 2*a^2*b^5*c*d + a^3*b^4*d^2)*g^4*x^2 + 3*(a^2*b^5*c^2 - 2*a^3*b^4*c*d + a^4*b^3*d^2)*g^4*x + (a^3*b^4*c^2 - 2*a^4*b^3*c*d + a^5*b^2*d^2)*g^4) - 6*(3*b*c*d^2 - a*d^3)*\log(b*x + a)/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*g^4) + 6*(3*b*c*d^2 - a*d^3)*\log(d*x + c)/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*g^4) - 1/18*B*c^3*i^3*((6*b^2*d^2*x^2 + 2*b^2*c^2 - 7*a*b*c*d + 11*a^2*d^2 - 3*(b^2*c*d - 5*a*b*d^2)*x)/((b^6*c^2 - 2*a*b^5*c*d + a^2*b^4*d^2)*g^4*x^3 + 3*(a*b^5*c^2 - 2*a^2*b^4*c*d + a^3*b^3*d^2)*g^4*x^2 + 3*(a^2*b^4*c^2 - 2*a^3*b^3*c*d + a^4*b^2*d^2)*g^4*x + (a^3*b^3*c^2 - 2*a^4*b^2*c*d + a^5*b*d^2)*g^4) + 6*\log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^4*g^4*x^3 + 3*a*b^3*g^4*x^2 + 3*a^2*b^2*g^4*x + a^3*b*g^4) + 6*d^3*\log(b*x + a)/((b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^3)*g^4) - 6*d^3*\log(d*x + c)/((b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^3)*g^4) + 1/6*A*d^3*i^3*((18*a*b^2*x^2 + 27*a^2*b*x + 11*a^3)/(b^7*g^4*x^3 + 3*a*b^6*g^4*x^2 + 3*a^2*b^5*g^4*x + a^3*b^4*g^4) + 6*\log(b*x + a)/(b^4*g^4) - 1/2*(3*b*x + a)*A*c^2*d*i^3/(b^5*g^4*x^3 + 3*a*b^4*g^4*x^2 + 3*a^2*b^3*g^4*x + a^3*b^2*g^4) - (3*b^2*x^2 + 3*a*b*x + a^2)*A*c*d^2*i^3/(b^6*g^4*x^3 + 3*a*b^5*g^4*x^2 + 3*a^2*b^4*g^4*x + a^3*b^3*g^4) - 1/3*A*c^3*i^3/(b^4*g^4*x^3 + 3*a*b^3*g^4*x^2 + 3*a^2*b^2*g^4*x + a^3*b*g^4)
\end{aligned}$$

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ci + dix)^3 \left(A + B \ln \left(\frac{e(a+bx)}{c+dx} \right) \right)}{(ag + bgx)^4} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x)^4, x)

[Out] int(((c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x)^4, x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)**4,x)

[Out] Timed out

$$3.28 \quad \int \frac{(ci+dx)^3 \left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{(ag+bgx)^5} dx$$

Optimal. Leaf size=89

$$-\frac{i^3(c+dx)^4 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{4g^5(a+bx)^4(bc-ad)} - \frac{Bi^3(c+dx)^4}{16g^5(a+bx)^4(bc-ad)}$$

[Out] $-1/16*B*i^3*(d*x+c)^4/(-a*d+b*c)/g^5/(b*x+a)^4-1/4*i^3*(d*x+c)^4*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)/g^5/(b*x+a)^4$

Rubi [B] time = 0.72, antiderivative size = 373, normalized size of antiderivative = 4.19, number of steps used = 18, number of rules used = 4, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.100$, Rules used = {2528, 2525, 12, 44}

$$\frac{d^3 i^3 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{b^4 g^5 (a+bx)} - \frac{3d^2 i^3 (bc-ad) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{2b^4 g^5 (a+bx)^2} - \frac{di^3 (bc-ad)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{b^4 g^5 (a+bx)^3} - \frac{i^3 (bc-a)}{b^4 g^5 (a+bx)^4}$$

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x])))/(a*g + b*g*x)^5, x]

[Out] $-(B*(b*c - a*d)^3*i^3)/(16*b^4*g^5*(a + b*x)^4) - (B*d*(b*c - a*d)^2*i^3)/(4*b^4*g^5*(a + b*x)^3) - (3*B*d^2*(b*c - a*d)*i^3)/(8*b^4*g^5*(a + b*x)^2) - (B*d^3*i^3)/(4*b^4*g^5*(a + b*x)) - (B*d^4*i^3*Log[a + b*x])/(4*b^4*(b*c - a*d)*g^5) - ((b*c - a*d)^3*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(4*b^4*g^5*(a + b*x)^4) - (d*(b*c - a*d)^2*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(b^4*g^5*(a + b*x)^3) - (3*d^2*(b*c - a*d)*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(2*b^4*g^5*(a + b*x)^2) - (d^3*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(b^4*g^5*(a + b*x)) + (B*d^4*i^3*Log[c + d*x])/(4*b^4*(b*c - a*d)*g^5)$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 44

Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m

+ n + 2, 0])

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_.))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
 \int \frac{(28c + 28dx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{(ag + bgx)^5} dx &= \int \left(\frac{21952(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3 g^5 (a + bx)^5} + \frac{65856d(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3 g^5 (a + bx)^4} \right) dx \\
 &= \frac{(21952d^3) \int \frac{A+B \log \left(\frac{e(a+bx)}{c+dx} \right)}{(a+bx)^2} dx}{b^3 g^5} + \frac{(65856d^2(bc - ad)) \int \frac{A+B \log \left(\frac{e(a+bx)}{c+dx} \right)}{(a+bx)^3} dx}{b^3 g^5} \\
 &= -\frac{5488(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^4 g^5 (a + bx)^4} - \frac{21952d(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^4 g^5 (a + bx)^3} \\
 &= -\frac{5488(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^4 g^5 (a + bx)^4} - \frac{21952d(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^4 g^5 (a + bx)^3} \\
 &= -\frac{5488(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^4 g^5 (a + bx)^4} - \frac{21952d(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^4 g^5 (a + bx)^3} \\
 &= -\frac{1372B(bc - ad)^3}{b^4 g^5 (a + bx)^4} - \frac{5488Bd(bc - ad)^2}{b^4 g^5 (a + bx)^3} - \frac{8232Bd^2(bc - ad)}{b^4 g^5 (a + bx)^2} - \frac{5488Bd^3}{b^4 g^5 (a + bx)}
 \end{aligned}$$

Mathematica [B] time = 0.49, size = 427, normalized size = 4.80

$$i^3 \left(-4a^4Ad^4 - 4a^4Bd^4 \log(c + dx) - a^4Bd^4 - 16a^3Abd^4x - 16a^3bBd^4x \log(c + dx) - 4a^3bBd^4x - 24a^2Ab^2d^4x^2 \right)$$

Antiderivative was successfully verified.

[In] Integrate[(((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])))/(a*g + b*g*x)^5,x]

[Out]
$$\frac{-1/16*(i^3*(4*A*b^4*c^4 + b^4*B*c^4 - 4*a^4*A*d^4 - a^4*B*d^4 + 16*A*b^4*c^3*d*x + 4*b^4*B*c^3*d*x - 16*a^3*A*b*d^4*x - 4*a^3*b*B*d^4*x + 24*A*b^4*c^2*d^2*x^2 + 6*b^4*B*c^2*d^2*x^2 - 24*a^2*A*b^2*d^4*x^2 - 6*a^2*b^2*B*d^4*x^2 + 16*A*b^4*c*d^3*x^3 + 4*b^4*B*c*d^3*x^3 - 16*a*A*b^3*d^4*x^3 - 4*a*b^3*B*d^4*x^3 + 4*B*d^4*(a + b*x)^4*Log[a + b*x] + 4*B*(-(a^4*d^4) - 4*a^3*b*d^4*x - 6*a^2*b^2*d^4*x^2 - 4*a*b^3*d^4*x^3 + b^4*c*(c^3 + 4*c^2*d*x + 6*c*d^2*x^2 + 4*d^3*x^3))*Log[(e*(a + b*x))/(c + d*x)] - 4*a^4*B*d^4*Log[c + d*x] - 16*a^3*b*B*d^4*x*Log[c + d*x] - 24*a^2*b^2*B*d^4*x^2*Log[c + d*x] - 16*a*b^3*B*d^4*x^3*Log[c + d*x] - 4*b^4*B*d^4*x^4*Log[c + d*x]))/(b^4*(b*c - a*d)*g^5*(a + b*x)^4}$$

fricas [B] time = 0.86, size = 355, normalized size = 3.99

$$\frac{4((4A + B)b^4cd^3 - (4A + B)ab^3d^4)i^3x^3 + 6((4A + B)b^4c^2d^2 - (4A + B)a^2b^2d^4)i^3x^2 + 4((4A + B)b^4c^3d - (4A + B)a^2b^2d^4)i^3x + 4((4A + B)b^4c^4 - (4A + B)a^4d^4)i^3 + 4(B*b^4*d^4*i^3*x^4 + 4*B*b^4*c*d^3*i^3*x^3 + 6*B*b^4*c^2*d^2*i^3*x^2 + 4*B*b^4*c^3*d*i^3*x + B*b^4*c^4*i^3)*\log((b*e*x + a*e)/(d*x + c)))/(b^9*c - a*b^8*d)*g^5*x^4 + 4*(a*b^8*c - a^2*b^7*d)*g^5*x^3 + 6*(a^2*b^7*c - a^3*b^6*d)*g^5*x^2 + 4*(a^3*b^6*c - a^4*b^5*d)*g^5*x + (a^4*b^5*c - a^5*b^4*d)*g^5}{16((b^9*c - ab^8*d)g^5x^4 + 4(ab^8*c - a^2b^7*d)g^5)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^5,x, algorith="fricas")

[Out]
$$\frac{-1/16*(4*((4A + B)*b^4*c*d^3 - (4A + B)*a*b^3*d^4)*i^3*x^3 + 6*((4A + B)*b^4*c^2*d^2 - (4A + B)*a^2*b^2*d^4)*i^3*x^2 + 4*((4A + B)*b^4*c^3*d - (4A + B)*a^3*b*d^4)*i^3*x + ((4A + B)*b^4*c^4 - (4A + B)*a^4*d^4)*i^3 + 4*(B*b^4*d^4*i^3*x^4 + 4*B*b^4*c*d^3*i^3*x^3 + 6*B*b^4*c^2*d^2*i^3*x^2 + 4*B*b^4*c^3*d*i^3*x + B*b^4*c^4*i^3)*\log((b*e*x + a*e)/(d*x + c)))/(b^9*c - a*b^8*d)*g^5*x^4 + 4*(a*b^8*c - a^2*b^7*d)*g^5*x^3 + 6*(a^2*b^7*c - a^3*b^6*d)*g^5*x^2 + 4*(a^3*b^6*c - a^4*b^5*d)*g^5*x + (a^4*b^5*c - a^5*b^4*d)*g^5}$$

giac [A] time = 3.27, size = 117, normalized size = 1.31

$$\frac{\left(4Bie^5 \log\left(\frac{bxe+ae}{dx+c}\right) + 4Aie^5 + Bie^5\right)(dx+c)^4 \left(\frac{bc}{(bce-ade)(bc-ad)} - \frac{ad}{(bce-ade)(bc-ad)}\right)}{16(bxe+ae)^4g^5}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^5,x, algorithm="giac")

[Out] $\frac{1}{16} \cdot (4 \cdot B \cdot i \cdot e^5 \cdot \log((b \cdot x \cdot e + a \cdot e)/(d \cdot x + c)) + 4 \cdot A \cdot i \cdot e^5 + B \cdot i \cdot e^5) \cdot (d \cdot x + c)^4 \cdot (b \cdot c / ((b \cdot c \cdot e - a \cdot d \cdot e) \cdot (b \cdot c - a \cdot d)) - a \cdot d / ((b \cdot c \cdot e - a \cdot d \cdot e) \cdot (b \cdot c - a \cdot d))) / ((b \cdot x \cdot e + a \cdot e)^4 \cdot g^5)$

maple [B] time = 0.05, size = 406, normalized size = 4.56

$$\frac{Bad e^4 i^3 \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{4(ad-bc)^2 \left(\frac{ae}{dx+c} - \frac{bce}{(dx+c)d} + \frac{be}{d}\right)^4 g^5} - \frac{Bbc e^4 i^3 \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{4(ad-bc)^2 \left(\frac{ae}{dx+c} - \frac{bce}{(dx+c)d} + \frac{be}{d}\right)^4 g^5} + \frac{Aad e^4 i^3}{4(ad-bc)^2 \left(\frac{ae}{dx+c} - \frac{bce}{(dx+c)d} + \frac{be}{d}\right)^4 g^5}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^5,x)

[Out] $\frac{1}{4} \cdot d \cdot e^4 \cdot i^3 / (a \cdot d - b \cdot c)^2 / g^5 \cdot A / (1 / (d \cdot x + c) \cdot a \cdot e - 1 / (d \cdot x + c) \cdot b \cdot c / d \cdot e + b / d \cdot e)^4 \cdot a - 1 / 4 \cdot e^4 \cdot i^3 / (a \cdot d - b \cdot c)^2 / g^5 \cdot A / (1 / (d \cdot x + c) \cdot a \cdot e - 1 / (d \cdot x + c) \cdot b \cdot c / d \cdot e + b / d \cdot e)^4 \cdot b \cdot c + 1 / 4 \cdot d \cdot e^4 \cdot i^3 / (a \cdot d - b \cdot c)^2 / g^5 \cdot B / (1 / (d \cdot x + c) \cdot a \cdot e - 1 / (d \cdot x + c) \cdot b \cdot c / d \cdot e + b / d \cdot e)^4 \cdot \ln(b / d \cdot e + (a \cdot d - b \cdot c) / (d \cdot x + c) / d \cdot e) \cdot a - 1 / 4 \cdot e^4 \cdot i^3 / (a \cdot d - b \cdot c)^2 / g^5 \cdot B / (1 / (d \cdot x + c) \cdot a \cdot e - 1 / (d \cdot x + c) \cdot b \cdot c / d \cdot e + b / d \cdot e)^4 \cdot \ln(b / d \cdot e + (a \cdot d - b \cdot c) / (d \cdot x + c) / d \cdot e) \cdot b \cdot c + 1 / 16 \cdot d \cdot e^4 \cdot i^3 / (a \cdot d - b \cdot c)^2 / g^5 \cdot B / (1 / (d \cdot x + c) \cdot a \cdot e - 1 / (d \cdot x + c) \cdot b \cdot c / d \cdot e + b / d \cdot e)^4 \cdot a - 1 / 16 \cdot e^4 \cdot i^3 / (a \cdot d - b \cdot c)^2 / g^5 \cdot B / (1 / (d \cdot x + c) \cdot a \cdot e - 1 / (d \cdot x + c) \cdot b \cdot c / d \cdot e + b / d \cdot e)^4 \cdot b \cdot c$

maxima [B] time = 2.71, size = 3107, normalized size = 34.91

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^5,x, algorithm="maxima")

[Out] $-\frac{1}{48} \cdot B \cdot d^3 \cdot i^3 \cdot (12 \cdot (4 \cdot b^3 \cdot x^3 + 6 \cdot a \cdot b^2 \cdot x^2 + 4 \cdot a^2 \cdot b \cdot x + a^3) \cdot \log(b \cdot e \cdot x / (d \cdot x + c)) + a \cdot e / (d \cdot x + c)) / (b^8 \cdot g^5 \cdot x^4 + 4 \cdot a \cdot b^7 \cdot g^5 \cdot x^3 + 6 \cdot a^2 \cdot b^6 \cdot g^5 \cdot x^2 + 4 \cdot a^3 \cdot b^5 \cdot g^5 \cdot x + a^4 \cdot b^4 \cdot g^5) + (25 \cdot a^3 \cdot b^3 \cdot c^3 - 23 \cdot a^4 \cdot b^2 \cdot c^2 \cdot d + 13 \cdot a^5 \cdot b \cdot c \cdot d^2 - 3 \cdot a^6 \cdot d^3 + 12 \cdot (4 \cdot b^6 \cdot c^3 - 6 \cdot a \cdot b^5 \cdot c^2 \cdot d + 4 \cdot a^2 \cdot b^4 \cdot c \cdot d^2 - a^3 \cdot b^3 \cdot d^3) \cdot x^3 + 6 \cdot (18 \cdot a \cdot b^5 \cdot c^3 - 22 \cdot a^2 \cdot b^4 \cdot c^2 \cdot d + 13 \cdot a^3 \cdot b^3 \cdot c \cdot d^2 - 3 \cdot a^4 \cdot b^2 \cdot d^3) \cdot x^2 + 4 \cdot (22 \cdot a^2 \cdot b^4 \cdot c^3 - 23 \cdot a^3 \cdot b^3 \cdot c^2 \cdot d + 13 \cdot a^4 \cdot b^2 \cdot c \cdot d^2 - 3 \cdot a^5 \cdot b \cdot d^3) \cdot x) / ((b^{11} \cdot c^3 - 3 \cdot a \cdot b^{10} \cdot c^2 \cdot d + 3 \cdot a^2 \cdot b^9 \cdot c \cdot d^2 - a^3 \cdot b^8 \cdot d^3) \cdot g^5 \cdot x^4 + 4 \cdot (a \cdot b^{10} \cdot c^3 - 3 \cdot a^2 \cdot b^9 \cdot c^2 \cdot d + 3 \cdot a^3 \cdot b^8 \cdot c \cdot d^2 - a^4 \cdot b^7 \cdot d^3) \cdot g^5 \cdot x^3 + 6 \cdot (a^2 \cdot b^9 \cdot c^3 - 3 \cdot a^3 \cdot b^8 \cdot c^2 \cdot d + 3 \cdot a^4 \cdot b^7 \cdot c \cdot d^2 - a^5 \cdot b^6 \cdot d^3) \cdot g^5 \cdot x^2 + 4 \cdot (a^3 \cdot b^8 \cdot c^3 - 3 \cdot a^4 \cdot b^7 \cdot c^2 \cdot d + 3 \cdot a^5 \cdot b^6 \cdot c \cdot d^2 - a^6 \cdot b^5 \cdot d^3))$

$$\begin{aligned}
& 6*b^5*d^3)*g^5*x + (a^4*b^7*c^3 - 3*a^5*b^6*c^2*d + 3*a^6*b^5*c*d^2 - a^7*b^4*d^3)*g^5) + 12*(4*b^3*c^3*d - 6*a*b^2*c^2*d^2 + 4*a^2*b*c*d^3 - a^3*d^4) \\
& *log(b*x + a)/((b^8*c^4 - 4*a*b^7*c^3*d + 6*a^2*b^6*c^2*d^2 - 4*a^3*b^5*c*d^3 + a^4*b^4*d^4)*g^5) - 12*(4*b^3*c^3*d - 6*a*b^2*c^2*d^2 + 4*a^2*b*c*d^3 \\
& - a^3*d^4)*log(d*x + c)/((b^8*c^4 - 4*a*b^7*c^3*d + 6*a^2*b^6*c^2*d^2 - 4*a^3*b^5*c*d^3 + a^4*b^4*d^4)*g^5)) - 1/48*B*c*d^2*i^3*(12*(6*b^2*x^2 + 4*a*b \\
& *x + a^2)*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^7*g^5*x^4 + 4*a*b^6*g^5*x^3 + 6*a^2*b^5*g^5*x^2 + 4*a^3*b^4*g^5*x + a^4*b^3*g^5) + (13*a^2*b^3*c^3 - \\
& 75*a^3*b^2*c^2*d + 33*a^4*b*c*d^2 - 7*a^5*d^3 - 12*(6*b^5*c^2*d - 4*a*b^4*c*d^2 + a^2*b^3*d^3)*x^3 + 6*(6*b^5*c^3 - 46*a*b^4*c^2*d + 29*a^2*b^3*c*d^2 \\
& - 7*a^3*b^2*d^3)*x^2 + 4*(10*a*b^4*c^3 - 63*a^2*b^3*c^2*d + 33*a^3*b^2*c*d^2 - 7*a^4*b*d^3)*x)/((b^10*c^3 - 3*a*b^9*c^2*d + 3*a^2*b^8*c*d^2 - a^3*b^7 \\
& *d^3)*g^5*x^4 + 4*(a*b^9*c^3 - 3*a^2*b^8*c^2*d + 3*a^3*b^7*c*d^2 - a^4*b^6*d^3)*g^5*x^3 + 6*(a^2*b^8*c^3 - 3*a^3*b^7*c^2*d + 3*a^4*b^6*c*d^2 - a^5*b^5 \\
& *d^3)*g^5*x^2 + 4*(a^3*b^7*c^3 - 3*a^4*b^6*c^2*d + 3*a^5*b^5*c*d^2 - a^6*b^4*d^3)*g^5*x + (a^4*b^6*c^3 - 3*a^5*b^5*c^2*d + 3*a^6*b^4*c*d^2 - a^7*b^3*d \\
& ^3)*g^5) - 12*(6*b^2*c^2*d^2 - 4*a*b*c*d^3 + a^2*d^4)*log(b*x + a)/((b^7*c^4 - 4*a*b^6*c^3*d + 6*a^2*b^5*c^2*d^2 - 4*a^3*b^4*c*d^3 + a^4*b^3*d^4)*g^5) \\
& + 12*(6*b^2*c^2*d^2 - 4*a*b*c*d^3 + a^2*d^4)*log(d*x + c)/((b^7*c^4 - 4*a*b^6*c^3*d + 6*a^2*b^5*c^2*d^2 - 4*a^3*b^4*c*d^3 + a^4*b^3*d^4)*g^5)) - 1/48 \\
& *B*c^2*d*i^3*(12*(4*b*x + a)*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^6*g^5*x^4 + 4*a*b^5*g^5*x^3 + 6*a^2*b^4*g^5*x^2 + 4*a^3*b^3*g^5*x + a^4*b^2*g^5) \\
& + (7*a*b^3*c^3 - 33*a^2*b^2*c^2*d + 75*a^3*b*c*d^2 - 13*a^4*d^3 + 12*(4*b^4*c*d^2 - a*b^3*d^3)*x^3 - 6*(4*b^4*c^2*d - 29*a*b^3*c*d^2 + 7*a^2*b^2*d^3)* \\
& x^2 + 4*(4*b^4*c^3 - 21*a*b^3*c^2*d + 57*a^2*b^2*c*d^2 - 13*a^3*b*d^3)*x)/((b^9*c^3 - 3*a*b^8*c^2*d + 3*a^2*b^7*c*d^2 - a^3*b^6*d^3)*g^5*x^4 + 4*(a*b^8*c^3 - 3*a^2*b^7*c^2*d + 3*a^3*b^6*c*d^2 - a^4*b^5*d^3)*g^5*x^3 + 6*(a^2*b^7*c^3 - 3*a^3*b^6*c^2*d + 3*a^4*b^5*c*d^2 - a^5*b^4*d^3)*g^5*x^2 + 4*(a^3*b^6*c^3 - 3*a^4*b^5*c^2*d + 3*a^5*b^4*c*d^2 - a^6*b^3*d^3)*g^5*x + (a^4*b^5*c^3 - 3*a^5*b^4*c^2*d + 3*a^6*b^3*c*d^2 - a^7*b^2*d^3)*g^5) + 12*(4*b*c*d^3 - a*d^4)*log(b*x + a)/((b^6*c^4 - 4*a*b^5*c^3*d + 6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*g^5) - 12*(4*b*c*d^3 - a*d^4)*log(d*x + c)/((b^6*c^4 - 4*a*b^5*c^3*d + 6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*g^5)) + 1/48*B*c^3*i^3*((12*b^3*d^3*x^3 - 3*b^3*c^3 + 13*a*b^2*c^2*d - 23*a^2*b*c*d^2 + 25*a^3*d^3 - 6*(b^3*c*d^2 - 7*a*b^2*d^3)*x^2 + 4*(b^3*c^2*d - 5*a*b^2*c*d^2 + 13*a^2*b*d^3)*x)/((b^8*c^3 - 3*a*b^7*c^2*d + 3*a^2*b^6*c*d^2 - a^3*b^5*d^3)*g^5*x^4 + 4*(a*b^7*c^3 - 3*a^2*b^6*c^2*d + 3*a^3*b^5*c*d^2 - a^4*b^4*d^3)*g^5*x^3 + 6*(a^2*b^6*c^3 - 3*a^3*b^5*c^2*d + 3*a^4*b^4*c*d^2 - a^5*b^3*d^3)*g^5*x^2 + 4*(a^3*b^5*c^3 - 3*a^4*b^4*c^2*d + 3*a^5*b^3*c*d^2 - a^6*b^2*d^3)*g^5*x + (a^4*b^4*c^3 - 3*a^5*b^3*c^2*d + 3*a^6*b^2*c*d^2 - a^7*b*d^3)*g^5) - 12*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^5*g^5*x^4 + 4*a*b^4*g^5*x^3 + 6*a^2*b^3*g^5*x^2 + 4*a^3*b^2*g^5*x + a^4*b*g^5) + 12*d^4*log(b*x + a)/((b^5*c^4 - 4*a*b^4*c^3*d + 6*a^2*b^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)*g^5) - 12*d^4*log(d*x + c)/((b^5*c^4 - 4*a*b^4*c^3*d + 6*a^2*b^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)*g^5)) - 1/4*(4*b*x + a)*A*c^2*
\end{aligned}$$

$$d^3i^3/(b^6g^5x^4 + 4a^2b^4g^5x^3 + 6a^2b^4g^5x^2 + 4a^3b^3g^5x + a^4b^2g^5) - 1/4(6b^2x^2 + 4a^2bx + a^2)A^3c^2d^2i^3/(b^7g^5x^4 + 4a^2b^6g^5x^3 + 6a^2b^5g^5x^2 + 4a^3b^4g^5x + a^4b^3g^5) - 1/4(4b^3x^3 + 6a^2b^2x^2 + 4a^2b^2x + a^3)A^3d^3i^3/(b^8g^5x^4 + 4a^2b^7g^5x^3 + 6a^2b^6g^5x^2 + 4a^3b^5g^5x + a^4b^4g^5) - 1/4A^3c^3i^3/(b^5g^5x^4 + 4a^2b^4g^5x^3 + 6a^2b^3g^5x^2 + 4a^3b^2g^5x + a^4b^2g^5)$$

mupad [B] time = 7.16, size = 780, normalized size = 8.76

$$\frac{x^3 (4 A b^3 d^3 i^3 + B b^3 d^3 i^3) + x^2 \left(6 A a b^2 d^3 i^3 + \frac{3 B a b^2 d^3 i^3}{2} + 6 A b^3 c d^2 i^3 + \frac{3 B b^3 c d^2 i^3}{2} \right) + x (4 A a^2 b d^3 i^3 + B a^2 b d^3 i^3)}{4 a^4 b^2 g^5 x^4 + 4 a^2 b^4 g^5 x^3 + 6 a^2 b^4 g^5 x^2 + 4 a^3 b^3 g^5 x + a^4 b^2 g^5}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int(((c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x)^5, x)`

[Out]
$$- (x^3(4A^3b^3d^3i^3 + B^3b^3d^3i^3) + x^2(6A^3a^2b^2d^3i^3 + (3B^3a^2b^2d^3i^3)/2 + 6A^3a^2b^3cd^2i^3 + (3B^3a^2b^3cd^2i^3)/2) + x(4A^3a^2b^3d^3i^3 + B^3a^2b^3d^3i^3 + 4A^3a^2b^3c^2d^2i^3 + B^3a^2b^3c^2d^2i^3 + 4A^3a^2b^2cd^2i^3 + B^3a^2b^2cd^2i^3) + A^3a^3d^3i^3 + A^3b^3c^3i^3 + (B^3a^3d^3i^3)/4 + (B^3b^3c^3i^3)/4 + A^3a^2b^2c^2d^2i^3 + A^3a^2b^2c^2d^2i^3 + (B^3a^2b^2c^2d^2i^3)/4 + (B^3a^2b^2c^2d^2i^3)/4)/(4a^4b^4g^5 + 4b^8g^5x^4 + 16a^3b^5g^5x + 16a^2b^7g^5x^3 + 24a^2b^6g^5x^2) - (\log((e*(a + b*x))/(c + d*x)) * (x^2 * (b * (b * ((B^3a^3d^3i^3)/(4b^5g^5) + (B^3c^3d^2i^3)/(4b^4g^5)) + (B^3a^3d^3i^3)/(2b^4g^5) + (B^3c^3d^2i^3)/(2b^3g^5)) + (3B^3a^3d^3i^3)/(4b^3g^5) + (3B^3c^3d^2i^3)/(4b^2g^5)) + x * (b * (a * ((B^3a^3d^3i^3)/(4b^5g^5) + (B^3c^3d^2i^3)/(4b^4g^5)) + (B^3c^2d^2i^3)/(4b^3g^5)) + a * (b * ((B^3a^3d^3i^3)/(4b^5g^5) + (B^3c^3d^2i^3)/(4b^4g^5)) + (B^3a^3d^3i^3)/(2b^4g^5) + (B^3c^3d^2i^3)/(2b^3g^5)) + (3B^3c^2d^2i^3)/(4b^2g^5)) + a * (a * ((B^3a^3d^3i^3)/(4b^5g^5) + (B^3c^3d^2i^3)/(4b^4g^5)) + (B^3c^2d^2i^3)/(4b^3g^5)) + (B^3c^3i^3)/(4b^2g^5) + (B^3d^3i^3x^3)/(b^2g^5))))/(4a^3x + a^4/b + b^3x^4 + 6a^2b^2x^2 + 4a^2b^2x^3) - (B^3d^4i^3 * atan((b*c*i + b*d*x*2i)/(a*d - b*c) + 1i) * 1i)/(2b^4g^5 * (a*d - b*c))$$

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((d*i*x+c*i)**3*(A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)**5,x)`

[Out] Timed out

$$3.29 \quad \int \frac{(ci+dx)^3 \left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{(ag+bgx)^6} dx$$

Optimal. Leaf size=181

$$-\frac{bi^3(c+dx)^5 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{5g^6(a+bx)^5(bc-ad)^2} + \frac{di^3(c+dx)^4 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{4g^6(a+bx)^4(bc-ad)^2} - \frac{bBi^3(c+dx)^5}{25g^6(a+bx)^5(bc-ad)^2} + \frac{Bdi^3(c+dx)^4}{16g^6(a+bx)^4}$$

[Out] $1/16*B*d*i^3*(d*x+c)^4/(-a*d+b*c)^2/g^6/(b*x+a)^4-1/25*b*B*i^3*(d*x+c)^5/(-a*d+b*c)^2/g^6/(b*x+a)^5+1/4*d*i^3*(d*x+c)^4*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^2/g^6/(b*x+a)^4-1/5*b*i^3*(d*x+c)^5*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^2/g^6/(b*x+a)^5$

Rubi [B] time = 0.87, antiderivative size = 409, normalized size of antiderivative = 2.26, number of steps used = 18, number of rules used = 4, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.100$, Rules used = {2528, 2525, 12, 44}

$$\frac{d^3 i^3 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{2b^4 g^6 (a+bx)^2} - \frac{d^2 i^3 (bc-ad) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{b^4 g^6 (a+bx)^3} - \frac{3d i^3 (bc-ad)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{4b^4 g^6 (a+bx)^4} - \frac{i^3 (bc-ad)^3}{b^4 g^6 (a+bx)^5}$$

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a*g + b*g*x)^6, x]

[Out] $-(B*(b*c - a*d)^3*i^3)/(25*b^4*g^6*(a + b*x)^5) - (11*B*d*(b*c - a*d)^2*i^3)/(80*b^4*g^6*(a + b*x)^4) - (3*B*d^2*(b*c - a*d)*i^3)/(20*b^4*g^6*(a + b*x)^3) - (B*d^3*i^3)/(40*b^4*g^6*(a + b*x)^2) + (B*d^4*i^3)/(20*b^4*(b*c - a*d)*g^6*(a + b*x)) + (B*d^5*i^3*Log[a + b*x])/(20*b^4*(b*c - a*d)^2*g^6) - ((b*c - a*d)^3*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(5*b^4*g^6*(a + b*x)^5) - (3*d*(b*c - a*d)^2*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(4*b^4*g^6*(a + b*x)^4) - (d^2*(b*c - a*d)*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(b^4*g^6*(a + b*x)^3) - (d^3*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(2*b^4*g^6*(a + b*x)^2) - (B*d^5*i^3*Log[c + d*x])/(20*b^4*(b*c - a*d)^2*g^6)$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_) /; FreeQ[b, x]]

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunci
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(29c + 29dx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{(ag + bgx)^6} dx &= \int \left(\frac{24389(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3 g^6 (a + bx)^6} + \frac{73167d(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3 g^6 (a + bx)^6} \right) dx \\
&= \frac{(24389d^3) \int \frac{A+B \log \left(\frac{e(a+bx)}{c+dx} \right)}{(a+bx)^3} dx}{b^3 g^6} + \frac{(73167d^2(bc - ad)) \int \frac{A+B \log \left(\frac{e(a+bx)}{c+dx} \right)}{(a+bx)^4} dx}{b^3 g^6} \\
&= -\frac{24389(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{5b^4 g^6 (a + bx)^5} - \frac{73167d(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{4b^4 g^6 (a + bx)^5} \\
&= -\frac{24389(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{5b^4 g^6 (a + bx)^5} - \frac{73167d(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{4b^4 g^6 (a + bx)^5} \\
&= -\frac{24389(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{5b^4 g^6 (a + bx)^5} - \frac{73167d(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{4b^4 g^6 (a + bx)^5} \\
&= -\frac{24389B(bc - ad)^3}{25b^4 g^6 (a + bx)^5} - \frac{268279Bd(bc - ad)^2}{80b^4 g^6 (a + bx)^4} - \frac{73167Bd^2(bc - ad)}{20b^4 g^6 (a + bx)^3}
\end{aligned}$$

Mathematica [B] time = 0.60, size = 608, normalized size = 3.36

$$i^3 \left(20a^5 Ad^5 + 20a^5 Bd^5 \log(c + dx) + 9a^5 Bd^5 + 100a^4 Abd^5 x + 100a^4 bBd^5 x \log(c + dx) + 45a^4 bBd^5 x + 200a^3 \right)$$

Antiderivative was successfully verified.

[In] Integrate[(((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])))/(a*g + b*g*x)^6,x]

[Out] $-1/400*(i^3*(80*A*b^5*c^5 + 16*b^5*B*c^5 - 100*a*A*b^4*c^4*d - 25*a*b^4*B*c^4*d + 20*a^5*A*d^5 + 9*a^5*B*d^5 + 300*A*b^5*c^4*d*x + 55*b^5*B*c^4*d*x - 400*a*A*b^4*c^3*d^2*x - 100*a*b^4*B*c^3*d^2*x + 100*a^4*A*b*d^5*x + 45*a^4*b*B*d^5*x + 400*A*b^5*c^3*d^2*x^2 + 60*b^5*B*c^3*d^2*x^2 - 600*a*A*b^4*c^2*d^3*x^2 - 150*a*b^4*B*c^2*d^3*x^2 + 200*a^3*A*b^2*d^5*x^2 + 90*a^3*b^2*B*d^5*x^2 + 200*A*b^5*c^2*d^3*x^3 + 10*b^5*B*c^2*d^3*x^3 - 400*a*A*b^4*c*d^4*x^3 - 100*a*b^4*B*c*d^4*x^3 + 200*a^2*A*b^3*d^5*x^3 + 90*a^2*b^3*B*d^5*x^3 - 20*b^5*B*c*d^4*x^4 + 20*a*b^4*B*d^5*x^4 - 20*B*d^5*(a + b*x)^5*Log[a + b*x] + 20*B*(b*c - a*d)^2*(a^3*d^3 + a^2*b*d^2*(2*c + 5*d*x) + a*b^2*d*(3*c^2 + 10*c*d*x + 10*d^2*x^2) + b^3*(4*c^3 + 15*c^2*d*x + 20*c*d^2*x^2 + 10*d^3*x^3))*Log[(e*(a + b*x))/(c + d*x)] + 20*a^5*B*d^5*Log[c + d*x] + 100*a^4*b*B$

$*d^5*x*\text{Log}[c + d*x] + 200*a^3*b^2*B*d^5*x^2*\text{Log}[c + d*x] + 200*a^2*b^3*B*d^5*x^3*\text{Log}[c + d*x] + 100*a*b^4*B*d^5*x^4*\text{Log}[c + d*x] + 20*b^5*B*d^5*x^5*\text{Log}[c + d*x])/(b^4*(b*c - a*d)^2*g^6*(a + b*x)^5)$

fricas [B] time = 0.59, size = 644, normalized size = 3.56

$20(Bb^5cd^4 - Bab^4d^5)i^3x^4 - 10((20A + B)b^5c^2d^3 - 10(4A + B)ab^4cd^4 + (20A + 9B)a^2b^3d^5)i^3x^3 - 10(2(20A +$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^6,x, algorith="fricas")

[Out] $1/400*(20*(B*b^5*c*d^4 - B*a*b^4*d^5)*i^3*x^4 - 10*((20*A + B)*b^5*c^2*d^3 - 10*(4*A + B)*a*b^4*c*d^4 + (20*A + 9*B)*a^2*b^3*d^5)*i^3*x^3 - 10*(2*(20*A + 3*B)*b^5*c^3*d^2 - 15*(4*A + B)*a*b^4*c^2*d^3 + (20*A + 9*B)*a^3*b^2*d^5)*i^3*x^2 - 5*((60*A + 11*B)*b^5*c^4*d - 20*(4*A + B)*a*b^4*c^3*d^2 + (20*A + 9*B)*a^4*b*d^5)*i^3*x - (16*(5*A + B)*b^5*c^5 - 25*(4*A + B)*a*b^4*c^4*d + (20*A + 9*B)*a^5*d^5)*i^3 + 20*(B*b^5*d^5*i^3*x^5 + 5*B*a*b^4*d^5*i^3*x^4 - 10*(B*b^5*c^2*d^3 - 2*B*a*b^4*c*d^4)*i^3*x^3 - 10*(2*B*b^5*c^3*d^2 - 3*B*a*b^4*c^2*d^3)*i^3*x^2 - 5*(3*B*b^5*c^4*d - 4*B*a*b^4*c^3*d^2)*i^3*x - (4*B*b^5*c^5 - 5*B*a*b^4*c^4*d)*i^3)*\log((b*e*x + a*e)/(d*x + c)))/((b^11*c^2 - 2*a*b^10*c*d + a^2*b^9*d^2)*g^6*x^5 + 5*(a*b^10*c^2 - 2*a^2*b^9*c*d + a^3*b^8*d^2)*g^6*x^4 + 10*(a^2*b^9*c^2 - 2*a^3*b^8*c*d + a^4*b^7*d^2)*g^6*x^3 + 10*(a^3*b^8*c^2 - 2*a^4*b^7*c*d + a^5*b^6*d^2)*g^6*x^2 + 5*(a^4*b^7*c^2 - 2*a^5*b^6*c*d + a^6*b^5*d^2)*g^6*x + (a^5*b^6*c^2 - 2*a^6*b^5*c*d + a^7*b^4*d^2)*g^6)$

giac [A] time = 3.24, size = 244, normalized size = 1.35

$$\left(80 Bbie^6 \log\left(\frac{bx+ae}{dx+c}\right) - \frac{100(bx+ae)Bdie^5 \log\left(\frac{bx+ae}{dx+c}\right)}{dx+c} + 80 Abie^6 + 16 Bbie^6 - \frac{100(bx+ae)Adie^5}{dx+c} - \frac{25(bx+ae)Bdie^5}{dx+c}\right) \left(\frac{bc}{(bce-ade)}\right)$$

$$400 \left(\frac{(bx+ae)^5 bcg^6}{(dx+c)^5} - \frac{(bx+ae)^5 adg^6}{(dx+c)^5}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^6,x, algorith="giac")

[Out] $1/400*(80*B*b*i*e^6*\log((b*x*e + a*e)/(d*x + c)) - 100*(b*x*e + a*e)*B*d*i*e^5*\log((b*x*e + a*e)/(d*x + c))/(d*x + c) + 80*A*b*i*e^6 + 16*B*b*i*e^6 - 100*(b*x*e + a*e)*A*d*i*e^5/(d*x + c) - 25*(b*x*e + a*e)*B*d*i*e^5/(d*x + c$

))*((b*c*((b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))/
 ((b*x*e + a*e)^5*b*c*g^6/(d*x + c)^5 - (b*x*e + a*e)^5*a*d*g^6/(d*x + c)^5)

maple [B] time = 0.05, size = 828, normalized size = 4.57

$$\frac{Babd e^5 i^3 \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{5(ad-bc)^3 \left(\frac{ae}{dx+c} - \frac{bce}{(dx+c)d} + \frac{be}{d}\right)^5 g^6} + \frac{B b^2 c e^5 i^3 \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{5(ad-bc)^3 \left(\frac{ae}{dx+c} - \frac{bce}{(dx+c)d} + \frac{be}{d}\right)^5 g^6} - \frac{Aabd e^5 i^3}{5(ad-bc)^3 \left(\frac{ae}{dx+c} - \frac{bce}{(dx+c)d} + \frac{be}{d}\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^6,x)

[Out] 1/4*d^2*e^4*i^3/(a*d-b*c)^3/g^6*A/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4
 *a-1/4*d*e^4*i^3/(a*d-b*c)^3/g^6*A/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^
 4*b*c-1/5*d*e^5*i^3/(a*d-b*c)^3/g^6*A*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/
 d*e)^5*a+1/5*e^5*i^3/(a*d-b*c)^3/g^6*A*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e
 +b/d*e)^5*c+1/4*d^2*e^4*i^3/(a*d-b*c)^3/g^6*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/
 d*e+b/d*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-1/4*d*e^4*i^3/(a*d-b*c)^3/g^
 6*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*
 e)*b*c+1/16*d^2*e^4*i^3/(a*d-b*c)^3/g^6*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+
 b/d*e)^4*a-1/16*d*e^4*i^3/(a*d-b*c)^3/g^6*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*
 e+b/d*e)^4*b*c-1/5*d*e^5*i^3/(a*d-b*c)^3/g^6*B*b/(1/(d*x+c)*a*e-1/(d*x+c)*b
 *c/d*e+b/d*e)^5*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+1/5*e^5*i^3/(a*d-b*c)^3/g
 ^6*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*ln(b/d*e+(a*d-b*c)/(d*x+
 c)/d*e)*c-1/25*d*e^5*i^3/(a*d-b*c)^3/g^6*B*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d
 *e+b/d*e)^5*a+1/25*e^5*i^3/(a*d-b*c)^3/g^6*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b
 *c/d*e+b/d*e)^5*c

maxima [B] time = 3.85, size = 4218, normalized size = 23.30

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^6,x, algo
 rithm="maxima")

[Out] -1/1200*B*d^3*i^3*(60*(10*b^3*x^3 + 10*a*b^2*x^2 + 5*a^2*b*x + a^3)*log(b*e
 *x/(d*x + c) + a*e/(d*x + c))/(b^9*g^6*x^5 + 5*a*b^8*g^6*x^4 + 10*a^2*b^7*g
 ^6*x^3 + 10*a^3*b^6*g^6*x^2 + 5*a^4*b^5*g^6*x + a^5*b^4*g^6) + (77*a^3*b^4*c
 ^4 - 548*a^4*b^3*c^3*d + 352*a^5*b^2*c^2*d^2 - 148*a^6*b*c*d^3 + 27*a^7*d^
 4 - 60*(10*b^7*c^3*d - 10*a*b^6*c^2*d^2 + 5*a^2*b^5*c*d^3 - a^3*b^4*d^4)*x^
 4 + 30*(10*b^7*c^4 - 100*a*b^6*c^3*d + 95*a^2*b^5*c^2*d^2 - 46*a^3*b^4*c*d^
 3 + 9*a^4*b^3*d^4)*x^3 + 10*(50*a*b^6*c^4 - 410*a^2*b^5*c^3*d + 337*a^3*b^4
 *c^2*d^2 - 148*a^4*b^3*c*d^3 + 27*a^5*b^2*d^4)*x^2 + 5*(65*a^2*b^5*c^4 - 48

$$\begin{aligned}
& 8*a^3*b^4*c^3*d + 352*a^4*b^3*c^2*d^2 - 148*a^5*b^2*c*d^3 + 27*a^6*b*d^4)*x \\
&)/((b^{13}*c^4 - 4*a*b^{12}*c^3*d + 6*a^2*b^{11}*c^2*d^2 - 4*a^3*b^{10}*c*d^3 + a^4 \\
& *b^9*d^4)*g^6*x^5 + 5*(a*b^{12}*c^4 - 4*a^2*b^{11}*c^3*d + 6*a^3*b^{10}*c^2*d^2 - \\
& 4*a^4*b^9*c*d^3 + a^5*b^8*d^4)*g^6*x^4 + 10*(a^2*b^{11}*c^4 - 4*a^3*b^{10}*c^3 \\
& *d + 6*a^4*b^9*c^2*d^2 - 4*a^5*b^8*c*d^3 + a^6*b^7*d^4)*g^6*x^3 + 10*(a^3*b \\
& ^{10}*c^4 - 4*a^4*b^9*c^3*d + 6*a^5*b^8*c^2*d^2 - 4*a^6*b^7*c*d^3 + a^7*b^6*d \\
& ^4)*g^6*x^2 + 5*(a^4*b^9*c^4 - 4*a^5*b^8*c^3*d + 6*a^6*b^7*c^2*d^2 - 4*a^7*b \\
& ^6*c*d^3 + a^8*b^5*d^4)*g^6*x + (a^5*b^8*c^4 - 4*a^6*b^7*c^3*d + 6*a^7*b^6 \\
& *c^2*d^2 - 4*a^8*b^5*c*d^3 + a^9*b^4*d^4)*g^6) - 60*(10*b^3*c^3*d^2 - 10*a* \\
& b^2*c^2*d^3 + 5*a^2*b*c*d^4 - a^3*d^5)*\log(b*x + a)/((b^9*c^5 - 5*a*b^8*c^4 \\
& *d + 10*a^2*b^7*c^3*d^2 - 10*a^3*b^6*c^2*d^3 + 5*a^4*b^5*c*d^4 - a^5*b^4*d^ \\
& 5)*g^6) + 60*(10*b^3*c^3*d^2 - 10*a*b^2*c^2*d^3 + 5*a^2*b*c*d^4 - a^3*d^5)* \\
& \log(d*x + c)/((b^9*c^5 - 5*a*b^8*c^4*d + 10*a^2*b^7*c^3*d^2 - 10*a^3*b^6*c^ \\
& 2*d^3 + 5*a^4*b^5*c*d^4 - a^5*b^4*d^5)*g^6)) - 1/600*B*c*d^2*i^3*(60*(10*b^ \\
& 2*x^2 + 5*a*b*x + a^2)*\log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^8*g^6*x^5 + \\
& 5*a*b^7*g^6*x^4 + 10*a^2*b^6*g^6*x^3 + 10*a^3*b^5*g^6*x^2 + 5*a^4*b^4*g^6*x \\
& + a^5*b^3*g^6) + (47*a^2*b^4*c^4 - 278*a^3*b^3*c^3*d + 822*a^4*b^2*c^2*d^2 \\
& - 278*a^5*b*c*d^3 + 47*a^6*d^4 + 60*(10*b^6*c^2*d^2 - 5*a*b^5*c*d^3 + a^2* \\
& b^4*d^4)*x^4 - 30*(10*b^6*c^3*d - 95*a*b^5*c^2*d^2 + 46*a^2*b^4*c*d^3 - 9*a \\
& ^3*b^3*d^4)*x^3 + 10*(20*b^6*c^4 - 140*a*b^5*c^3*d + 537*a^2*b^4*c^2*d^2 - \\
& 248*a^3*b^3*c*d^3 + 47*a^4*b^2*d^4)*x^2 + 5*(35*a*b^5*c^4 - 218*a^2*b^4*c^3 \\
& *d + 702*a^3*b^3*c^2*d^2 - 278*a^4*b^2*c*d^3 + 47*a^5*b*d^4)*x)/((b^{12}*c^4 \\
& - 4*a*b^{11}*c^3*d + 6*a^2*b^{10}*c^2*d^2 - 4*a^3*b^9*c*d^3 + a^4*b^8*d^4)*g^6* \\
& x^5 + 5*(a*b^{11}*c^4 - 4*a^2*b^{10}*c^3*d + 6*a^3*b^9*c^2*d^2 - 4*a^4*b^8*c*d^ \\
& 3 + a^5*b^7*d^4)*g^6*x^4 + 10*(a^2*b^{10}*c^4 - 4*a^3*b^9*c^3*d + 6*a^4*b^8*c \\
& ^2*d^2 - 4*a^5*b^7*c*d^3 + a^6*b^6*d^4)*g^6*x^3 + 10*(a^3*b^9*c^4 - 4*a^4*b \\
& ^8*c^3*d + 6*a^5*b^7*c^2*d^2 - 4*a^6*b^6*c*d^3 + a^7*b^5*d^4)*g^6*x^2 + 5*(\\
& a^4*b^8*c^4 - 4*a^5*b^7*c^3*d + 6*a^6*b^6*c^2*d^2 - 4*a^7*b^5*c*d^3 + a^8*b \\
& ^4*d^4)*g^6*x + (a^5*b^7*c^4 - 4*a^6*b^6*c^3*d + 6*a^7*b^5*c^2*d^2 - 4*a^8* \\
& b^4*c*d^3 + a^9*b^3*d^4)*g^6) + 60*(10*b^2*c^2*d^3 - 5*a*b*c*d^4 + a^2*d^5) \\
& *\log(b*x + a)/((b^8*c^5 - 5*a*b^7*c^4*d + 10*a^2*b^6*c^3*d^2 - 10*a^3*b^5*c \\
& ^2*d^3 + 5*a^4*b^4*c*d^4 - a^5*b^3*d^5)*g^6) - 60*(10*b^2*c^2*d^3 - 5*a*b*c \\
& *d^4 + a^2*d^5)*\log(d*x + c)/((b^8*c^5 - 5*a*b^7*c^4*d + 10*a^2*b^6*c^3*d^2 \\
& - 10*a^3*b^5*c^2*d^3 + 5*a^4*b^4*c*d^4 - a^5*b^3*d^5)*g^6)) - 1/400*B*c^2* \\
& d*i^3*(60*(5*b*x + a)*\log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^7*g^6*x^5 + 5 \\
& *a*b^6*g^6*x^4 + 10*a^2*b^5*g^6*x^3 + 10*a^3*b^4*g^6*x^2 + 5*a^4*b^3*g^6*x \\
& + a^5*b^2*g^6) + (27*a*b^4*c^4 - 148*a^2*b^3*c^3*d + 352*a^3*b^2*c^2*d^2 - \\
& 548*a^4*b*c*d^3 + 77*a^5*d^4 - 60*(5*b^5*c*d^3 - a*b^4*d^4)*x^4 + 30*(5*b^5 \\
& *c^2*d^2 - 46*a*b^4*c*d^3 + 9*a^2*b^3*d^4)*x^3 - 10*(10*b^5*c^3*d - 67*a*b^ \\
& 4*c^2*d^2 + 248*a^2*b^3*c*d^3 - 47*a^3*b^2*d^4)*x^2 + 5*(15*b^5*c^4 - 88*a* \\
& b^4*c^3*d + 232*a^2*b^3*c^2*d^2 - 428*a^3*b^2*c*d^3 + 77*a^4*b*d^4)*x)/((b^ \\
& 11*c^4 - 4*a*b^{10}*c^3*d + 6*a^2*b^9*c^2*d^2 - 4*a^3*b^8*c*d^3 + a^4*b^7*d^4 \\
&)*g^6*x^5 + 5*(a*b^{10}*c^4 - 4*a^2*b^9*c^3*d + 6*a^3*b^8*c^2*d^2 - 4*a^4*b^7 \\
& *c*d^3 + a^5*b^6*d^4)*g^6*x^4 + 10*(a^2*b^9*c^4 - 4*a^3*b^8*c^3*d + 6*a^4*b \\
& ^7*c^2*d^2 - 4*a^5*b^6*c*d^3 + a^6*b^5*d^4)*g^6*x^3 + 10*(a^3*b^8*c^4 - 4*a
\end{aligned}$$

$$\begin{aligned}
& 4*b^7*c^3*d + 6*a^5*b^6*c^2*d^2 - 4*a^6*b^5*c*d^3 + a^7*b^4*d^4)*g^6*x^2 + \\
& 5*(a^4*b^7*c^4 - 4*a^5*b^6*c^3*d + 6*a^6*b^5*c^2*d^2 - 4*a^7*b^4*c*d^3 + a \\
& ^8*b^3*d^4)*g^6*x + (a^5*b^6*c^4 - 4*a^6*b^5*c^3*d + 6*a^7*b^4*c^2*d^2 - 4* \\
& a^8*b^3*c*d^3 + a^9*b^2*d^4)*g^6) - 60*(5*b*c*d^4 - a*d^5)*\log(b*x + a)/((b \\
& ^7*c^5 - 5*a*b^6*c^4*d + 10*a^2*b^5*c^3*d^2 - 10*a^3*b^4*c^2*d^3 + 5*a^4*b^3*c*d^4 \\
& - a^5*b^2*d^5)*g^6) + 60*(5*b*c*d^4 - a*d^5)*\log(d*x + c)/((b^7*c^5 \\
& - 5*a*b^6*c^4*d + 10*a^2*b^5*c^3*d^2 - 10*a^3*b^4*c^2*d^3 + 5*a^4*b^3*c*d^4 \\
& - a^5*b^2*d^5)*g^6)) - 1/300*B*c^3*i^3*((60*b^4*d^4*x^4 + 12*b^4*c^4 - 63 \\
& *a*b^3*c^3*d + 137*a^2*b^2*c^2*d^2 - 163*a^3*b*c*d^3 + 137*a^4*d^4 - 30*(b^4 \\
& *c*d^3 - 9*a*b^3*d^4)*x^3 + 10*(2*b^4*c^2*d^2 - 13*a*b^3*c*d^3 + 47*a^2*b^2 \\
& *d^4)*x^2 - 5*(3*b^4*c^3*d - 17*a*b^3*c^2*d^2 + 43*a^2*b^2*c*d^3 - 77*a^3* \\
& b*d^4)*x)/((b^10*c^4 - 4*a*b^9*c^3*d + 6*a^2*b^8*c^2*d^2 - 4*a^3*b^7*c*d^3 \\
& + a^4*b^6*d^4)*g^6*x^5 + 5*(a*b^9*c^4 - 4*a^2*b^8*c^3*d + 6*a^3*b^7*c^2*d^2 \\
& - 4*a^4*b^6*c*d^3 + a^5*b^5*d^4)*g^6*x^4 + 10*(a^2*b^8*c^4 - 4*a^3*b^7*c^3 \\
& *d + 6*a^4*b^6*c^2*d^2 - 4*a^5*b^5*c*d^3 + a^6*b^4*d^4)*g^6*x^3 + 10*(a^3*b^7 \\
& *c^4 - 4*a^4*b^6*c^3*d + 6*a^5*b^5*c^2*d^2 - 4*a^6*b^4*c*d^3 + a^7*b^3*d^4) \\
& *g^6*x^2 + 5*(a^4*b^6*c^4 - 4*a^5*b^5*c^3*d + 6*a^6*b^4*c^2*d^2 - 4*a^7*b^3 \\
& *c*d^3 + a^8*b^2*d^4)*g^6*x + (a^5*b^5*c^4 - 4*a^6*b^4*c^3*d + 6*a^7*b^3*c^2 \\
& *d^2 - 4*a^8*b^2*c*d^3 + a^9*b*d^4)*g^6) + 60*\log(b*e*x/(d*x + c) + a*e/ \\
& (d*x + c))/(b^6*g^6*x^5 + 5*a*b^5*g^6*x^4 + 10*a^2*b^4*g^6*x^3 + 10*a^3*b^3 \\
& *g^6*x^2 + 5*a^4*b^2*g^6*x + a^5*b*g^6) + 60*d^5*\log(b*x + a)/((b^6*c^5 - 5 \\
& *a*b^5*c^4*d + 10*a^2*b^4*c^3*d^2 - 10*a^3*b^3*c^2*d^3 + 5*a^4*b^2*c*d^4 - \\
& a^5*b*d^5)*g^6) - 60*d^5*\log(d*x + c)/((b^6*c^5 - 5*a*b^5*c^4*d + 10*a^2*b^4 \\
& *c^3*d^2 - 10*a^3*b^3*c^2*d^3 + 5*a^4*b^2*c*d^4 - a^5*b*d^5)*g^6)) - 3/20* \\
& (5*b*x + a)*A*c^2*d*i^3/(b^7*g^6*x^5 + 5*a*b^6*g^6*x^4 + 10*a^2*b^5*g^6*x^3 \\
& + 10*a^3*b^4*g^6*x^2 + 5*a^4*b^3*g^6*x + a^5*b^2*g^6) - 1/10*(10*b^2*x^2 + \\
& 5*a*b*x + a^2)*A*c*d^2*i^3/(b^8*g^6*x^5 + 5*a*b^7*g^6*x^4 + 10*a^2*b^6*g^6 \\
& *x^3 + 10*a^3*b^5*g^6*x^2 + 5*a^4*b^4*g^6*x + a^5*b^3*g^6) - 1/20*(10*b^3*x \\
& ^3 + 10*a*b^2*x^2 + 5*a^2*b*x + a^3)*A*d^3*i^3/(b^9*g^6*x^5 + 5*a*b^8*g^6*x \\
& ^4 + 10*a^2*b^7*g^6*x^3 + 10*a^3*b^6*g^6*x^2 + 5*a^4*b^5*g^6*x + a^5*b^4*g^6) \\
& - 1/5*A*c^3*i^3/(b^6*g^6*x^5 + 5*a*b^5*g^6*x^4 + 10*a^2*b^4*g^6*x^3 + 10 \\
& *a^3*b^3*g^6*x^2 + 5*a^4*b^2*g^6*x + a^5*b*g^6)
\end{aligned}$$

mupad [B] time = 8.31, size = 1053, normalized size = 5.82

$$\frac{20 A a^4 d^4 i^3 - 80 A b^4 c^4 i^3 + 9 B a^4 d^4 i^3 - 16 B b^4 c^4 i^3 + 20 A a^2 b^2 c^2 d^2 i^3 + 9 B a^2 b^2 c^2 d^2 i^3 + 20 A a b^3 c^3 d i^3 + 20 A a^3 b c d^3 i^3 + 9 B a b^3 c^3 d i^3 + 9 B a^3 b c d^3 i^3}{20(a d - b c)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x)^6, x)

[Out] - ((20*A*a^4*d^4*i^3 - 80*A*b^4*c^4*i^3 + 9*B*a^4*d^4*i^3 - 16*B*b^4*c^4*i^3

$$\begin{aligned}
& 3 + 20Aa^2b^2c^2d^2i^3 + 9B^2a^2b^2c^2d^2i^3 + 20Aab^3c^3d^3i^3 + 20Aa^3b^3c^3d^3i^3 + 9B^2a^3b^3c^3d^3i^3 + 9B^2a^3b^3c^3d^3i^3) / (20(a*d - b*c)) \\
& + (x^2(20Aa^2b^2d^4i^3 + 9B^2a^2b^2d^4i^3 - 40A^2b^4c^2d^2i^3 - 6B^2b^4c^2d^2i^3 + 20A^2ab^3c^3d^3i^3 + 9B^2a^2b^3c^3d^3i^3) / (2(a*d - b*c)) \\
& + (x(20Aa^3b^3d^4i^3 + 9B^2a^3b^3d^4i^3 - 60A^2b^4c^3d^3i^3 - 11B^2b^4c^3d^3i^3 + 20A^2ab^3c^2d^2i^3 + 20A^2a^2b^2c^2d^3i^3 + 9B^2a^2b^3c^2d^3i^3) / (4(a*d - b*c)) \\
& + (x^3(20A^2ab^3d^4i^3 + 9B^2a^2b^3d^4i^3 - 20A^2b^4c^3d^3i^3 - B^2b^4c^3d^3i^3) / (2(a*d - b*c)) + (B^2b^4d^4i^3x^4) / (a*d - b*c)) / (20a^5b^4g^6 + 20b^9g^6x^5 + 100a^4b^5g^6x + 100a^2b^8g^6x^4 + 200a^3b^6g^6x^2 + 200a^2b^7g^6x^3) - (\log((e*(a + b*x)) / (c + d*x))) * (x^2 * (b * (B^2a^3d^3i^3) / (20b^5g^6) + (B^2c^2d^2i^3) / (10b^4g^6)) + (3B^2a^3d^3i^3) / (20b^4g^6) + (3B^2c^2d^2i^3) / (10b^3g^6)) + (3B^2a^3d^3i^3) / (10b^3g^6) + (3B^2c^2d^2i^3) / (5b^2g^6) + x * (b * (a * ((B^2a^3d^3i^3) / (20b^5g^6) + (B^2c^2d^2i^3) / (10b^4g^6)) + (3B^2c^2d^2i^3) / (20b^3g^6)) + a * (b * ((B^2a^3d^3i^3) / (20b^5g^6) + (B^2c^2d^2i^3) / (10b^4g^6)) + (3B^2a^3d^3i^3) / (20b^4g^6) + (3B^2c^2d^2i^3) / (10b^3g^6)) + (3B^2c^2d^2i^3) / (5b^2g^6)) + a * (a * ((B^2a^3d^3i^3) / (20b^5g^6) + (B^2c^2d^2i^3) / (10b^4g^6)) + (3B^2c^2d^2i^3) / (20b^3g^6)) + (B^2c^3i^3) / (5b^2g^6) + (B^2d^3i^3x^3) / (2b^2g^6))) / (5a^4x + a^5/b + b^4x^5 + 10a^3b^3x^2 + 5a^2b^3x^4 + 10a^2b^2x^3) - (B^2d^5i^3 * atanh((20b^6c^2g^6 - 20a^2b^4d^2g^6) / (20b^4g^6 * (a*d - b*c)^2) - (2b*d*x) / (a*d - b*c))) / (10b^4g^6 * (a*d - b*c)^2)
\end{aligned}$$

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)**6,x)

[Out] Timed out

$$3.30 \quad \int \frac{(ci+dx)^3 \left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{(ag+bgx)^7} dx$$

Optimal. Leaf size=281

$$\frac{b^2 i^3 (c+dx)^6 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{6g^7 (a+bx)^6 (bc-ad)^3} - \frac{d^2 i^3 (c+dx)^4 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{4g^7 (a+bx)^4 (bc-ad)^3} + \frac{2bd i^3 (c+dx)^5 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{5g^7 (a+bx)^5 (bc-ad)^3}$$

[Out] $-1/16*B*d^2*i^3*(d*x+c)^4/(-a*d+b*c)^3/g^7/(b*x+a)^4+2/25*b*B*d*i^3*(d*x+c)^5/(-a*d+b*c)^3/g^7/(b*x+a)^5-1/36*b^2*B*i^3*(d*x+c)^6/(-a*d+b*c)^3/g^7/(b*x+a)^6-1/4*d^2*i^3*(d*x+c)^4*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^3/g^7/(b*x+a)^4+2/5*b*d*i^3*(d*x+c)^5*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^3/g^7/(b*x+a)^5-1/6*b^2*i^3*(d*x+c)^6*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^3/g^7/(b*x+a)^6$

Rubi [A] time = 0.98, antiderivative size = 445, normalized size of antiderivative = 1.58, number of steps used = 18, number of rules used = 4, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.100$, Rules used = {2528, 2525, 12, 44}

$$\frac{d^3 i^3 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{3b^4 g^7 (a+bx)^3} - \frac{3d^2 i^3 (bc-ad) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{4b^4 g^7 (a+bx)^4} - \frac{3d i^3 (bc-ad)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{5b^4 g^7 (a+bx)^5} - \frac{i^3 (bc-ad)^3 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{6b^4 g^7 (a+bx)^6}$$

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(a*g + b*g*x)^7, x]

[Out] $-(B*(b*c - a*d)^3*i^3)/(36*b^4*g^7*(a + b*x)^6) - (13*B*d*(b*c - a*d)^2*i^3)/(150*b^4*g^7*(a + b*x)^5) - (19*B*d^2*(b*c - a*d)*i^3)/(240*b^4*g^7*(a + b*x)^4) - (B*d^3*i^3)/(180*b^4*g^7*(a + b*x)^3) + (B*d^4*i^3)/(120*b^4*(b*c - a*d)*g^7*(a + b*x)^2) - (B*d^5*i^3)/(60*b^4*(b*c - a*d)^2*g^7*(a + b*x)) - (B*d^6*i^3*Log[a + b*x])/(60*b^4*(b*c - a*d)^3*g^7) - ((b*c - a*d)^3*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(6*b^4*g^7*(a + b*x)^6) - (3*d*(b*c - a*d)^2*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(5*b^4*g^7*(a + b*x)^5) - (3*d^2*(b*c - a*d)*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(4*b^4*g^7*(a + b*x)^4) - (d^3*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(3*b^4*g^7*(a + b*x)^3) + (B*d^6*i^3*Log[c + d*x])/(60*b^4*(b*c - a*d)^3*g^7)$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_) /; FreeQ[b, x]]

Rule 44

```
Int[((a_) + (b_)*(x_))^(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2525

```
Int[((a_) + Log[(c_)*(RFx_)^(p_)])*(b_)^(n_)*((d_) + (e_)*(x_))^(m_
), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_) + Log[(c_)*(RFx_)^(p_)])*(b_)^(n_)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunci
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(30c + 30dx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{(ag + bgx)^7} dx &= \int \left(\frac{27000(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3 g^7 (a + bx)^7} + \frac{81000d(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3 g^7 (a + bx)^7} \right) dx \\
&= \frac{(27000d^3) \int \frac{A+B \log \left(\frac{e(a+bx)}{c+dx} \right)}{(a+bx)^4} dx}{b^3 g^7} + \frac{(81000d^2(bc - ad)) \int \frac{A+B \log \left(\frac{e(a+bx)}{c+dx} \right)}{(a+bx)^5} dx}{b^3 g^7} \\
&= -\frac{4500(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^4 g^7 (a + bx)^6} - \frac{16200d(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^4 g^7 (a + bx)^6} \\
&= -\frac{4500(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^4 g^7 (a + bx)^6} - \frac{16200d(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^4 g^7 (a + bx)^6} \\
&= -\frac{4500(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^4 g^7 (a + bx)^6} - \frac{16200d(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^4 g^7 (a + bx)^6} \\
&= -\frac{750B(bc - ad)^3}{b^4 g^7 (a + bx)^6} - \frac{2340Bd(bc - ad)^2}{b^4 g^7 (a + bx)^5} - \frac{4275Bd^2(bc - ad)}{2b^4 g^7 (a + bx)^4} - \frac{15}{b^4 g^7}
\end{aligned}$$

Mathematica [B] time = 1.05, size = 642, normalized size = 2.28

$$\frac{i^3 \left(1200d^3(a + bx)^3(ad - bc)^3 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right) - 2700d^2(a + bx)^2(bc - ad)^4 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right) + 2160d \right)}{b^4 g^7}$$

Antiderivative was successfully verified.

[In] Integrate[(((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])))/(a*g + b*g*x)^7, x]

[Out] (i^3*(-100*B*(b*c - a*d)^6 + 432*a*B*d*(-(b*c) + a*d)^5 - 432*b*B*d*(b*c - a*d)^5*x + 540*a*B*d^2*(b*c - a*d)^4*(a + b*x) + 120*B*d*(b*c - a*d)^5*(a + b*x) + 540*b*B*d^2*(b*c - a*d)^4*x*(a + b*x) - 825*B*d^2*(b*c - a*d)^4*(a + b*x)^2 + 720*a*B*d^3*(-(b*c) + a*d)^3*(a + b*x)^2 - 720*b*B*d^3*(b*c - a*d)^3*x*(a + b*x)^2 + 1080*a*B*d^4*(b*c - a*d)^2*(a + b*x)^3 + 700*B*d^3*(b*c - a*d)^3*(a + b*x)^3 + 1080*b*B*d^4*(b*c - a*d)^2*x*(a + b*x)^3 - 1050*B*d^4*(b*c - a*d)^2*(a + b*x)^4 + 2160*a*B*d^5*(-(b*c) + a*d)*(a + b*x)^4 - 2160*b*B*d^5*(b*c - a*d)*x*(a + b*x)^4 + 2100*B*d^5*(b*c - a*d)*(a + b*x)^5 - 2160*a*B*d^6*(a + b*x)^5*Log[a + b*x] - 2160*b*B*d^6*x*(a + b*x)^5*Log[a + b*x] + 2100*B*d^6*(a + b*x)^6*Log[a + b*x] - 600*(b*c - a*d)^6*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 2160*d*(-(b*c) + a*d)^5*(a + b*x)*(A + B*Log[(

$e*(a + b*x)/(c + d*x)] - 2700*d^2*(b*c - a*d)^4*(a + b*x)^2*(A + B*\text{Log}[(e*(a + b*x)/(c + d*x)] + 1200*d^3*(-(b*c) + a*d)^3*(a + b*x)^3*(A + B*\text{Log}[(e*(a + b*x)/(c + d*x)] + 2160*a*B*d^6*(a + b*x)^5*\text{Log}[c + d*x] + 2160*b*B*d^6*x*(a + b*x)^5*\text{Log}[c + d*x] - 2100*B*d^6*(a + b*x)^6*\text{Log}[c + d*x]))/(3600*b^4*(b*c - a*d)^3*g^7*(a + b*x)^6)$

fricas [B] time = 0.94, size = 991, normalized size = 3.53

$$60 (Bb^6cd^5 - Bab^5d^6) i^3 x^5 - 30 (Bb^6c^2d^4 - 12 Bab^5cd^5 + 11 Ba^2b^4d^6) i^3 x^4 + 20 ((60A + B)b^6c^3d^3 - 9(20A + B)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^7,x, algorith="fricas")

[Out] $-1/3600*(60*(B*b^6*c*d^5 - B*a*b^5*d^6)*i^3*x^5 - 30*(B*b^6*c^2*d^4 - 12*B*a*b^5*c*d^5 + 11*B*a^2*b^4*d^6)*i^3*x^4 + 20*((60*A + B)*b^6*c^3*d^3 - 9*(20*A + B)*a*b^5*c^2*d^4 + 45*(4*A + B)*a^2*b^4*c*d^5 - (60*A + 37*B)*a^3*b^3*d^6)*i^3*x^3 + 15*((180*A + 19*B)*b^6*c^4*d^2 - 24*(20*A + 3*B)*a*b^5*c^3*d^3 + 90*(4*A + B)*a^2*b^4*c^2*d^4 - (60*A + 37*B)*a^4*b^2*d^6)*i^3*x^2 + 6*(4*(90*A + 13*B)*b^6*c^5*d - 15*(60*A + 11*B)*a*b^5*c^4*d^2 + 150*(4*A + B)*a^2*b^4*c^3*d^3 - (60*A + 37*B)*a^5*b*d^6)*i^3*x + (100*(6*A + B)*b^6*c^6 - 288*(5*A + B)*a*b^5*c^5*d + 225*(4*A + B)*a^2*b^4*c^4*d^2 - (60*A + 37*B)*a^6*d^6)*i^3 + 60*(B*b^6*d^6*i^3*x^6 + 6*B*a*b^5*d^6*i^3*x^5 + 15*B*a^2*b^4*d^6*i^3*x^4 + 20*(B*b^6*c^3*d^3 - 3*B*a*b^5*c^2*d^4 + 3*B*a^2*b^4*c*d^5)*i^3*x^3 + 15*(3*B*b^6*c^4*d^2 - 8*B*a*b^5*c^3*d^3 + 6*B*a^2*b^4*c^2*d^4)*i^3*x^2 + 6*(6*B*b^6*c^5*d - 15*B*a*b^5*c^4*d^2 + 10*B*a^2*b^4*c^3*d^3)*i^3*x + (10*B*b^6*c^6 - 24*B*a*b^5*c^5*d + 15*B*a^2*b^4*c^4*d^2)*i^3)*log((b*e*x + a*e)/(d*x + c)))/((b^13*c^3 - 3*a*b^12*c^2*d + 3*a^2*b^11*c*d^2 - a^3*b^10*d^3)*g^7*x^6 + 6*(a*b^12*c^3 - 3*a^2*b^11*c^2*d + 3*a^3*b^10*c*d^2 - a^4*b^9*d^3)*g^7*x^5 + 15*(a^2*b^11*c^3 - 3*a^3*b^10*c^2*d + 3*a^4*b^9*c*d^2 - a^5*b^8*d^3)*g^7*x^4 + 20*(a^3*b^10*c^3 - 3*a^4*b^9*c^2*d + 3*a^5*b^8*c*d^2 - a^6*b^7*d^3)*g^7*x^3 + 15*(a^4*b^9*c^3 - 3*a^5*b^8*c^2*d + 3*a^6*b^7*c*d^2 - a^7*b^6*d^3)*g^7*x^2 + 6*(a^5*b^8*c^3 - 3*a^6*b^7*c^2*d + 3*a^7*b^6*c*d^2 - a^8*b^5*d^3)*g^7*x + (a^6*b^7*c^3 - 3*a^7*b^6*c^2*d + 3*a^8*b^5*c*d^2 - a^9*b^4*d^3)*g^7)$

giac [A] time = 4.08, size = 391, normalized size = 1.39

$$\frac{\left(600 B b^2 i e^7 \log\left(\frac{b x e+a e}{d x+c}\right) - \frac{1440 (b x e+a e) B b d i e^6 \log\left(\frac{b x e+a e}{d x+c}\right)}{d x+c} + \frac{900 (b x e+a e)^2 B d^2 i e^5 \log\left(\frac{b x e+a e}{d x+c}\right)}{(d x+c)^2} + 600 A b^2 i e^7 + 100 B b^2 i e^7 - \frac{1440}{3600} \left(\frac{(b x e+a e)^6 b^2 c^2 g^7}{(d x+c)^6} - \frac{2 (b x e+a e)^6 a b c}{(d x+c)^6}\right)\right.}{3600 \left(\frac{(b x e+a e)^6 b^2 c^2 g^7}{(d x+c)^6} - \frac{2 (b x e+a e)^6 a b c}{(d x+c)^6}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^7,x, algorith="giac")

[Out] 1/3600*(600*B*b^2*i*e^7*log((b*x*e + a*e)/(d*x + c)) - 1440*(b*x*e + a*e)*B*b*d*i*e^6*log((b*x*e + a*e)/(d*x + c))/(d*x + c) + 900*(b*x*e + a*e)^2*B*d^2*i*e^5*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 + 600*A*b^2*i*e^7 + 100*B*b^2*i*e^7 - 1440*(b*x*e + a*e)*A*b*d*i*e^6/(d*x + c) - 288*(b*x*e + a*e)*B*b*d*i*e^6/(d*x + c) + 900*(b*x*e + a*e)^2*A*d^2*i*e^5/(d*x + c)^2 + 225*(b*x*e + a*e)^2*B*d^2*i*e^5/(d*x + c)^2*(b*c/((b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))/((b*x*e + a*e)^6*b^2*c^2*g^7/(d*x + c)^6 - 2*(b*x*e + a*e)^6*a*b*c*d*g^7/(d*x + c)^6 + (b*x*e + a*e)^6*a^2*d^2*g^7/(d*x + c)^6)

maple [B] time = 0.05, size = 1262, normalized size = 4.49

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^7,x)

[Out] 1/4*d^3*e^4*i^3/(a*d-b*c)^4/g^7*A/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*a-1/4*d^2*e^4*i^3/(a*d-b*c)^4/g^7*A/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*b*c-2/5*d^2*e^5*i^3/(a*d-b*c)^4/g^7*A*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*a+2/5*d*e^5*i^3/(a*d-b*c)^4/g^7*A*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*c+1/6*d*e^6*i^3/(a*d-b*c)^4/g^7*A*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^6*a-1/6*e^6*i^3/(a*d-b*c)^4/g^7*A*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^6*c+1/4*d^3*e^4*i^3/(a*d-b*c)^4/g^7*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-1/4*d^2*e^4*i^3/(a*d-b*c)^4/g^7*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*c+1/16*d^3*e^4*i^3/(a*d-b*c)^4/g^7*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*a-1/16*d^2*e^4*i^3/(a*d-b*c)^4/g^7*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*b*c-2/5*d^2*e^5*i^3/(a*d-b*c)^4/g^7*B*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+2/5*d*e^5*i^3/(a*d-b*c)^4/g^7*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-2/25*d^2*e^5*i^3/(a*d-b*c)^4/g^7*B*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*a+2/25*d*e^5*i^3/(a*d-b*c)^4/g^7*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*c+1/6*d*e^6*i^3/(a*d-b*c)^4/g^7*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^6*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-1/6*e^6*i^3/(a*d-b*c)^4/g^7*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^6*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+1/36*d*e^6*i^3/(a*d-b*c)^4/g^7*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^6*a-1/36*e^6*i^3/(a*d-b*c)^4/g^7*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^6*c

maxima [B] time = 5.15, size = 5524, normalized size = 19.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^7,x, algorithm="maxima")

[Out]
$$-1/3600*B*d^3*i^3*(60*(20*b^3*x^3 + 15*a*b^2*x^2 + 6*a^2*b*x + a^3)*\log(b*e*x/(d*x + c) + a*e/(d*x + c)))/(b^{10}g^7*x^6 + 6*a*b^9g^7*x^5 + 15*a^2*b^8g^7*x^4 + 20*a^3*b^7g^7*x^3 + 15*a^4*b^6g^7*x^2 + 6*a^5*b^5g^7*x + a^6*b^4g^7) + (57*a^3*b^5*c^5 - 405*a^4*b^4*c^4*d + 1470*a^5*b^3*c^3*d^2 - 730*a^6*b^2*c^2*d^3 + 245*a^7*b*c*d^4 - 37*a^8*d^5 + 60*(20*b^8*c^3*d^2 - 15*a*b^7*c^2*d^3 + 6*a^2*b^6*c*d^4 - a^3*b^5*d^5))*x^5 - 30*(20*b^8*c^4*d - 235*a*b^7*c^3*d^2 + 171*a^2*b^6*c^2*d^3 - 67*a^3*b^5*c*d^4 + 11*a^4*b^4*d^5))*x^4 + 20*(20*b^8*c^5 - 175*a*b^7*c^4*d + 866*a^2*b^6*c^3*d^2 - 604*a^3*b^5*c^2*d^3 + 230*a^4*b^4*c*d^4 - 37*a^5*b^3*d^5))*x^3 + 15*(35*a*b^7*c^5 - 271*a^2*b^6*c^4*d + 1128*a^3*b^5*c^3*d^2 - 700*a^4*b^4*c^2*d^3 + 245*a^5*b^3*c*d^4 - 37*a^6*b^2*d^5))*x^2 + 6*(47*a^2*b^6*c^5 - 345*a^3*b^5*c^4*d + 1320*a^4*b^4*c^3*d^2 - 730*a^5*b^3*c^2*d^3 + 245*a^6*b^2*c*d^4 - 37*a^7*b*d^5))*x)/((b^{15}c^5 - 5*a*b^{14}c^4*d + 10*a^2*b^{13}c^3*d^2 - 10*a^3*b^{12}c^2*d^3 + 5*a^4*b^{11}c*d^4 - a^5*b^{10}d^5)*g^7*x^6 + 6*(a*b^{14}c^5 - 5*a^2*b^{13}c^4*d + 10*a^3*b^{12}c^3*d^2 - 10*a^4*b^{11}c^2*d^3 + 5*a^5*b^{10}c*d^4 - a^6*b^9*d^5))*g^7*x^5 + 15*(a^2*b^{13}c^5 - 5*a^3*b^{12}c^4*d + 10*a^4*b^{11}c^3*d^2 - 10*a^5*b^{10}c^2*d^3 + 5*a^6*b^9*c*d^4 - a^7*b^8*d^5))*g^7*x^4 + 20*(a^3*b^{12}c^5 - 5*a^4*b^{11}c^4*d + 10*a^5*b^{10}c^3*d^2 - 10*a^6*b^9*c^2*d^3 + 5*a^7*b^8*c*d^4 - a^8*b^7*d^5))*g^7*x^3 + 15*(a^4*b^{11}c^5 - 5*a^5*b^{10}c^4*d + 10*a^6*b^9*c^3*d^2 - 10*a^7*b^8*c^2*d^3 + 5*a^8*b^7*c*d^4 - a^9*b^6*d^5))*g^7*x^2 + 6*(a^5*b^{10}c^5 - 5*a^6*b^9*c^4*d + 10*a^7*b^8*c^3*d^2 - 10*a^8*b^7*c^2*d^3 + 5*a^9*b^6*c*d^4 - a^{10}b^5*d^5))*g^7*x + (a^6*b^9*c^5 - 5*a^7*b^8*c^4*d + 10*a^8*b^7*c^3*d^2 - 10*a^9*b^6*c^2*d^3 + 5*a^{10}b^5*c*d^4 - a^{11}b^4*d^5))*g^7) + 60*(20*b^3*c^3*d^3 - 15*a*b^2*c^2*d^4 + 6*a^2*b*c*d^5 - a^3*d^6)*\log(b*x + a)/((b^{10}c^6 - 6*a*b^9*c^5*d + 15*a^2*b^8*c^4*d^2 - 20*a^3*b^7*c^3*d^3 + 15*a^4*b^6*c^2*d^4 - 6*a^5*b^5*c*d^5 + a^6*b^4*d^6))*g^7) - 60*(20*b^3*c^3*d^3 - 15*a*b^2*c^2*d^4 + 6*a^2*b*c*d^5 - a^3*d^6)*\log(d*x + c)/((b^{10}c^6 - 6*a*b^9*c^5*d + 15*a^2*b^8*c^4*d^2 - 20*a^3*b^7*c^3*d^3 + 15*a^4*b^6*c^2*d^4 - 6*a^5*b^5*c*d^5 + a^6*b^4*d^6))*g^7)) - 1/1200*B*c*d^2*i^3*(60*(15*b^2*x^2 + 6*a*b*x + a^2)*\log(b*e*x/(d*x + c) + a*e/(d*x + c)))/(b^9g^7*x^6 + 6*a*b^8g^7*x^5 + 15*a^2*b^7g^7*x^4 + 20*a^3*b^6g^7*x^3 + 15*a^4*b^5g^7*x^2 + 6*a^5*b^4g^7*x + a^6*b^3g^7) + (37*a^2*b^5*c^5 - 245*a^3*b^4*c^4*d + 730*a^4*b^3*c^3*d^2 - 1470*a^5*b^2*c^2*d^3 + 405*a^6*b*c*d^4 - 57*a^7*d^5 - 60*(15*b^7*c^2*d^3 - 6*a*b^6*c*d^4 + a^2*b^5*d^5))*x^5 + 30*(15*b^7*c^3*d^2 - 171*a*b^6*c^2*d^3 + 67*a^2*b^5*c*d^4 - 11*a^3*b^4*d^5))*x^4 - 20*(15*b^7*c^4*d - 126*a*b^6*c^3*d^2 + 604*a^2*b^5*c^2*d^3 - 230*a^3*b^4*c*d^4$$

$$\begin{aligned}
& + 37*a^4*b^3*d^5)*x^3 + 15*(15*b^7*c^5 - 111*a*b^6*c^4*d + 388*a^2*b^5*c^3*d^2 - 1000*a^3*b^4*c^2*d^3 + 365*a^4*b^3*c*d^4 - 57*a^5*b^2*d^5)*x^2 + 6*(27*a*b^6*c^5 - 185*a^2*b^5*c^4*d + 580*a^3*b^4*c^3*d^2 - 1270*a^4*b^3*c^2*d^3 + 405*a^5*b^2*c*d^4 - 57*a^6*b*d^5)*x)/((b^14*c^5 - 5*a*b^13*c^4*d + 10*a^2*b^12*c^3*d^2 - 10*a^3*b^11*c^2*d^3 + 5*a^4*b^10*c*d^4 - a^5*b^9*d^5)*g^7*x^6 + 6*(a*b^13*c^5 - 5*a^2*b^12*c^4*d + 10*a^3*b^11*c^3*d^2 - 10*a^4*b^10*c^2*d^3 + 5*a^5*b^9*c*d^4 - a^6*b^8*d^5)*g^7*x^5 + 15*(a^2*b^12*c^5 - 5*a^3*b^11*c^4*d + 10*a^4*b^10*c^3*d^2 - 10*a^5*b^9*c^2*d^3 + 5*a^6*b^8*c*d^4 - a^7*b^7*d^5)*g^7*x^4 + 20*(a^3*b^11*c^5 - 5*a^4*b^10*c^4*d + 10*a^5*b^9*c^3*d^2 - 10*a^6*b^8*c^2*d^3 + 5*a^7*b^7*c*d^4 - a^8*b^6*d^5)*g^7*x^3 + 15*(a^4*b^10*c^5 - 5*a^5*b^9*c^4*d + 10*a^6*b^8*c^3*d^2 - 10*a^7*b^7*c^2*d^3 + 5*a^8*b^6*c*d^4 - a^9*b^5*d^5)*g^7*x^2 + 6*(a^5*b^9*c^5 - 5*a^6*b^8*c^4*d + 10*a^7*b^7*c^3*d^2 - 10*a^8*b^6*c^2*d^3 + 5*a^9*b^5*c*d^4 - a^10*b^4*d^5)*g^7*x + (a^6*b^8*c^5 - 5*a^7*b^7*c^4*d + 10*a^8*b^6*c^3*d^2 - 10*a^9*b^5*c^2*d^3 + 5*a^10*b^4*c*d^4 - a^11*b^3*d^5)*g^7) - 60*(15*b^2*c^2*d^4 - 6*a*b*c*d^5 + a^2*d^6)*log(b*x + a)/((b^9*c^6 - 6*a*b^8*c^5*d + 15*a^2*b^7*c^4*d^2 - 20*a^3*b^6*c^3*d^3 + 15*a^4*b^5*c^2*d^4 - 6*a^5*b^4*c*d^5 + a^6*b^3*d^6)*g^7) + 60*(15*b^2*c^2*d^4 - 6*a*b*c*d^5 + a^2*d^6)*log(d*x + c)/((b^9*c^6 - 6*a*b^8*c^5*d + 15*a^2*b^7*c^4*d^2 - 20*a^3*b^6*c^3*d^3 + 15*a^4*b^5*c^2*d^4 - 6*a^5*b^4*c*d^5 + a^6*b^3*d^6)*g^7)) - 1/600*B*c^2*d*i^3*(60*(6*b*x + a)*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^8*g^7*x^6 + 6*a*b^7*g^7*x^5 + 15*a^2*b^6*g^7*x^4 + 20*a^3*b^5*g^7*x^3 + 15*a^4*b^4*g^7*x^2 + 6*a^5*b^3*g^7*x + a^6*b^2*g^7) + (22*a*b^5*c^5 - 140*a^2*b^4*c^4*d + 385*a^3*b^3*c^3*d^2 - 615*a^4*b^2*c^2*d^3 + 735*a^5*b*c*d^4 - 87*a^6*d^5 + 60*(6*b^6*c*d^4 - a*b^5*d^5)*x^5 - 30*(6*b^6*c^2*d^3 - 67*a*b^5*c*d^4 + 11*a^2*b^4*d^5)*x^4 + 20*(6*b^6*c^3*d^2 - 49*a*b^5*c^2*d^3 + 230*a^2*b^4*c*d^4 - 37*a^3*b^3*d^5)*x^3 - 15*(6*b^6*c^4*d - 43*a*b^5*c^3*d^2 + 145*a^2*b^4*c^2*d^3 - 365*a^3*b^3*c*d^4 + 57*a^4*b^2*d^5)*x^2 + 6*(12*b^6*c^5 - 80*a*b^5*c^4*d + 235*a^2*b^4*c^3*d^2 - 415*a^3*b^3*c^2*d^3 + 585*a^4*b^2*c*d^4 - 87*a^5*b*d^5)*x)/((b^13*c^5 - 5*a*b^12*c^4*d + 10*a^2*b^11*c^3*d^2 - 10*a^3*b^10*c^2*d^3 + 5*a^4*b^9*c*d^4 - a^5*b^8*d^5)*g^7*x^6 + 6*(a*b^12*c^5 - 5*a^2*b^11*c^4*d + 10*a^3*b^10*c^3*d^2 - 10*a^4*b^9*c^2*d^3 + 5*a^5*b^8*c*d^4 - a^6*b^7*d^5)*g^7*x^5 + 15*(a^2*b^11*c^5 - 5*a^3*b^10*c^4*d + 10*a^4*b^9*c^3*d^2 - 10*a^5*b^8*c^2*d^3 + 5*a^6*b^7*c*d^4 - a^7*b^6*d^5)*g^7*x^4 + 20*(a^3*b^10*c^5 - 5*a^4*b^9*c^4*d + 10*a^5*b^8*c^3*d^2 - 10*a^6*b^7*c^2*d^3 + 5*a^7*b^6*c*d^4 - a^8*b^5*d^5)*g^7*x^3 + 15*(a^4*b^9*c^5 - 5*a^5*b^8*c^4*d + 10*a^6*b^7*c^3*d^2 - 10*a^7*b^6*c^2*d^3 + 5*a^8*b^5*c*d^4 - a^9*b^4*d^5)*g^7*x^2 + 6*(a^5*b^8*c^5 - 5*a^6*b^7*c^4*d + 10*a^7*b^6*c^3*d^2 - 10*a^8*b^5*c^2*d^3 + 5*a^9*b^4*c*d^4 - a^10*b^3*d^5)*g^7*x + (a^6*b^7*c^5 - 5*a^7*b^6*c^4*d + 10*a^8*b^5*c^3*d^2 - 10*a^9*b^4*c^2*d^3 + 5*a^10*b^3*c*d^4 - a^11*b^2*d^5)*g^7) + 60*(6*b*c*d^5 - a*d^6)*log(b*x + a)/((b^8*c^6 - 6*a*b^7*c^5*d + 15*a^2*b^6*c^4*d^2 - 20*a^3*b^5*c^3*d^3 + 15*a^4*b^4*c^2*d^4 - 6*a^5*b^3*c*d^5 + a^6*b^2*d^6)*g^7) - 60*(6*b*c*d^5 - a*d^6)*log(d*x + c)/((b^8*c^6 - 6*a*b^7*c^5*d + 15*a^2*b^6*c^4*d^2 - 20*a^3*b^5*c^3*d^3 + 15*a^4*b^4*c^2*d^4 - 6*a^5*b^3*c*d^5 + a^6*b^2*d^6)*g^7)) + 1/360*B*c^3*i^3*((60*b^5*d^5*x^5 - 10*b^5*c^5 +
\end{aligned}$$

$$\begin{aligned}
& 62*a*b^4*c^4*d - 163*a^2*b^3*c^3*d^2 + 237*a^3*b^2*c^2*d^3 - 213*a^4*b*c*d^4 + 147*a^5*d^5 - 30*(b^5*c*d^4 - 11*a*b^4*d^5)*x^4 + 20*(b^5*c^2*d^3 - 8*a*b^4*c*d^4 + 37*a^2*b^3*d^5)*x^3 - 15*(b^5*c^3*d^2 - 7*a*b^4*c^2*d^3 + 23*a^2*b^3*c*d^4 - 57*a^3*b^2*d^5)*x^2 + 6*(2*b^5*c^4*d - 13*a*b^4*c^3*d^2 + 37*a^2*b^3*c^2*d^3 - 63*a^3*b^2*c*d^4 + 87*a^4*b*d^5)*x)/((b^12*c^5 - 5*a*b^11*c^4*d + 10*a^2*b^10*c^3*d^2 - 10*a^3*b^9*c^2*d^3 + 5*a^4*b^8*c*d^4 - a^5*b^7*d^5)*g^7*x^6 + 6*(a*b^11*c^5 - 5*a^2*b^10*c^4*d + 10*a^3*b^9*c^3*d^2 - 10*a^4*b^8*c^2*d^3 + 5*a^5*b^7*c*d^4 - a^6*b^6*d^5)*g^7*x^5 + 15*(a^2*b^10*c^5 - 5*a^3*b^9*c^4*d + 10*a^4*b^8*c^3*d^2 - 10*a^5*b^7*c^2*d^3 + 5*a^6*b^6*c*d^4 - a^7*b^5*d^5)*g^7*x^4 + 20*(a^3*b^9*c^5 - 5*a^4*b^8*c^4*d + 10*a^5*b^7*c^3*d^2 - 10*a^6*b^6*c^2*d^3 + 5*a^7*b^5*c*d^4 - a^8*b^4*d^5)*g^7*x^3 + 15*(a^4*b^8*c^5 - 5*a^5*b^7*c^4*d + 10*a^6*b^6*c^3*d^2 - 10*a^7*b^5*c^2*d^3 + 5*a^8*b^4*c*d^4 - a^9*b^3*d^5)*g^7*x^2 + 6*(a^5*b^7*c^5 - 5*a^6*b^6*c^4*d + 10*a^7*b^5*c^3*d^2 - 10*a^8*b^4*c^2*d^3 + 5*a^9*b^3*c*d^4 - a^10*b^2*d^5)*g^7*x + (a^6*b^6*c^5 - 5*a^7*b^5*c^4*d + 10*a^8*b^4*c^3*d^2 - 10*a^9*b^3*c^2*d^3 + 5*a^10*b^2*c*d^4 - a^11*b*d^5)*g^7) - 60*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^7*g^7*x^6 + 6*a*b^6*g^7*x^5 + 15*a^2*b^5*g^7*x^4 + 20*a^3*b^4*g^7*x^3 + 15*a^4*b^3*g^7*x^2 + 6*a^5*b^2*g^7*x + a^6*b*g^7) + 60*d^6*log(b*x + a)/((b^7*c^6 - 6*a*b^6*c^5*d + 15*a^2*b^5*c^4*d^2 - 20*a^3*b^4*c^3*d^3 + 15*a^4*b^3*c^2*d^4 - 6*a^5*b^2*c*d^5 + a^6*b*d^6)*g^7) - 60*d^6*log(d*x + c)/((b^7*c^6 - 6*a*b^6*c^5*d + 15*a^2*b^5*c^4*d^2 - 20*a^3*b^4*c^3*d^3 + 15*a^4*b^3*c^2*d^4 - 6*a^5*b^2*c*d^5 + a^6*b*d^6)*g^7)) - 1/10*(6*b*x + a)*A*c^2*d*i^3/(b^8*g^7*x^6 + 6*a*b^7*g^7*x^5 + 15*a^2*b^6*g^7*x^4 + 20*a^3*b^5*g^7*x^3 + 15*a^4*b^4*g^7*x^2 + 6*a^5*b^3*g^7*x + a^6*b^2*g^7) - 1/20*(15*b^2*x^2 + 6*a*b*x + a^2)*A*c*d^2*i^3/(b^9*g^7*x^6 + 6*a*b^8*g^7*x^5 + 15*a^2*b^7*g^7*x^4 + 20*a^3*b^6*g^7*x^3 + 15*a^4*b^5*g^7*x^2 + 6*a^5*b^4*g^7*x + a^6*b^3*g^7) - 1/60*(20*b^3*x^3 + 15*a*b^2*x^2 + 6*a^2*b*x + a^3)*A*d^3*i^3/(b^10*g^7*x^6 + 6*a*b^9*g^7*x^5 + 15*a^2*b^8*g^7*x^4 + 20*a^3*b^7*g^7*x^3 + 15*a^4*b^6*g^7*x^2 + 6*a^5*b^5*g^7*x + a^6*b^4*g^7) - 1/6*A*c^3*i^3/(b^7*g^7*x^6 + 6*a*b^6*g^7*x^5 + 15*a^2*b^5*g^7*x^4 + 20*a^3*b^4*g^7*x^3 + 15*a^4*b^3*g^7*x^2 + 6*a^5*b^2*g^7*x + a^6*b*g^7)
\end{aligned}$$

mupad [B] time = 9.73, size = 1396, normalized size = 4.97

$$\frac{B d^6 i^3 \operatorname{atanh}\left(\frac{60 a^3 b^4 d^3 g^7 - 60 a^2 b^5 c d^2 g^7 - 60 a b^6 c^2 d g^7 + 60 b^7 c^3 g^7}{60 b^4 g^7 (a d - b c)^3} + \frac{2 b d x (a^2 d^2 - 2 a b c d + b^2 c^2)}{(a d - b c)^3}\right) \ln\left(\frac{e(a+b x)}{c+d x}\right) \left(x^2 \left(b \left(b \left(\frac{B a d^5}{60 b^5}\right)\right)\right)\right)}{30 b^4 g^7 (a d - b c)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x)^7, x)

[Out] (B*d^6*i^3*atanh((60*b^7*c^3*g^7 + 60*a^3*b^4*d^3*g^7 - 60*a*b^6*c^2*d*g^7 - 60*a^2*b^5*c*d^2*g^7)/(60*b^4*g^7*(a*d - b*c)^3) + (2*b*d*x*(a^2*d^2 + b^

$$\frac{2c^2 - 2abc}{(ad - bc)^3} \Big/ \left(\frac{30b^4g^7(ad - bc)^3 - (\log((e(ax + bx)) / (c + dx)) * (x^2 * (b * (b * ((B * a * d^3 i^3) / (60b^5g^7) + (B * c * d^2 i^3) / (20b^4g^7)) + (B * a * d^3 i^3) / (15b^4g^7) + (B * c * d^2 i^3) / (5b^3g^7)) + (B * a * d^3 i^3) / (6b^3g^7) + (B * c * d^2 i^3) / (2b^2g^7)) + x * (b * (a * ((B * a * d^3 i^3) / (60b^5g^7) + (B * c * d^2 i^3) / (20b^4g^7)) + (B * c^2 * d * i^3) / (10b^3g^7)) + a * (b * ((B * a * d^3 i^3) / (60b^5g^7) + (B * c * d^2 i^3) / (20b^4g^7)) + (B * a * d^3 i^3) / (15b^4g^7) + (B * c * d^2 i^3) / (5b^3g^7)) + (B * c^2 * d * i^3) / (2b^2g^7)) + a * (a * ((B * a * d^3 i^3) / (60b^5g^7) + (B * c * d^2 i^3) / (20b^4g^7)) + (B * c^2 * d * i^3) / (10b^3g^7)) + (B * c^3 * i^3) / (6b^2g^7) + (B * d^3 * i^3 * x^3) / (3b^2g^7)) \Big/ (6a^5x + a^6/b + b^5x^6 + 15a^4bx^2 + 6a^3b^4x^5 + 20a^3b^2x^3 + 15a^2b^3x^4) - ((60Aa^5d^5i^3 + 600Ab^5c^5i^3 + 37Ba^5d^5i^3 + 100Bb^5c^5i^3 + 60Aa^2b^3c^3d^2i^3 + 60Aa^3b^2c^2d^3i^3 + 37Ba^2b^3c^3d^2i^3 + 37Ba^3b^2c^2d^3i^3 - 840Aa^4b^4c^4d^4i^3 + 60Aa^4b^3c^4d^4i^3 - 188Ba^4b^4c^4d^4i^3 + 37Ba^4b^3c^4d^4i^3) / (60(a^2d^2 + b^2c^2 - 2abc)) + (x^2 * (60Aa^3b^2d^5i^3 + 37Ba^3b^2d^5i^3 + 180Ab^5c^3d^2i^3 + 19Bb^5c^3d^2i^3 - 300Aa^4b^4c^2d^3i^3 + 60Aa^2b^3c^4d^4i^3 - 53Ba^4b^4c^2d^3i^3 + 37Ba^2b^3c^4d^4i^3)) / (4(a^2d^2 + b^2c^2 - 2abc)) + (x * (60Aa^4b^4d^5i^3 + 37Ba^4b^4d^5i^3 + 360Ab^5c^4d^4i^3 + 52Bb^5c^4d^4i^3 - 540Aa^4b^4c^3d^2i^3 + 60Aa^3b^2c^4d^4i^3 - 113Ba^4b^4c^3d^2i^3 + 37Ba^3b^2c^4d^4i^3 + 60Aa^2b^3c^2d^3i^3 + 37Ba^2b^3c^2d^3i^3)) / (10(a^2d^2 + b^2c^2 - 2abc)) + (x^3 * (60Aa^2b^3d^5i^3 + 37Ba^2b^3d^5i^3 + 60Ab^5c^2d^3i^3 + Bb^5c^2d^3i^3 - 120Aa^4b^4c^4d^4i^3 - 8Ba^4b^4c^4d^4i^3)) / (3(a^2d^2 + b^2c^2 - 2abc)) + (dx^4 * (11Ba^4b^4d^4i^3 - Bb^5c^4d^3i^3)) / (2(a^2d^2 + b^2c^2 - 2abc)) + (Bb^5d^5i^3 * x^5) / (a^2d^2 + b^2c^2 - 2abc) \Big/ (60a^6b^4g^7 + 60b^10g^7x^6 + 360a^5b^5g^7x + 360a^4b^9g^7x^5 + 900a^4b^6g^7x^2 + 1200a^3b^7g^7x^3 + 900a^2b^8g^7x^4)$$

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)**7,x)

[Out] Timed out

$$3.31 \quad \int \frac{(ag+bgx)^3 \left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{ci+dix} dx$$

Optimal. Leaf size=252

$$\frac{g^3(bc-ad)^3 \log\left(\frac{bc-ad}{b(c+dx)}\right) \left(6B \log\left(\frac{e(a+bx)}{c+dx}\right) + 6A + 11B\right)}{6d^4i} + \frac{g^3(a+bx)(bc-ad)^2 \left(6B \log\left(\frac{e(a+bx)}{c+dx}\right) + 6A + 5B\right)}{6d^3i} g^3($$

[Out] $\frac{1}{3}g^3(b^3x^3+a)^3(A+B\ln(e(b^3x^3+a)/(d^3x^3+c)))/d/i-1/6*(-a*d+b*c)*g^3(b^3x^3+a)^2*(3*A+B+3*B*\ln(e(b^3x^3+a)/(d^3x^3+c)))/d^2/i+1/6*(-a*d+b*c)^2*g^3(b^3x^3+a)*(6*A+5*B+6*B*\ln(e(b^3x^3+a)/(d^3x^3+c)))/d^3/i+1/6*(-a*d+b*c)^3*g^3*\ln((-a*d+b*c)/b/(d^3x^3+c))*(6*A+11*B+6*B*\ln(e(b^3x^3+a)/(d^3x^3+c)))/d^4/i+B*(-a*d+b*c)^3*g^3*\text{polylog}(2,d*(b^3x^3+a)/b/(d^3x^3+c))/d^4/i$

Rubi [A] time = 0.63, antiderivative size = 408, normalized size of antiderivative = 1.62, number of steps used = 23, number of rules used = 13, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.325$, Rules used = {2528, 2486, 31, 2525, 12, 43, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$\frac{Bg^3(bc-ad)^3 \text{PolyLog}\left(2, \frac{b(c+dx)}{bc-ad}\right)}{d^4i} g^3(a+bx)^2(bc-ad) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right) \frac{g^3(bc-ad)^3 \log(ci+dix) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{d^4i}$$

Antiderivative was successfully verified.

[In] Int[((a*g + b*g*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(c*i + d*i*x),x]

[Out] $\frac{A*b*(b*c - a*d)^2*g^3*x}{(d^3*i)} + \frac{(5*b*B*(b*c - a*d)^2*g^3*x)}{(6*d^3*i)} - \frac{B*(b*c - a*d)*g^3*(a + b*x)^2}{(6*d^2*i)} + \frac{B*(b*c - a*d)^2*g^3*(a + b*x)*\text{Log}[(e*(a + b*x))/(c + d*x)]}{(d^3*i)} - \frac{((b*c - a*d)*g^3*(a + b*x)^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(2*d^2*i)} + \frac{(g^3*(a + b*x)^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(3*d*i)} - \frac{(11*B*(b*c - a*d)^3*g^3*\text{Log}[c + d*x])}{(6*d^4*i)} - \frac{B*(b*c - a*d)^3*g^3*\text{Log}[i*(c + d*x)]^2}{(2*d^4*i)} + \frac{B*(b*c - a*d)^3*g^3*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c*i + d*i*x]}{(d^4*i)} - \frac{((b*c - a*d)^3*g^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)])*\text{Log}[c*i + d*i*x])}{(d^4*i)} + \frac{B*(b*c - a*d)^3*g^3*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]}{(d^4*i)}$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_) /; FreeQ[b, x]]

Rule 31

Int[((a_) + (b_)*(x_))⁽⁻¹⁾, x_Symbol] := Simp[Log[RemoveContent[a + b*x, x]]/b, x] /; FreeQ[{a, b}, x]

Rule 43

Int[((a_) + (b_)*(x_))^(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)ⁿ, x], x] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && (!IntegerQ[n] || (EqQ[c, 0] && LeQ[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])

Rule 2301

Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)/(x_), x_Symbol] := Simp[(a + b*Log[c*xⁿ])²/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2390

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)])*(b_)^(p_)*((f_) + (g_)*(x_))^(q_), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*xⁿ])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_)*((d_) + (e_)*(x_))^(n_)]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*xⁿ)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))])*(b_)/((f_) + (g_)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)])*(b_)/((f_) + (g_)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)ⁿ])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2418

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)])*(b_)^(p_)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)ⁿ])^p, RFx, x]},

```
Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFX, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] := Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q]^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFX^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFX^p])^(n - 1)*D[RFX, x])/RFX, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFX, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFX^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFX^p])^(n - 1)*D[RFX, x])/RFX, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFX, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*RFX^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFX, x] && RationalFunci
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(ag + bgx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{31c + 31dx} dx &= \int \left(\frac{b(bc - ad)^2 g^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{31d^3} + \frac{(-bc + ad)^3 g^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{d^3(31c + 31dx)} \right) dx \\
&= \frac{(bg) \int (ag + bgx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) dx}{31d} - \frac{(b(bc - ad)g^2) \int (ag + b^2x^2) dx}{31d^3} \\
&= \frac{Ab(bc - ad)^2 g^3 x}{31d^3} - \frac{(bc - ad)g^3 (a + bx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{62d^2} + \frac{g^3 (a^3 + 3a^2bx + 3abx^2 + b^3x^3)}{31d^3} \\
&= \frac{Ab(bc - ad)^2 g^3 x}{31d^3} + \frac{B(bc - ad)^2 g^3 (a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{31d^3} - \frac{(bc - ad)g^3 (a^3 + 3a^2bx + 3abx^2 + b^3x^3)}{31d^3} \\
&= \frac{Ab(bc - ad)^2 g^3 x}{31d^3} + \frac{B(bc - ad)^2 g^3 (a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{31d^3} - \frac{(bc - ad)g^3 (a^3 + 3a^2bx + 3abx^2 + b^3x^3)}{31d^3} \\
&= \frac{Ab(bc - ad)^2 g^3 x}{31d^3} + \frac{5bB(bc - ad)^2 g^3 x}{186d^3} - \frac{B(bc - ad)g^3 (a + bx)^2}{186d^2} + \frac{B(b^3x^3 + 3abx^2 + 3a^2bx + a^3)}{31d^3} \\
&= \frac{Ab(bc - ad)^2 g^3 x}{31d^3} + \frac{5bB(bc - ad)^2 g^3 x}{186d^3} - \frac{B(bc - ad)g^3 (a + bx)^2}{186d^2} + \frac{B(b^3x^3 + 3abx^2 + 3a^2bx + a^3)}{31d^3} \\
&= \frac{Ab(bc - ad)^2 g^3 x}{31d^3} + \frac{5bB(bc - ad)^2 g^3 x}{186d^3} - \frac{B(bc - ad)g^3 (a + bx)^2}{186d^2} + \frac{B(b^3x^3 + 3abx^2 + 3a^2bx + a^3)}{31d^3} \\
&= \frac{Ab(bc - ad)^2 g^3 x}{31d^3} + \frac{5bB(bc - ad)^2 g^3 x}{186d^3} - \frac{B(bc - ad)g^3 (a + bx)^2}{186d^2} + \frac{B(b^3x^3 + 3abx^2 + 3a^2bx + a^3)}{31d^3}
\end{aligned}$$

Mathematica [A] time = 0.29, size = 354, normalized size = 1.40

$$\frac{g^3 \left(2d^3(a + bx)^3 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right) + 3d^2(a + bx)^2(ad - bc) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right) - 6(bc - ad)^3 \log(i(c + dx)) \right)}{31d^3}$$

Antiderivative was successfully verified.

[In] Integrate[((a*g + b*g*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(c*i + d*i*x), x]

[Out] (g^3*(6*A*b*d*(b*c - a*d)^2*x + 6*B*d*(b*c - a*d)^2*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)] + 3*d^2*(-(b*c) + a*d)*(a + b*x)^2*(A + B*Log[(e*(a + b*x))

$$\begin{aligned} &/(c + d*x))] + 2*d^3*(a + b*x)^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]) - 6*B \\ &*(b*c - a*d)^3*\text{Log}[c + d*x] + B*(b*c - a*d)*(2*b*d*(b*c - a*d)*x - d^2*(a + \\ &b*x)^2 - 2*(b*c - a*d)^2*\text{Log}[c + d*x]) + 3*B*(b*c - a*d)^2*(b*d*x + (-b*c \\ &) + a*d)*\text{Log}[c + d*x] - 6*(b*c - a*d)^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x) \\ &])*\text{Log}[i*(c + d*x)] + 3*B*(b*c - a*d)^3*((2*\text{Log}[(d*(a + b*x))/(-b*c) + a*d \\ &)] - \text{Log}[i*(c + d*x)])*\text{Log}[i*(c + d*x)] + 2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - \\ &a*d)])))/(6*d^4*i) \end{aligned}$$

fricas [F] time = 0.81, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{Ab^3g^3x^3 + 3Aab^2g^3x^2 + 3Aa^2bg^3x + Aa^3g^3 + (Bb^3g^3x^3 + 3Bab^2g^3x^2 + 3Ba^2bg^3x + Ba^3g^3) \log\left(\frac{bex+}{dx+}\right)}{dix + ci} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i),x, algorithm="fricas")

[Out] integral((A*b^3*g^3*x^3 + 3*A*a*b^2*g^3*x^2 + 3*A*a^2*b*g^3*x + A*a^3*g^3 + (B*b^3*g^3*x^3 + 3*B*a*b^2*g^3*x^2 + 3*B*a^2*b*g^3*x + B*a^3*g^3)*log((b*e*x + a*e)/(d*x + c)))/(d*i*x + c*i), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i),x, algorithm="giac")

[Out] Timed out

maple [B] time = 0.16, size = 4297, normalized size = 17.05

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)/(d*i*x+c*i),x)

[Out]
$$\begin{aligned} &-1/d*A*g^3/i*\ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a^3-1/d*B*g^3/i*dilog \\ &(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a^3-11/6/d*B*g^3/i*\ln(-b*e+(b \\ &/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a^3-3/d^3*A*g^3/i*\ln(-b*e+(b/d*e+(a*d-b*c)/(\\ &d*x+c)/d*e)*d)*b^2*c^2*a-3/d^4*e*A*g^3/i*b^4/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c \\ &*e)*c^3+3/d^2*B*g^3/i*dilog(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a^ \end{aligned}$$

$$\begin{aligned}
& 2*b*c+15/d^2*e^2*B*g^3/i*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1 \\
& / (d*x+c)*b*c*e)^2*a^2*b^3*c^3/(d*x+c)^2+5/d^2*e^3*B*g^3/i*\ln(b/d*e+(a*d-b*c) \\
&)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*b^4*c^4/(d*x+c)^3*a^2+18 \\
& /d^2*e*B*g^3/i*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b \\
& *c*e)*b^2*c^2/(d*x+c)*a^2-15/d^2*e^2*B*g^3/i*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(\\
& (1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^3*b^2*c^2/(d*x+c)^2-2/d^3*e^3*B*g^3/i \\
& *ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*b^5*c^ \\
& 5/(d*x+c)^3*a-2*d*e^3*B*g^3/i*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a* \\
& d*e-1/(d*x+c)*b*c*e)^3*a^5*b*c/(d*x+c)^3-20/3/d^2*e^3*B*g^3/i*\ln(b/d*e+(a*d-b \\
& *c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*b^3*c^3/(d*x+c)^3*a^3- \\
& 15/2/d^3*e^2*B*g^3/i*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d* \\
& x+c)*b*c*e)^2*a*b^4*c^4/(d*x+c)^2-12/d^2*e*B*g^3/i*\ln(b/d*e+(a*d-b*c)/(d*x+c) \\
& /d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^3*b*c/(d*x+c)-12/d^3*e*B*g^3/i*\ln \\
& (b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*b^3*c^3/(d* \\
& x+c)*a+11/6/d^4*B*g^3/i*\ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*b^3*c^3+1/ \\
& d^4*A*g^3/i*\ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*b^3*c^3+1/d^4*B*g^3/i* \\
& dilog(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*b^3*c^3-1/d*B*g^3/i*\ln(b \\
& /d*e+(a*d-b*c)/(d*x+c)/d*e)*ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e) \\
& *a^3+7/2/d^3*e*B*g^3/i*b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*c^2*a+1/d^3*e^ \\
& 3*A*g^3/i*b^5/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*c^2*a-3/2/d^4*e^2*A*g^3/i \\
& *b^5/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*c^3-7/6/d^4*e*B*g^3/i*b^4/(1/(d*x+ \\
& c)*a*d*e-1/(d*x+c)*b*c*e)*c^3+1/3/d^2*e^3*A*g^3/i*b^3/(1/(d*x+c)*a*d*e-1/(d*x \\
& +c)*b*c*e)^3*a^3+3/2/d^2*e^2*A*g^3/i*b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2* \\
& a^3+1/6/d^2*e^2*B*g^3/i*b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^3-1/2/d^2*e \\
& ^2*B*g^3/i*b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^2*c-3/2/d^4*e^2*B*g^3/ \\
& i*b^5*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*c \\
& ^3-3/2*d^2*e^2*B*g^3/i*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d* \\
& x+c)*b*c*e)^2*a^5/(d*x+c)^2+3/2/d^2*e^2*B*g^3/i*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c) \\
&)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^3+1/3/d^2*e^3*B*g^3/i*b^3*ln(b/d \\
& *e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^3+3/d^2*e*B*g \\
& ^3/i*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^3* \\
& b-3/d^4*e*B*g^3/i*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c) \\
&)*b*c*e)*b^4*c^3-11/2/d^3*B*g^3/i*\ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)* \\
& b^2*c^2*a+3*e*B*g^3/i*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d \\
& *x+c)*b*c*e)*a^4/(d*x+c)+1/d^4*B*g^3/i*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*ln(- \\
& (-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*b^3*c^3+3/d^2*e*A*g^3/i*b/(1/(d*x \\
& +c)*a*d*e-1/(d*x+c)*b*c*e)*a^3-9/d^2*e*A*g^3/i*b^2/(1/(d*x+c)*a*d*e-1/(d*x+ \\
& c)*b*c*e)*a^2*c-7/2/d^2*e*B*g^3/i*b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^2 \\
& *c+3/d^2*B*g^3/i*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*ln(-(-b*e+(b/d*e+(a*d-b*c) \\
&)/(d*x+c)/d*e)*d)/b/e)*a^2*b*c-3/d^3*B*g^3/i*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e) \\
& *ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a*b^2*c^2+1/3*d^2*e^3*B*g^ \\
& 3/i*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^6 \\
& / (d*x+c)^3+1/2/d^3*e^2*B*g^3/i*b^4/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*c^2* \\
& a-9/2/d^2*e^2*A*g^3/i*b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^2*c+9/2/d^3 \\
& *e^2*A*g^3/i*b^4/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a*c^2-1/d^2*e^3*A*g^3/
\end{aligned}$$

$$i*b^4/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^2*c+7/6/d*e*B*g^3/i*b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^3-1/3/d^4*e^3*A*g^3/i*b^6/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*c^3+3/2/d^4*e^2*B*g^3/i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*b^5*c^5/(d*x+c)^2+1/d^3*e^3*B*g^3/i*b^5*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*c^2*a-9/2/d^2*e^2*B*g^3/i*b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^2*c+1/3/d^4*e^3*B*g^3/i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*b^6*c^6/(d*x+c)^3+9/2/d^3*e^2*B*g^3/i*b^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*c^2*a+5*e^3*B*g^3/i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^4*b^2*c^2/(d*x+c)^3+15/2*e^2*B*g^3/i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^4*b*c/(d*x+c)^2-1/d^2*e^3*B*g^3/i*b^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^2*c-9/d^2*e*B*g^3/i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^2*b^2*c+9/d^3*e*B*g^3/i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a*b^3*c^2+3/d^4*e*B*g^3/i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*b^4*c^4/(d*x+c)-1/6/d^4*e^2*B*g^3/i*b^5/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*c^3+11/2/d^2*B*g^3/i*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a^2*b*c+3/d^2*A*g^3/i*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a^2*b*c-3/d^3*B*g^3/i*dilog(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*b^2*c^2*a+9/d^3*e*A*g^3/i*b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*c^2*a-1/3/d^4*e^3*B*g^3/i*b^6*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*c^3$$

maxima [B] time = 1.79, size = 790, normalized size = 3.13

$$3 A a^2 b g^3 \left(\frac{x}{d i} - \frac{c \log(dx + c)}{d^2 i} \right) - \frac{1}{6} A b^3 g^3 \left(\frac{6 c^3 \log(dx + c)}{d^4 i} - \frac{2 d^2 x^3 - 3 c d x^2 + 6 c^2 x}{d^3 i} \right) + \frac{3}{2} A a b^2 g^3 \left(\frac{2 c^2 \log(dx + c)}{d^3 i} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i),x, algorithm="maxima")

[Out] 3*A*a^2*b*g^3*(x/(d*i) - c*log(dx + c)/(d^2*i)) - 1/6*A*b^3*g^3*(6*c^3*log(dx + c)/(d^4*i) - (2*d^2*x^3 - 3*c*d*x^2 + 6*c^2*x)/(d^3*i)) + 3/2*A*a*b^2*g^3*(2*c^2*log(dx + c)/(d^3*i) + (d*x^2 - 2*c*x)/(d^2*i)) + A*a^3*g^3*log(d*i*x + c*i)/(d*i) - (b^3*c^3*g^3 - 3*a*b^2*c^2*d*g^3 + 3*a^2*b*c*d^2*g^3 - a^3*d^3*g^3)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d)))*B/(d^4*i) + 1/6*(6*a^3*d^3*g^3*log(e) - (6*g^3*log(e) + 11*g^3)*b^3*c^3 + 9*(2*g^3*log(e) + 3*g^3)*a*b^2*c^2*d - 18*(g^3*log(e) + g^3)*a^2*b*c*d^2)*B*log(dx + c)/(d^4*i) + 1/6*(2*B*b^3*d^3*g^3*x^3*log(e) - ((3*g^3*log(e) + g^3)*b^3*c*d^2 - (9*g^3*log(e) + g^3)*a*b^2*d^3)*B*x^2 + 3*(b^3*c^3*g^3 - 3*a*b^2*c^2*d*g^3 + 3*a^2*b*c*d^2*g^3 - a^3*d^3*g^3)*B*log(dx + c)^2 + ((6*g^3*log(e) + 5*g^3)*b^3*c^2*d - 6*(3*g^3*log(e) +

$$2g^3)ab^2cd^2 + (18g^3\log(e) + 7g^3)a^2bd^3)Bx + (2Bb^3d^3g^3x^3 - 3(b^3cd^2g^3 - 3ab^2d^3g^3)Bx^2 + 6(b^3c^2dg^3 - 3ab^2cd^2g^3 + 3a^2bd^3g^3)Bx + (6ab^2c^2dg^3 - 15a^2b^2cd^2g^3 + 11a^3d^3g^3)B)\log(bx + a) - (2Bb^3d^3g^3x^3 - 3(b^3cd^2g^3 - 3ab^2d^3g^3)Bx^2 + 6(b^3c^2dg^3 - 3ab^2cd^2g^3 + 3a^2bd^3g^3)Bx)\log(dx + c))/(d^4i)$$

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ag + bgx)^3 \left(A + B \ln\left(\frac{e(a+bx)}{c+dx}\right) \right)}{ci + dix} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((a*g + b*g*x)^3*(A + B*log((e*(a + b*x))/(c + d*x))))/(c*i + d*i*x),x)

[Out] int(((a*g + b*g*x)^3*(A + B*log((e*(a + b*x))/(c + d*x))))/(c*i + d*i*x), x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)**3*(A+B*ln(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i),x)

[Out] Timed out

$$3.32 \quad \int \frac{(ag+bgx)^2 \left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{ci+dx} dx$$

Optimal. Leaf size=198

$$\frac{g^2(bc-ad)^2 \log\left(\frac{bc-ad}{b(c+dx)}\right) \left(2B \log\left(\frac{e(a+bx)}{c+dx}\right) + 2A + 3B \right)}{2d^3i} - \frac{g^2(a+bx)(bc-ad) \left(2B \log\left(\frac{e(a+bx)}{c+dx}\right) + 2A + B \right)}{2d^2i} + \frac{g^2(a+bx)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{2di}$$

[Out] $1/2*g^2*(b*x+a)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/d/i-1/2*(-a*d+b*c)*g^2*(b*x+a)*(2*A+B+2*B*\ln(e*(b*x+a)/(d*x+c)))/d^2/i-1/2*(-a*d+b*c)^2*g^2*\ln((-a*d+b*c)/b/(d*x+c))*(2*A+3*B+2*B*\ln(e*(b*x+a)/(d*x+c)))/d^3/i-B*(-a*d+b*c)^2*g^2*polylog(2,d*(b*x+a)/b/(d*x+c))/d^3/i$

Rubi [A] time = 0.49, antiderivative size = 329, normalized size of antiderivative = 1.66, number of steps used = 19, number of rules used = 13, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.325$, Rules used = {2528, 2486, 31, 2525, 12, 43, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$-\frac{Bg^2(bc-ad)^2 \text{PolyLog}\left(2, \frac{b(c+dx)}{bc-ad}\right)}{d^3i} + \frac{g^2(bc-ad)^2 \log(ci+dx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{d^3i} + \frac{g^2(a+bx)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{2di}$$

Antiderivative was successfully verified.

[In] $\text{Int}[\frac{(a*g + b*g*x)^2*(A + B*\text{Log}[\frac{e*(a + b*x)}{c + d*x}])}{(c*i + d*i*x)}, x]$

[Out] $-((A*b*(b*c - a*d)*g^2*x)/(d^2*i)) - (b*B*(b*c - a*d)*g^2*x)/(2*d^2*i) - (B*(b*c - a*d)*g^2*(a + b*x)*\text{Log}[\frac{e*(a + b*x)}{c + d*x}])/(d^2*i) + (g^2*(a + b*x)^2*(A + B*\text{Log}[\frac{e*(a + b*x)}{c + d*x}]))/(2*d*i) + (3*B*(b*c - a*d)^2*g^2*\text{Log}[c + d*x])/(2*d^3*i) + (B*(b*c - a*d)^2*g^2*\text{Log}[i*(c + d*x)]^2)/(2*d^3*i) - (B*(b*c - a*d)^2*g^2*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c*i + d*i*x])/(d^3*i) + ((b*c - a*d)^2*g^2*(A + B*\text{Log}[\frac{e*(a + b*x)}{c + d*x}])*\text{Log}[c*i + d*i*x])/(d^3*i) - (B*(b*c - a*d)^2*g^2*\text{PolyLog}[2, \frac{b*(c + d*x)}{b*c - a*d}])/(d^3*i)$

Rule 12

$\text{Int}[(a_*)(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \ \&\& \ !\text{MatchQ}[u, (b_)*(v_)] /; \text{FreeQ}[b, x]$

Rule 31

$\text{Int}[\frac{(a_*) + (b_.)*(x_)}{x}, x_Symbol] \rightarrow \text{Simp}[\text{Log}[\text{RemoveContent}[a + b*x, x]]/b, x] /; \text{FreeQ}[\{a, b\}, x]$

Rule 43

Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && (!IntegerQ[n] || (EqQ[c, 0] && LeQ[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])

Rule 2301

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*((f_) + (g_.)*(x_)^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2418

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] := Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(ag + bgx)^2 \left(A + B \log \left(\frac{e^{(a+bx)}}{c+dx} \right) \right)}{32c + 32dx} dx &= \int \left(-\frac{b(bc - ad)g^2 \left(A + B \log \left(\frac{e^{(a+bx)}}{c+dx} \right) \right)}{32d^2} + \frac{(bc - ad)^2 g^2 \left(A + B \log \left(\frac{e^{(a+bx)}}{c+dx} \right) \right)}{d^2(32c + 32dx)} \right) dx \\
&= \frac{(bg) \int (ag + bgx) \left(A + B \log \left(\frac{e^{(a+bx)}}{c+dx} \right) \right) dx}{32d} - \frac{(b(bc - ad)g^2) \int \left(A + B \log \left(\frac{e^{(a+bx)}}{c+dx} \right) \right) dx}{32d^2} \\
&= -\frac{Ab(bc - ad)g^2 x}{32d^2} + \frac{g^2(a + bx)^2 \left(A + B \log \left(\frac{e^{(a+bx)}}{c+dx} \right) \right)}{64d} + \frac{(bc - ad)^2 g^2 \int \left(A + B \log \left(\frac{e^{(a+bx)}}{c+dx} \right) \right) dx}{32d^2} \\
&= -\frac{Ab(bc - ad)g^2 x}{32d^2} - \frac{B(bc - ad)g^2(a + bx) \log \left(\frac{e^{(a+bx)}}{c+dx} \right)}{32d^2} + \frac{g^2(a + bx)^2 \int \left(A + B \log \left(\frac{e^{(a+bx)}}{c+dx} \right) \right) dx}{32d^2} \\
&= -\frac{Ab(bc - ad)g^2 x}{32d^2} - \frac{B(bc - ad)g^2(a + bx) \log \left(\frac{e^{(a+bx)}}{c+dx} \right)}{32d^2} + \frac{g^2(a + bx)^2 \int \left(A + B \log \left(\frac{e^{(a+bx)}}{c+dx} \right) \right) dx}{32d^2} \\
&= -\frac{Ab(bc - ad)g^2 x}{32d^2} - \frac{bB(bc - ad)g^2 x}{64d^2} - \frac{B(bc - ad)g^2(a + bx) \log \left(\frac{e^{(a+bx)}}{c+dx} \right)}{32d^2} + \frac{g^2(a + bx)^2 \int \left(A + B \log \left(\frac{e^{(a+bx)}}{c+dx} \right) \right) dx}{32d^2} \\
&= -\frac{Ab(bc - ad)g^2 x}{32d^2} - \frac{bB(bc - ad)g^2 x}{64d^2} - \frac{B(bc - ad)g^2(a + bx) \log \left(\frac{e^{(a+bx)}}{c+dx} \right)}{32d^2} + \frac{g^2(a + bx)^2 \int \left(A + B \log \left(\frac{e^{(a+bx)}}{c+dx} \right) \right) dx}{32d^2} \\
&= -\frac{Ab(bc - ad)g^2 x}{32d^2} - \frac{bB(bc - ad)g^2 x}{64d^2} - \frac{B(bc - ad)g^2(a + bx) \log \left(\frac{e^{(a+bx)}}{c+dx} \right)}{32d^2} + \frac{g^2(a + bx)^2 \int \left(A + B \log \left(\frac{e^{(a+bx)}}{c+dx} \right) \right) dx}{32d^2} \\
&= -\frac{Ab(bc - ad)g^2 x}{32d^2} - \frac{bB(bc - ad)g^2 x}{64d^2} - \frac{B(bc - ad)g^2(a + bx) \log \left(\frac{e^{(a+bx)}}{c+dx} \right)}{32d^2} + \frac{g^2(a + bx)^2 \int \left(A + B \log \left(\frac{e^{(a+bx)}}{c+dx} \right) \right) dx}{32d^2}
\end{aligned}$$

Mathematica [A] time = 0.18, size = 254, normalized size = 1.28

$$\frac{g^2 \left(d^2(a + bx)^2 \left(B \log \left(\frac{e^{(a+bx)}}{c+dx} \right) + A \right) + 2(bc - ad)^2 \log(i(c + dx)) \left(B \log \left(\frac{e^{(a+bx)}}{c+dx} \right) + A \right) - 2Abdx(bc - ad) + 2Bd \right)}{32d^2}$$

Antiderivative was successfully verified.

[In] Integrate[((a*g + b*g*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(c*i + d*i*x), x]

[Out] (g^2*(-2*A*b*d*(b*c - a*d)*x + 2*B*d*(-(b*c) + a*d)*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)] + d^2*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x])) + 2*

$B*(b*c - a*d)^2*\text{Log}[c + d*x] - B*(b*c - a*d)*(b*d*x + (-(b*c) + a*d)*\text{Log}[c + d*x]) + 2*(b*c - a*d)^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)])*\text{Log}[i*(c + d*x)] - B*(b*c - a*d)^2*((2*\text{Log}[(d*(a + b*x))/(-(b*c) + a*d)] - \text{Log}[i*(c + d*x)])*\text{Log}[i*(c + d*x)] + 2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/(2*d^3*i)$

fricas [F] time = 0.52, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{Ab^2g^2x^2 + 2Aabg^2x + Aa^2g^2 + (Bb^2g^2x^2 + 2Babg^2x + Ba^2g^2)\log\left(\frac{bex+ae}{dx+c}\right)}{dix + ci}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i),x, algorithm="fricas")

[Out] integral((A*b^2*g^2*x^2 + 2*A*a*b*g^2*x + A*a^2*g^2 + (B*b^2*g^2*x^2 + 2*B*a*b*g^2*x + B*a^2*g^2)*log((b*e*x + a*e)/(d*x + c)))/(d*i*x + c*i), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i),x, algorithm="giac")

[Out] Timed out

maple [B] time = 0.14, size = 2309, normalized size = 11.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)/(d*i*x+c*i),x)

[Out] $-1/d*A*g^2/i*\ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a^2-1/d*B*g^2/i*\text{dilog}(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a^2-3/2/d*B*g^2/i*\ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a^2-6/d*e*B*g^2/i*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^2/(d*x+c)*b*c+2/d^2*e^2*B*g^2/i*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a/(d*x+c)^2*b^3*c^3-3/d*e^2*B*g^2/i*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^2/(d*x+c)^2*b^2*c^2+6/d^2*e*B*g^2/i*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a/(d*x+c)*b^2*c^2-4/d^2*e$

$$\begin{aligned}
 & B^2 g^2 / i \ln(b/d^2 e + (a^2 d - b^2 c) / (d^2 x + c) / d^2 e) / (1 / (d^2 x + c) * a^2 d^2 e - 1 / (d^2 x + c) * b^2 c^2 e) * a \\
 & * b^2 c^2 + 2 e^2 B^2 g^2 / i \ln(b/d^2 e + (a^2 d - b^2 c) / (d^2 x + c) / d^2 e) / (1 / (d^2 x + c) * a^2 d^2 e - 1 / (d^2 x + c) * b^2 c^2 e) \\
 & ^2 * a^3 / (d^2 x + c)^2 * b^2 c - 1 / d^3 B^2 g^2 / i \ln(b/d^2 e + (a^2 d - b^2 c) / (d^2 x + c) / d^2 e) * \ln(-(-b^2 e + (b/d^2 e + (a^2 d - b^2 c) / (d^2 x + c) / d^2 e) * d) / b / e) * b^2 c^2 + 1 / 2 / d^2 e * B^2 g^2 / i \\
 & b / (1 / (d^2 x + c) * a^2 d^2 e - 1 / (d^2 x + c) * b^2 c^2 e) * a^2 + 2 * e * B^2 g^2 / i \ln(b/d^2 e + (a^2 d - b^2 c) / (d^2 x + c) / d^2 e) / (1 / (d^2 x + c) * a^2 d^2 e - 1 / (d^2 x + c) * b^2 c^2 e) * a^3 / (d^2 x + c) + 2 / d^2 e * B^2 g^2 / i \ln(b/d^2 e + (a^2 d - b^2 c) / (d^2 x + c) / d^2 e) / (1 / (d^2 x + c) * a^2 d^2 e - 1 / (d^2 x + c) * b^2 c^2 e) * a^2 * b - 1 / d^2 e^2 \\
 & * A^2 g^2 / i * b^3 / (1 / (d^2 x + c) * a^2 d^2 e - 1 / (d^2 x + c) * b^2 c^2 e) ^2 * c * a + 2 / d^2 * A^2 g^2 / i \ln(-b^2 e + (b/d^2 e + (a^2 d - b^2 c) / (d^2 x + c) / d^2 e) * d) * a * b^2 c - 1 / d^3 B^2 g^2 / i * \operatorname{dilog}(-(-b^2 e + (b/d^2 e + (a^2 d - b^2 c) / (d^2 x + c) / d^2 e) * d) / b / e) * b^2 c^2 - 1 / d^3 * A^2 g^2 / i \ln(-b^2 e + (b/d^2 e + (a^2 d - b^2 c) / (d^2 x + c) / d^2 e) * d) * b^2 c^2 - 1 / d^3 * B^2 g^2 / i \ln(b/d^2 e + (a^2 d - b^2 c) / (d^2 x + c) / d^2 e) * \ln(-(-b^2 e + (b/d^2 e + (a^2 d - b^2 c) / (d^2 x + c) / d^2 e) * d) / b / e) * a^2 - 3 / 2 / d^3 * B^2 g^2 / i \ln(-b^2 e + (b/d^2 e + (a^2 d - b^2 c) / (d^2 x + c) / d^2 e) * d) * b^2 c^2 + 2 / d^3 * e * A^2 g^2 / i * b^3 / (1 / (d^2 x + c) * a^2 d^2 e - 1 / (d^2 x + c) * b^2 c^2 e) * c^2 + 3 / d^2 * B^2 g^2 / i \ln(-b^2 e + (b/d^2 e + (a^2 d - b^2 c) / (d^2 x + c) / d^2 e) * d) * b \\
 & * c * a + 1 / 2 / d^3 * e^2 * A^2 g^2 / i * b^4 / (1 / (d^2 x + c) * a^2 d^2 e - 1 / (d^2 x + c) * b^2 c^2 e) ^2 * c^2 + 1 / 2 / d^3 * e * B^2 g^2 / i * b^3 / (1 / (d^2 x + c) * a^2 d^2 e - 1 / (d^2 x + c) * b^2 c^2 e) * c^2 + 1 / 2 / d^2 * e^2 * A^2 g^2 / i * b^2 \\
 & / (1 / (d^2 x + c) * a^2 d^2 e - 1 / (d^2 x + c) * b^2 c^2 e) ^2 * a^2 + 2 / d^2 * e * A^2 g^2 / i * b / (1 / (d^2 x + c) * a^2 d^2 e - 1 / (d^2 x + c) * b^2 c^2 e) * a^2 + 2 / d^2 * B^2 g^2 / i * \operatorname{dilog}(-(-b^2 e + (b/d^2 e + (a^2 d - b^2 c) / (d^2 x + c) / d^2 e) * d) / b / e) * a * b^2 c + 2 / d^2 * B^2 g^2 / i \ln(b/d^2 e + (a^2 d - b^2 c) / (d^2 x + c) / d^2 e) * \ln(-(-b^2 e + (b/d^2 e + (a^2 d - b^2 c) / (d^2 x + c) / d^2 e) * d) / b / e) * a * b^2 c - 4 / d^2 * e * A^2 g^2 / i * b^2 / (1 / (d^2 x + c) * a^2 d^2 e - 1 / (d^2 x + c) * b^2 c^2 e) * a * c - 1 / d^2 * e * B^2 g^2 / i * b^2 / (1 / (d^2 x + c) * a^2 d^2 e - 1 / (d^2 x + c) * b^2 c^2 e) * a * c - 2 / d^3 * e * B^2 g^2 / i \ln(b/d^2 e + (a^2 d - b^2 c) / (d^2 x + c) / d^2 e) / (1 / (d^2 x + c) * a^2 d^2 e - 1 / (d^2 x + c) * b^2 c^2 e) * b^3 * c^3 / (d^2 x + c) - 1 / d^2 * e^2 * B^2 g^2 / i \ln(b/d^2 e + (a^2 d - b^2 c) / (d^2 x + c) / d^2 e) / (1 / (d^2 x + c) * a^2 d^2 e - 1 / (d^2 x + c) * b^2 c^2 e) ^2 * b^3 * c * a - 1 / 2 / d^3 * e^2 * B^2 g^2 / i \ln(b/d^2 e + (a^2 d - b^2 c) / (d^2 x + c) / d^2 e) / (1 / (d^2 x + c) * a^2 d^2 e - 1 / (d^2 x + c) * b^2 c^2 e) ^2 * b^4 * c^4 / (d^2 x + c)^2 + 1 / 2 / d^2 * e^2 * B^2 g^2 / i \ln(b/d^2 e + (a^2 d - b^2 c) / (d^2 x + c) / d^2 e) / (1 / (d^2 x + c) * a^2 d^2 e - 1 / (d^2 x + c) * b^2 c^2 e) ^2 * a^2 * b^2 + 2 / d^3 * e * B^2 g^2 / i \ln(b/d^2 e + (a^2 d - b^2 c) / (d^2 x + c) / d^2 e) / (1 / (d^2 x + c) * a^2 d^2 e - 1 / (d^2 x + c) * b^2 c^2 e) * b^3 * c^2 - 1 / 2 * d^2 * e^2 * B^2 g^2 / i \ln(b/d^2 e + (a^2 d - b^2 c) / (d^2 x + c) / d^2 e) / (1 / (d^2 x + c) * a^2 d^2 e - 1 / (d^2 x + c) * b^2 c^2 e) ^2 * a^4 / (d^2 x + c)^2 + 1 / 2 / d^3 * e^2 * B^2 g^2 / i \ln(b/d^2 e + (a^2 d - b^2 c) / (d^2 x + c) / d^2 e) / (1 / (d^2 x + c) * a^2 d^2 e - 1 / (d^2 x + c) * b^2 c^2 e) ^2 * b^4 * c^2
 \end{aligned}$$

maxima [B] time = 1.74, size = 477, normalized size = 2.41

$$2 A a b g^2 \left(\frac{x}{d i} - \frac{c \log(dx + c)}{d^2 i} \right) + \frac{1}{2} A b^2 g^2 \left(\frac{2 c^2 \log(dx + c)}{d^3 i} + \frac{d x^2 - 2 c x}{d^2 i} \right) + \frac{A a^2 g^2 \log(d i x + c i)}{d i} + \frac{(b^2 c^2 g^2 - 2 a b c a)}{d^2 i}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i),x, algorithm="maxima")

[Out] 2*A*a*b*g^2*(x/(d*i) - c*log(d*x + c)/(d^2*i)) + 1/2*A*b^2*g^2*(2*c^2*log(d*x + c)/(d^3*i) + (d*x^2 - 2*c*x)/(d^2*i)) + A*a^2*g^2*log(d*i*x + c*i)/(d*i) + (b^2*c^2*g^2 - 2*a*b*c*d*g^2 + a^2*d^2*g^2)*(log(b*x + a)*log((b*d*x +

$$\begin{aligned} & a*d)/(b*c - a*d) + 1) + \operatorname{dilog}(-(b*d*x + a*d)/(b*c - a*d)) * B/(d^{3*i}) + 1/2 \\ & * (2*a^2*d^2*g^2*\log(e) + (2*g^2*\log(e) + 3*g^2)*b^2*c^2 - 4*(g^2*\log(e) + g \\ & ^2)*a*b*c*d) * B*\log(d*x + c)/(d^{3*i}) + 1/2*(B*b^2*d^2*g^2*x^2*\log(e) - (b^2* \\ & c^2*g^2 - 2*a*b*c*d*g^2 + a^2*d^2*g^2) * B*\log(d*x + c)^2 - ((2*g^2*\log(e) + \\ & g^2)*b^2*c*d - (4*g^2*\log(e) + g^2)*a*b*d^2) * B*x + (B*b^2*d^2*g^2*x^2 - 2*(\\ & b^2*c*d*g^2 - 2*a*b*d^2*g^2) * B*x - (2*a*b*c*d*g^2 - 3*a^2*d^2*g^2) * B)*\log(b \\ & *x + a) - (B*b^2*d^2*g^2*x^2 - 2*(b^2*c*d*g^2 - 2*a*b*d^2*g^2) * B*x)*\log(d*x \\ & + c))/(d^{3*i}) \end{aligned}$$

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(ag + bgx)^2 \left(A + B \ln \left(\frac{e(a+bx)}{c+dx} \right) \right)}{ci + dix} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int(((a*g + b*g*x)^2*(A + B*log((e*(a + b*x))/(c + d*x))))/(c*i + d*i*x),x)`

[Out] `int(((a*g + b*g*x)^2*(A + B*log((e*(a + b*x))/(c + d*x))))/(c*i + d*i*x), x)`

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$g^2 \left(\int \frac{Aa^2}{c+dx} dx + \int \frac{Ab^2x^2}{c+dx} dx + \int \frac{Ba^2 \log\left(\frac{ae}{c+dx} + \frac{bex}{c+dx}\right)}{c+dx} dx + \int \frac{2Aabx}{c+dx} dx + \int \frac{Bb^2x^2 \log\left(\frac{ae}{c+dx} + \frac{bex}{c+dx}\right)}{c+dx} dx + \int \frac{2Babx \log\left(\frac{ae}{c+dx} + \frac{bex}{c+dx}\right)}{c+dx} dx \right) / i$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((b*g*x+a*g)**2*(A+B*ln(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i),x)`

[Out] `g**2*(Integral(A*a**2/(c + d*x), x) + Integral(A*b**2*x**2/(c + d*x), x) + Integral(B*a**2*log(a*e/(c + d*x) + b*e*x/(c + d*x))/(c + d*x), x) + Integral(2*A*a*b*x/(c + d*x), x) + Integral(B*b**2*x**2*log(a*e/(c + d*x) + b*e*x/(c + d*x))/(c + d*x), x) + Integral(2*B*a*b*x*log(a*e/(c + d*x) + b*e*x/(c + d*x))/(c + d*x), x))/i`

$$3.33 \quad \int \frac{(ag+bgx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{ci+dix} dx$$

Optimal. Leaf size=125

$$\frac{g(bc-ad)\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A+B\right)}{d^2i} + \frac{g(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{di} + \frac{Bg(bc-ad)\text{Li}_2\left(\frac{d(a+bx)}{b(c+dx)}\right)}{d^2i}$$

[Out] $g*(b*x+a)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/d/i+(-a*d+b*c)*g*\ln((-a*d+b*c)/b/(d*x+c))*(A+B+B*\ln(e*(b*x+a)/(d*x+c)))/d^2/i+B*(-a*d+b*c)*g*polylog(2,d*(b*x+a)/b/(d*x+c))/d^2/i$

Rubi [A] time = 0.35, antiderivative size = 213, normalized size of antiderivative = 1.70, number of steps used = 14, number of rules used = 11, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}} = 0.290$, Rules used = {2528, 2486, 31, 2524, 12, 2418, 2394, 2393, 2391, 2390, 2301}

$$\frac{Bg(bc-ad)\text{PolyLog}\left(2, \frac{b(c+dx)}{bc-ad}\right)}{d^2i} - \frac{g(bc-ad)\log(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{d^2i} - \frac{Bg(bc-ad)\log^2(c+dx)}{2d^2i} + \frac{Bg(bc-ad)\log\left(\frac{d(a+bx)}{b(c+dx)}\right)}{d^2i}$$

Antiderivative was successfully verified.

[In] $\text{Int}[\frac{(a*g + b*g*x)*(A + B*\text{Log}[\frac{e*(a + b*x)}{c + d*x}])}{(c*i + d*i*x)}, x]$

[Out] $(A*b*g*x)/(d*i) + (B*g*(a + b*x)*\text{Log}[\frac{e*(a + b*x)}{c + d*x}])/(d*i) - (B*(b*c - a*d)*g*\text{Log}[c + d*x])/(d^2*i) + (B*(b*c - a*d)*g*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c + d*x])/(d^2*i) - ((b*c - a*d)*g*(A + B*\text{Log}[\frac{e*(a + b*x)}{c + d*x}])*\text{Log}[c + d*x])/(d^2*i) - (B*(b*c - a*d)*g*\text{Log}[c + d*x]^2)/(2*d^2*i) + (B*(b*c - a*d)*g*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/(d^2*i)$

Rule 12

$\text{Int}[(a_*)(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \&\& \text{!MatchQ}[u, (b_*)(v_)] /; \text{FreeQ}[b, x]$

Rule 31

$\text{Int}[(a_*) + (b_*)(x_)^(-1), x_Symbol] \rightarrow \text{Simp}[\text{Log}[\text{RemoveContent}[a + b*x, x]]/b, x] /; \text{FreeQ}[\{a, b\}, x]$

Rule 2301

$\text{Int}[(a_*) + \text{Log}[(c_*)(x_)^(n_)]*(b_)]/(x_), x_Symbol] \rightarrow \text{Simp}[(a + b*\text{Log}[c*x^n])^2/(2*b*n), x] /; \text{FreeQ}[\{a, b, c, n\}, x]$

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)
^(r_.)]^(s_.), x_Symbol] := Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q]^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
```

, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]

Rule 2528

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]

Rubi steps

$$\begin{aligned}
 \int \frac{(ag + bgx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{33c + 33dx} dx &= \int \left(\frac{bg \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{33d} + \frac{(-bc + ad)g \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{33d(c + dx)} \right) dx \\
 &= \frac{(bg) \int \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) dx}{33d} - \frac{((bc - ad)g) \int \frac{A + B \log \left(\frac{e(a+bx)}{c+dx} \right)}{c+dx} dx}{33d} \\
 &= \frac{Abgx}{33d} - \frac{(bc - ad)g \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) \log(c + dx)}{33d^2} + \frac{(bBg) \int \log \left(\frac{e(a+bx)}{c+dx} \right) dx}{33d} \\
 &= \frac{Abgx}{33d} + \frac{Bg(a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{33d} - \frac{(bc - ad)g \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) \log(c + dx)}{33d^2} \\
 &= \frac{Abgx}{33d} + \frac{Bg(a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{33d} - \frac{B(bc - ad)g \log(c + dx)}{33d^2} - \frac{(bc - ad)g \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) \log(c + dx)}{33d^2} \\
 &= \frac{Abgx}{33d} + \frac{Bg(a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{33d} - \frac{B(bc - ad)g \log(c + dx)}{33d^2} - \frac{(bc - ad)g \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) \log(c + dx)}{33d^2} \\
 &= \frac{Abgx}{33d} + \frac{Bg(a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{33d} - \frac{B(bc - ad)g \log(c + dx)}{33d^2} + \frac{B(bc - ad)g \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) \log(c + dx)}{33d^2} \\
 &= \frac{Abgx}{33d} + \frac{Bg(a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{33d} - \frac{B(bc - ad)g \log(c + dx)}{33d^2} + \frac{B(bc - ad)g \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) \log(c + dx)}{33d^2} \\
 &= \frac{Abgx}{33d} + \frac{Bg(a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{33d} - \frac{B(bc - ad)g \log(c + dx)}{33d^2} + \frac{B(bc - ad)g \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) \log(c + dx)}{33d^2}
 \end{aligned}$$

Mathematica [A] time = 0.11, size = 162, normalized size = 1.30

$$\frac{g \left(-2(bc - ad) \log(c + dx) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right) + 2Bd(a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right) + B(bc - ad) \left(2\text{Li}_2 \left(\frac{b(c+dx)}{bc-ad} \right) + \log(c + dx) \right) \right)}{2d^2i}$$

Antiderivative was successfully verified.

[In] Integrate[((a*g + b*g*x)*(A + B*Log[(e*(a + b*x))/(c + d*x])))/(c*i + d*i*x), x]

[Out] (g*(2*A*b*d*x + 2*B*d*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)] - 2*B*(b*c - a*d)*Log[c + d*x] - 2*(b*c - a*d)*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x] + B*(b*c - a*d)*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(2*d^2*i)

fricas [F] time = 0.73, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{Abgx + Aag + (Bbgx + Bag) \log \left(\frac{bex+ae}{dx+c} \right)}{dix + ci}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i), x, algorithm="fricas")

[Out] integral((A*b*g*x + A*a*g + (B*b*g*x + B*a*g)*log((b*e*x + a*e)/(d*x + c)))/(d*i*x + c*i), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i), x, algorithm="giac")

[Out] Timed out

maple [B] time = 0.13, size = 895, normalized size = 7.16

$$\frac{B a^2 e g \ln \left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d} \right)}{\left(\frac{ade}{dx+c} - \frac{bce}{dx+c} \right) (dx + c) i} - \frac{2Babceg \ln \left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d} \right)}{\left(\frac{ade}{dx+c} - \frac{bce}{dx+c} \right) (dx + c) di} + \frac{B b^2 c^2 e g \ln \left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d} \right)}{\left(\frac{ade}{dx+c} - \frac{bce}{dx+c} \right) (dx + c) d^2 i} + \frac{Babeg \ln \left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d} \right)}{\left(\frac{ade}{dx+c} - \frac{bce}{dx+c} \right) di} - \frac{B b^2 c e g}{\left(\frac{ade}{dx+c} - \frac{bce}{dx+c} \right)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((b*g*x+a*g)*(B*ln((b*x+a)/(d*x+c)*e)+A)/(d*i*x+c*i),x)`

[Out]
$$\frac{1/d*e*g/i*A*b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a-1/d^2*e*g/i*A*b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*c-1/d*g/i*A*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a+1/d^2*g/i*A*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*b*c-1/d*g/i*B*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a+1/d^2*g/i*B*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*b*c+1/d*e*g/i*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*b*a-1/d^2*e*g/i*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*b^2*c+e*g/i*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)/(d*x+c)*a^2-2/d*e*g/i*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)/(d*x+c)*a*b*c+1/d^2*e*g/i*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)/(d*x+c)*b^2*c^2-1/d*g/i*B*dilog(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a+1/d^2*g/i*B*dilog(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*b*c-1/d*g/i*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a+1/d^2*g/i*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*b*c$$

maxima [A] time = 1.68, size = 221, normalized size = 1.77

$$A b g \left(\frac{x}{d i} - \frac{c \log(dx + c)}{d^2 i} \right) + \frac{A a g \log(dix + ci)}{d i} - \frac{(bcg - adg) \left(\log(bx + a) \log\left(\frac{bdx + ad}{bc - ad} + 1\right) + \text{Li}_2\left(-\frac{bdx + ad}{bc - ad}\right) \right) B}{d^2 i} + \dots$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((b*g*x+a*g)*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i),x, algorithm="maxima")`

[Out]
$$A*b*g*(x/(d*i) - c*\log(d*x + c)/(d^2*i)) + A*a*g*\log(d*i*x + c*i)/(d*i) - (b*c*g - a*d*g)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d)))*B/(d^2*i) + (a*d*g*\log(e) - (g*\log(e) + g)*b*c)*B*\log(d*x + c)/(d^2*i) - 1/2*(2*B*b*d*g*x*\log(d*x + c) - 2*B*b*d*g*x*\log(e) - (b*c*g - a*d*g)*B*\log(d*x + c)^2 - 2*(B*b*d*g*x + B*a*d*g)*\log(b*x + a))/(d^2*i)$$

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(ag + bgx) \left(A + B \ln\left(\frac{e(a+bx)}{c+dx}\right) \right)}{ci + dix} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int(((a*g + b*g*x)*(A + B*log((e*(a + b*x))/(c + d*x))))/(c*i + d*i*x),x)`

[Out] `int(((a*g + b*g*x)*(A + B*log((e*(a + b*x))/(c + d*x))))/(c*i + d*i*x), x)`
sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{g \left(\int \frac{Aa}{c+dx} dx + \int \frac{Abx}{c+dx} dx + \int \frac{Ba \log\left(\frac{ae}{c+dx} + \frac{bex}{c+dx}\right)}{c+dx} dx + \int \frac{Bbx \log\left(\frac{ae}{c+dx} + \frac{bex}{c+dx}\right)}{c+dx} dx \right)}{i}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((b*g*x+a*g)*(A+B*ln(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i), x)`

[Out] `g*(Integral(A*a/(c + d*x), x) + Integral(A*b*x/(c + d*x), x) + Integral(B*a*log(a*e/(c + d*x) + b*e*x/(c + d*x))/(c + d*x), x) + Integral(B*b*x*log(a*e/(c + d*x) + b*e*x/(c + d*x))/(c + d*x), x))/i`

$$3.34 \quad \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{ci+dix} dx$$

Optimal. Leaf size=76

$$-\frac{\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{di} - \frac{B \operatorname{Li}_2\left(\frac{d(a+bx)}{b(c+dx)}\right)}{di}$$

[Out] $-\ln((-a*d+b*c)/b/(d*x+c))*(A+B*\ln(e*(b*x+a)/(d*x+c)))/d/i-B*\operatorname{polylog}(2,d*(b*x+a)/b/(d*x+c))/d/i$

Rubi [A] time = 0.22, antiderivative size = 122, normalized size of antiderivative = 1.61, number of steps used = 10, number of rules used = 8, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.267$, Rules used = {2524, 12, 2418, 2394, 2393, 2391, 2390, 2301}

$$-\frac{B \operatorname{PolyLog}\left(2, \frac{b(c+dx)}{bc-ad}\right)}{di} + \frac{\log(ci+dix)\left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{di} - \frac{B \log(ci+dix) \log\left(-\frac{d(a+bx)}{bc-ad}\right)}{di} + \frac{B \log^2(i(c+dx))}{2di}$$

Antiderivative was successfully verified.

[In] $\operatorname{Int}[(A + B*\operatorname{Log}[(e*(a + b*x))/(c + d*x]))/(c*i + d*i*x), x]$

[Out] $(B*\operatorname{Log}[i*(c + d*x)]^2)/(2*d*i) - (B*\operatorname{Log}[-(d*(a + b*x))/(b*c - a*d)])*\operatorname{Log}[c*i + d*i*x]/(d*i) + ((A + B*\operatorname{Log}[(e*(a + b*x))/(c + d*x)])*\operatorname{Log}[c*i + d*i*x])/d/i - (B*\operatorname{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]/d/i)$

Rule 12

$\operatorname{Int}[(a_*)(u_), x_Symbol] \rightarrow \operatorname{Dist}[a, \operatorname{Int}[u, x], x] /;$ FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 2301

$\operatorname{Int}[(a_*) + \operatorname{Log}[(c_*)(x_)^(n_)]*(b_)]/(x_), x_Symbol] \rightarrow \operatorname{Simp}[(a + b*\operatorname{Log}[c*x^n])^2/(2*b*n), x] /;$ FreeQ[{a, b, c, n}, x]

Rule 2390

$\operatorname{Int}[(a_*) + \operatorname{Log}[(c_*)((d_*) + (e_*)(x_)^(n_)]*(b_))]^(p_)*((f_*) + (g_*)(x_))^(q_), x_Symbol] \rightarrow \operatorname{Dist}[1/e, \operatorname{Subst}[\operatorname{Int}[(f*x)/d]^q*(a + b*\operatorname{Log}[c*x^n])^p, x], x, d + e*x], x] /;$ FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{34c + 34dx} dx &= \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right) \log(34c + 34dx)}{34d} - \frac{B \int \frac{(c+dx)\left(-\frac{de(a+bx)}{(c+dx)^2} + \frac{be}{c+dx}\right) \log(34c+34dx)}{e(a+bx)} dx}{34d} \\
&= \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right) \log(34c + 34dx)}{34d} - \frac{B \int \frac{(c+dx)\left(-\frac{de(a+bx)}{(c+dx)^2} + \frac{be}{c+dx}\right) \log(34c+34dx)}{a+bx} dx}{34de} \\
&= \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right) \log(34c + 34dx)}{34d} - \frac{B \int \left(\frac{be \log(34c+34dx)}{a+bx} - \frac{de \log(34c+34dx)}{c+dx}\right) dx}{34de} \\
&= \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right) \log(34c + 34dx)}{34d} + \frac{1}{34} B \int \frac{\log(34c + 34dx)}{c + dx} dx - \frac{(bB) \int \frac{\log(34c + 34dx)}{a + bx} dx}{34} \\
&= -\frac{B \log\left(-\frac{d(a+bx)}{bc-ad}\right) \log(34c + 34dx)}{34d} + \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right) \log(34c + 34dx)}{34d} + B \int \frac{\log(34c + 34dx)}{a + bx} dx \\
&= -\frac{B \log\left(-\frac{d(a+bx)}{bc-ad}\right) \log(34c + 34dx)}{34d} + \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right) \log(34c + 34dx)}{34d} + \frac{B \int \frac{\log(34c + 34dx)}{a + bx} dx}{34} \\
&= \frac{B \log^2(34(c + dx))}{68d} - \frac{B \log\left(-\frac{d(a+bx)}{bc-ad}\right) \log(34c + 34dx)}{34d} + \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right) \log(34c + 34dx)}{34d}
\end{aligned}$$

Mathematica [A] time = 0.03, size = 95, normalized size = 1.25

$$\frac{\log(i(c + dx)) \left(2B \log\left(\frac{e(a+bx)}{c+dx}\right) - 2B \log\left(\frac{d(a+bx)}{ad-bc}\right) + 2A + B \log(i(c + dx)) \right) - 2BLi_2\left(\frac{b(c+dx)}{bc-ad}\right)}{2di}$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x]))/(c*i + d*i*x), x]

[Out] (Log[i*(c + d*x)]*(2*A - 2*B*Log[(d*(a + b*x))/(-b*c) + a*d]) + 2*B*Log[(e*(a + b*x))/(c + d*x)] + B*Log[i*(c + d*x)]) - 2*B*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]/(2*d*i)

fricas [F] time = 0.85, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{B \log\left(\frac{bex+ae}{dx+c}\right) + A}{dix + ci}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i),x, algorithm="fricas")

[Out] integral((B*log((b*e*x + a*e)/(d*x + c)) + A)/(d*i*x + c*i), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i),x, algorithm="giac")

[Out] Timed out

maple [B] time = 0.05, size = 411, normalized size = 5.41

$$\frac{Ba \ln\left(-\frac{-be + \left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)d}{be}\right) \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{(ad-bc)i} + \frac{Bbc \ln\left(-\frac{-be + \left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)d}{be}\right) \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{(ad-bc)di} - \frac{Aa \ln\left(-be + \left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)d\right)}{(ad-bc)i}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)/(d*i*x+c*i),x)

[Out] $-1/i/(a*d-b*c)*A*\ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a+1/d/i/(a*d-b*c)*A*\ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*b*c-1/i/(a*d-b*c)*B*dilog(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a+1/d/i/(a*d-b*c)*B*dilog(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*b*c-1/i/(a*d-b*c)*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*\ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a+1/d/i/(a*d-b*c)*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*\ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*b*c$

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}B\left(\frac{\log(dx+c)^2}{di} - 2\int\frac{\log(bx+a)+\log(e)}{dix+ci}dx\right) + \frac{A\log(dix+ci)}{di}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i),x, algorithm="maxima")

[Out] $-1/2*B*(\log(d*x + c)^2/(d*i) - 2*\int(\log(b*x + a) + \log(e))/(d*i*x + c*i), x) + A*\log(d*i*x + c*i)/(d*i)$

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A + B \ln\left(\frac{e^{(a+bx)}}{c+dx}\right)}{ci + dix} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((A + B*log((e*(a + b*x))/(c + d*x)))/(c*i + d*i*x),x)

[Out] int((A + B*log((e*(a + b*x))/(c + d*x)))/(c*i + d*i*x), x)

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{A}{c+dx} dx + \int \frac{B \log\left(\frac{ae}{c+dx} + \frac{bex}{c+dx}\right)}{c+dx} dx}{i}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i),x)

[Out] (Integral(A/(c + d*x), x) + Integral(B*log(a*e/(c + d*x) + b*e*x/(c + d*x)) / (c + d*x), x))/i

$$3.35 \quad \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{(ag+bgx)(ci+dix)} dx$$

Optimal. Leaf size=44

$$\frac{\left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)^2}{2Bgi(bc-ad)}$$

[Out] $1/2*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/B/(-a*d+b*c)/g/i$

Rubi [C] time = 0.58, antiderivative size = 304, normalized size of antiderivative = 6.91, number of steps used = 20, number of rules used = 9, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.225$, Rules used = {2528, 2524, 12, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{BPolyLog\left(2, -\frac{d(a+bx)}{bc-ad}\right)}{gi(bc-ad)} + \frac{BPolyLog\left(2, \frac{b(c+dx)}{bc-ad}\right)}{gi(bc-ad)} + \frac{\log(a+bx)\left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{gi(bc-ad)} - \frac{\log(c+dx)\left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{gi(bc-ad)}$$

Antiderivative was successfully verified.

[In] `Int[(A + B*Log[(e*(a + b*x))/(c + d*x]))/((a*g + b*g*x)*(c*i + d*i*x)),x]`

[Out] $-(B*\text{Log}[a + b*x]^2)/(2*(b*c - a*d)*g*i) + (\text{Log}[a + b*x]*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/((b*c - a*d)*g*i) + (B*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c + d*x])/((b*c - a*d)*g*i) - ((A + B*\text{Log}[(e*(a + b*x))/(c + d*x)])*\text{Log}[c + d*x])/((b*c - a*d)*g*i) - (B*\text{Log}[c + d*x]^2)/(2*(b*c - a*d)*g*i) + (B*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)*g*i) + (B*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)*g*i) + (B*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)*g*i)$

Rule 12

`Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]`

Rule 2301

`Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]`

Rule 2390

`Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.)]*(b_.))^(p_.)*((f_) + (g_.)*(x_)^(q_.)), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E`

qQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))/((f_.) + (g_.)*(x_))), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2418

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]

Rule 2524

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]

Rule 2528

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]

Rubi steps

$$\begin{aligned}
\int \frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{(35c + 35dx)(ag + bgx)} dx &= \int \left(\frac{b \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{35(bc - ad)g(a + bx)} - \frac{d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{35(bc - ad)g(c + dx)} \right) dx \\
&= \frac{b \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{a+bx} dx}{35(bc - ad)g} - \frac{d \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{c+dx} dx}{35(bc - ad)g} \\
&= \frac{\log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{35(bc - ad)g} - \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right) \log(c + dx)}{35(bc - ad)g} - B \int \frac{(c+dx)^{c+dx}}{c+dx} dx \\
&= \frac{\log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{35(bc - ad)g} - \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right) \log(c + dx)}{35(bc - ad)g} - B \int \frac{(c+dx)^{c+dx}}{c+dx} dx \\
&= \frac{\log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{35(bc - ad)g} - \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right) \log(c + dx)}{35(bc - ad)g} - B \int \left(\frac{be^{c+dx}}{c+dx} \right) dx \\
&= \frac{\log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{35(bc - ad)g} - \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right) \log(c + dx)}{35(bc - ad)g} - \frac{(bB) \int \frac{e^{c+dx}}{c+dx} dx}{35(bc - ad)g} \\
&= \frac{\log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{35(bc - ad)g} + \frac{B \log\left(-\frac{d(a+bx)}{bc-ad}\right) \log(c + dx)}{35(bc - ad)g} - \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right) \log(c + dx)}{35(bc - ad)g} \\
&= -\frac{B \log^2(a + bx)}{70(bc - ad)g} + \frac{\log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{35(bc - ad)g} + \frac{B \log\left(-\frac{d(a+bx)}{bc-ad}\right) \log(c + dx)}{35(bc - ad)g} \\
&= -\frac{B \log^2(a + bx)}{70(bc - ad)g} + \frac{\log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{35(bc - ad)g} + \frac{B \log\left(-\frac{d(a+bx)}{bc-ad}\right) \log(c + dx)}{35(bc - ad)g}
\end{aligned}$$

Mathematica [C] time = 0.12, size = 207, normalized size = 4.70

$$\frac{2A \log(a + bx) + 2B \log(a + bx) \log\left(\frac{e(a+bx)}{c+dx}\right) - 2B \log(c + dx) \log\left(\frac{e(a+bx)}{c+dx}\right) + 2BLi_2\left(\frac{d(a+bx)}{ad-bc}\right) + 2BLi_2\left(\frac{b(c+dx)}{bc-ad}\right) + 2gi(bc - ad)}{2gi(bc - ad)}$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x]))/((a*g + b*g*x)*(c*i + d*i*x)), x]


```
[Out] (2*A*Log[a + b*x] - B*Log[a + b*x]^2 + 2*B*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)] - 2*A*Log[c + d*x] + 2*B*Log[(d*(a + b*x))/(-(b*c) + a*d)]*Log[c + d*x] - 2*B*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x] - B*Log[c + d*x]^2 + 2*B*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)] + 2*B*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)] + 2*B*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]/(2*(b*c - a*d)*g*i)
```

fricas [A] time = 0.74, size = 60, normalized size = 1.36

$$\frac{B \log\left(\frac{bex+ae}{dx+c}\right)^2 + 2 A \log\left(\frac{bex+ae}{dx+c}\right)}{2 (bc - ad)gi}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)/(d*i*x+c*i),x, algorithm="fricas")
```

```
[Out] 1/2*(B*log((b*e*x + a*e)/(d*x + c))^2 + 2*A*log((b*e*x + a*e)/(d*x + c)))/(b*c - a*d)*g*i
```

giac [B] time = 0.35, size = 113, normalized size = 2.57

$$\frac{\left(Bie \log\left(\frac{bxe+ae}{dx+c}\right)^2 + 2 Aie \log\left(\frac{bxe+ae}{dx+c}\right) \right) \left(\frac{bc}{(bce-ade)(bc-ad)} - \frac{ad}{(bce-ade)(bc-ad)} \right)}{2g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)/(d*i*x+c*i),x, algorithm="giac")
```

```
[Out] -1/2*(B*i*e*log((b*x*e + a*e)/(d*x + c))^2 + 2*A*i*e*log((b*x*e + a*e)/(d*x + c)))*(b*c/((b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))/g
```

maple [B] time = 0.05, size = 201, normalized size = 4.57

$$\frac{Bad \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)^2}{2(ad-bc)^2 gi} + \frac{Bbc \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)^2}{2(ad-bc)^2 gi} - \frac{Aad \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{(ad-bc)^2 gi} + \frac{Abc \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{(ad-bc)^2 gi}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)/(d*i*x+c*i),x)
```

[Out] $-d/i/(a*d-b*c)^2/g*A*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+1/i/(a*d-b*c)^2/g*A*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*c-1/2*d/i/(a*d-b*c)^2/g*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a+1/2/i/(a*d-b*c)^2/g*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b*c$

maxima [B] time = 1.14, size = 172, normalized size = 3.91

$$B\left(\frac{\log(bx+a)}{(bc-ad)gi} - \frac{\log(dx+c)}{(bc-ad)gi}\right)\log\left(\frac{bex}{dx+c} + \frac{ae}{dx+c}\right) + A\left(\frac{\log(bx+a)}{(bc-ad)gi} - \frac{\log(dx+c)}{(bc-ad)gi}\right) - \frac{(\log(bx+a))^2 - 2\log(bx+a)\log(dx+c)}{2gi}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)/(d*i*x+c*i),x, algorithm="maxima")

[Out] $B*(\log(b*x + a)/((b*c - a*d)*g*i) - \log(d*x + c)/((b*c - a*d)*g*i))*\log(b*e*x/(d*x + c) + a*e/(d*x + c)) + A*(\log(b*x + a)/((b*c - a*d)*g*i) - \log(d*x + c)/((b*c - a*d)*g*i)) - 1/2*(\log(b*x + a)^2 - 2*\log(b*x + a)*\log(d*x + c) + \log(d*x + c)^2)*B/(b*c*g*i - a*d*g*i)$

mupad [B] time = 5.74, size = 69, normalized size = 1.57

$$\frac{B \ln\left(\frac{e^{(a+bx)}}{c+dx}\right)^2 - A \operatorname{atan}\left(\frac{bc2i+bdx2i}{ad-bc} + 1i\right) 4i}{2gi(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((A + B*log((e*(a + b*x))/(c + d*x)))/((a*g + b*g*x)*(c*i + d*i*x)),x)

[Out] $-(B*\log((e*(a + b*x))/(c + d*x))^2 - A*\operatorname{atan}((b*c*2i + b*d*x*2i)/(a*d - b*c) + 1i)*4i)/(2*g*i*(a*d - b*c))$

sympy [B] time = 1.13, size = 170, normalized size = 3.86

$$A\left(\frac{\log\left(x + \frac{-\frac{a^2d^2}{ad-bc} + \frac{2abcd}{ad-bc} + ad - \frac{b^2c^2}{ad-bc} + bc}{2bd}\right)}{gi(ad-bc)} - \frac{\log\left(x + \frac{\frac{a^2d^2}{ad-bc} - \frac{2abcd}{ad-bc} + ad + \frac{b^2c^2}{ad-bc} + bc}{2bd}\right)}{gi(ad-bc)}\right) - \frac{B \log\left(\frac{e^{(a+bx)}}{c+dx}\right)^2}{2adgi - 2bcgi}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)/(d*i*x+c*i),x)

[Out] $A*(\log(x + (-a**2*d**2/(a*d - b*c) + 2*a*b*c*d/(a*d - b*c) + a*d - b**2*c**2/(a*d - b*c) + b*c)/(2*b*d)))/(g*i*(a*d - b*c)) - \log(x + (a**2*d**2/(a*d -$

$$\begin{aligned}
 & b*c) - 2*a*b*c*d/(a*d - b*c) + a*d + b**2*c**2/(a*d - b*c) + b*c)/(2*b*d)) \\
 & /((g*i*(a*d - b*c))) - B*\log(e*(a + b*x)/(c + d*x))**2/(2*a*d*g*i - 2*b*c*g* \\
 & i)
 \end{aligned}$$

$$3.36 \quad \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{(ag+bgx)^2(ci+dix)} dx$$

Optimal. Leaf size=173

$$\frac{d \log\left(\frac{a+bx}{c+dx}\right) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{g^2 i (bc - ad)^2} - \frac{b(c+dx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{g^2 i (a+bx)(bc - ad)^2} - \frac{bB(c+dx)}{g^2 i (a+bx)(bc - ad)^2} + \frac{Bd \log^2\left(\frac{a+bx}{c+dx}\right)}{2g^2 i (bc - ad)^2}$$

[Out] $-b*B*(d*x+c)/(-a*d+b*c)^2/g^2/i/(b*x+a)+1/2*B*d*\ln((b*x+a)/(d*x+c))^2/(-a*d+b*c)^2/g^2/i-b*(d*x+c)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^2/g^2/i/(b*x+a)-d*\ln((b*x+a)/(d*x+c))*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^2/g^2/i$

Rubi [C] time = 0.70, antiderivative size = 437, normalized size of antiderivative = 2.53, number of steps used = 24, number of rules used = 11, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.275$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{Bd \text{PolyLog}\left(2, -\frac{d(a+bx)}{bc-ad}\right)}{g^2 i (bc - ad)^2} - \frac{Bd \text{PolyLog}\left(2, \frac{b(c+dx)}{bc-ad}\right)}{g^2 i (bc - ad)^2} - \frac{d \log(a+bx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{g^2 i (bc - ad)^2} - \frac{B \log\left(\frac{e(a+bx)}{c+dx}\right) + A}{g^2 i (a+bx)(bc - ad)} + \dots$$

Antiderivative was successfully verified.

[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x]))/((a*g + b*g*x)^2*(c*i + d*i*x)), x]

[Out] $-(B/((b*c - a*d)*g^2*i*(a + b*x))) - (B*d*Log[a + b*x])/((b*c - a*d)^2*g^2*i) + (B*d*Log[a + b*x]^2)/(2*(b*c - a*d)^2*g^2*i) - (A + B*Log[(e*(a + b*x))/(c + d*x)])/((b*c - a*d)*g^2*i*(a + b*x)) - (d*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/((b*c - a*d)^2*g^2*i) + (B*d*Log[c + d*x])/((b*c - a*d)^2*g^2*i) - (B*d*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/((b*c - a*d)^2*g^2*i) + (d*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/((b*c - a*d)^2*g^2*i) + (B*d*Log[c + d*x]^2)/(2*(b*c - a*d)^2*g^2*i) - (B*d*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^2*g^2*i) - (B*d*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^2*g^2*i) - (B*d*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^2*g^2*i)$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 44

Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &

& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])

Rule 2301

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.)]*(b_.))^(p_.)*((f_) + (g_.)*(x_)^(q_.)), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.)]*(b_.))/((f_.) + (g_.)*(x_))), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2418

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]

Rule 2524

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e

```
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunci
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{(36c + 36dx)(ag + bgx)^2} dx &= \int \left(\frac{b \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{36(bc - ad)g^2(a + bx)^2} - \frac{bd \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{36(bc - ad)^2g^2(a + bx)} + \frac{d^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{36(bc - ad)^2g^2(c + dx)} \right) dx \\
&= -\frac{(bd) \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{a+bx} dx}{36(bc - ad)^2g^2} + \frac{d^2 \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{c+dx} dx}{36(bc - ad)^2g^2} + \frac{b \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{(a+bx)^2} dx}{36(bc - ad)g^2} \\
&= -\frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{36(bc - ad)g^2(a + bx)} - \frac{d \log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{36(bc - ad)^2g^2} + \frac{d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{36(bc - ad)g^2} \\
&= -\frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{36(bc - ad)g^2(a + bx)} - \frac{d \log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{36(bc - ad)^2g^2} + \frac{d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{36(bc - ad)g^2} \\
&= -\frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{36(bc - ad)g^2(a + bx)} - \frac{d \log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{36(bc - ad)^2g^2} + \frac{d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{36(bc - ad)g^2} \\
&= -\frac{B}{36(bc - ad)g^2(a + bx)} - \frac{Bd \log(a + bx)}{36(bc - ad)^2g^2} - \frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{36(bc - ad)g^2(a + bx)} - \frac{d \log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{36(bc - ad)^2g^2} \\
&= -\frac{B}{36(bc - ad)g^2(a + bx)} - \frac{Bd \log(a + bx)}{36(bc - ad)^2g^2} - \frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{36(bc - ad)g^2(a + bx)} - \frac{d \log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{36(bc - ad)^2g^2} \\
&= -\frac{B}{36(bc - ad)g^2(a + bx)} - \frac{Bd \log(a + bx)}{36(bc - ad)^2g^2} + \frac{Bd \log^2(a + bx)}{72(bc - ad)^2g^2} - \frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{36(bc - ad)g^2(a + bx)} - \frac{d \log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{36(bc - ad)^2g^2} \\
&= -\frac{B}{36(bc - ad)g^2(a + bx)} - \frac{Bd \log(a + bx)}{36(bc - ad)^2g^2} + \frac{Bd \log^2(a + bx)}{72(bc - ad)^2g^2} - \frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{36(bc - ad)g^2(a + bx)} - \frac{d \log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{36(bc - ad)^2g^2}
\end{aligned}$$

Mathematica [C] time = 0.32, size = 292, normalized size = 1.69

$$\frac{2(bc - ad) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right) + 2d(a + bx) \log(a + bx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right) - 2d(a + bx) \log(c + dx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{(36c + 36dx)(ag + bgx)^2}$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x]))/((a*g + b*g*x)^2*(c*i + d*i*x)), x]

[Out] $-1/2*(2*(b*c - a*d)*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]) + 2*d*(a + b*x)*\text{Log}[a + b*x]*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]) - 2*d*(a + b*x)*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)])*\text{Log}[c + d*x] + 2*B*(b*c - a*d + d*(a + b*x)*\text{Log}[a + b*x] - d*(a + b*x)*\text{Log}[c + d*x]) - B*d*(a + b*x)*(\text{Log}[a + b*x]*(\text{Log}[a + b*x] - 2*\text{Log}[(b*(c + d*x))/(b*c - a*d)]) - 2*\text{PolyLog}[2, (d*(a + b*x))/(-(b*c) + a*d)]) + B*d*(a + b*x)*((2*\text{Log}[(d*(a + b*x))/(-(b*c) + a*d)] - \text{Log}[c + d*x])*\text{Log}[c + d*x] + 2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])))/(b*c - a*d)^2*g^2*i*(a + b*x)$

fricas [A] time = 1.19, size = 144, normalized size = 0.83

$$\frac{2(A+B)bc - 2(A+B)ad + (Bbdx + Bad) \log\left(\frac{bex+ae}{dx+c}\right)^2 + 2((A+B)bdx + Bbc + Aad) \log\left(\frac{bex+ae}{dx+c}\right)}{2((b^3c^2 - 2ab^2cd + a^2bd^2)g^2ix + (ab^2c^2 - 2a^2bcd + a^3d^2)g^2i)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^2/(d*i*x+c*i),x, algorithm="fricas")`

[Out] $-1/2*(2*(A + B)*b*c - 2*(A + B)*a*d + (B*b*d*x + B*a*d)*\text{log}((b*e*x + a*e)/(d*x + c))^2 + 2*((A + B)*b*d*x + B*b*c + A*a*d)*\text{log}((b*e*x + a*e)/(d*x + c)))/((b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*g^2*i*x + (a*b^2*c^2 - 2*a^2*b*c*d + a^3*d^2)*g^2*i)$

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^2/(d*i*x+c*i),x, algorithm="giac")`

[Out] Timed out

maple [B] time = 0.05, size = 605, normalized size = 3.50

$$\frac{Babde \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{(ad-bc)^3 \left(\frac{ae}{dx+c} - \frac{bce}{(dx+c)d} + \frac{be}{d}\right) g^2 i} - \frac{Ba d^2 \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)^2}{2(ad-bc)^3 g^2 i} + \frac{B b^2 c e \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{(ad-bc)^3 \left(\frac{ae}{dx+c} - \frac{bce}{(dx+c)d} + \frac{be}{d}\right) g^2 i} + \frac{Bbcd \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{2(ad-bc)^3 g^2 i}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^2/(d*i*x+c*i),x)`


```
[Out] -d^2/i/(a*d-b*c)^3/g^2*A*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+d/i/(a*d-b*c)^3/
g^2*A*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*c-d*e/i/(a*d-b*c)^3/g^2*A*b/(1/(d*x
+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a+e/i/(a*d-b*c)^3/g^2*A*b^2/(1/(d*x+c)*a*e
-1/(d*x+c)*b*c/d*e+b/d*e)*c-1/2*d^2/i/(a*d-b*c)^3/g^2*B*ln(b/d*e+(a*d-b*c)/
(d*x+c)/d*e)^2*a+1/2*d/i/(a*d-b*c)^3/g^2*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^
2*b*c-d*e/i/(a*d-b*c)^3/g^2*B*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(
b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+e/i/(a*d-b*c)^3/g^2*B*b^2/(1/(d*x+c)*a*e-1/(
d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-d*e/i/(a*d-b*c)^3/g
^2*B*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a+e/i/(a*d-b*c)^3/g^2*B*b^2/
(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c
```

maxima [B] time = 1.32, size = 424, normalized size = 2.45

$$-B \left(\frac{1}{(b^2c - abd)g^2ix + (abc - a^2d)g^2i} + \frac{d \log(bx + a)}{(b^2c^2 - 2abcd + a^2d^2)g^2i} - \frac{d \log(dx + c)}{(b^2c^2 - 2abcd + a^2d^2)g^2i} \right) \log \left(\frac{bex}{dx + c} + \frac{a}{dx + c} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^2/(d*i*x+c*i),x, algorit
hm="maxima")
```

```
[Out] -B*(1/((b^2*c - a*b*d)*g^2*i*x + (a*b*c - a^2*d)*g^2*i) + d*log(b*x + a)/((
b^2*c^2 - 2*a*b*c*d + a^2*d^2)*g^2*i) - d*log(d*x + c)/((b^2*c^2 - 2*a*b*c*
d + a^2*d^2)*g^2*i))*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - A*(1/((b^2*c -
a*b*d)*g^2*i*x + (a*b*c - a^2*d)*g^2*i) + d*log(b*x + a)/((b^2*c^2 - 2*a*b*
c*d + a^2*d^2)*g^2*i) - d*log(d*x + c)/((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*g^2
*i)) + 1/2*((b*d*x + a*d)*log(b*x + a)^2 + (b*d*x + a*d)*log(d*x + c)^2 - 2
*b*c + 2*a*d - 2*(b*d*x + a*d)*log(b*x + a) + 2*(b*d*x + a*d - (b*d*x + a*d
)*log(b*x + a))*log(d*x + c))*B/(a*b^2*c^2*g^2*i - 2*a^2*b*c*d*g^2*i + a^3*
d^2*g^2*i + (b^3*c^2*g^2*i - 2*a*b^2*c*d*g^2*i + a^2*b*d^2*g^2*i)*x)
```

mupad [B] time = 5.84, size = 241, normalized size = 1.39

$$\frac{A + B}{(ad - bc) \left(ag^2i + bg^2ix \right)} - \frac{B d \ln \left(\frac{e(a+bx)}{c+dx} \right)^2}{2g^2i \left(a^2d^2 - 2abcd + b^2c^2 \right)} + \frac{B \ln \left(\frac{e(a+bx)}{c+dx} \right) (ad - bc)}{bdg^2i \left(\frac{x}{d} + \frac{a}{bd} \right) \left(a^2d^2 - 2abcd + b^2c^2 \right)} + \frac{d \operatorname{atan} \left(\frac{(2bdx + a^2d^2g^2i - b^2c^2g^2i)/(g^2i(a-d-bc))}{(a-d-bc)} \right)}{(a-d-bc)^2} - \frac{B d \log \left(\frac{e(a+bx)}{c+dx} \right)^2}{(2g^2i(a-d-bc)^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x))/(c + d*x)))/((a*g + b*g*x)^2*(c*i + d*i*x)),x)
```

```
[Out] (A + B)/((a*d - b*c)*(a*g^2*i + b*g^2*i*x)) + (d*atan(((2*b*d*x + (a^2*d^2*
g^2*i - b^2*c^2*g^2*i)/(g^2*i*(a*d - b*c))))*1i)/(a*d - b*c))*(A + B)*2i)/(g
^2*i*(a*d - b*c)^2) - (B*d*log((e*(a + b*x))/(c + d*x))^2)/(2*g^2*i*(a^2*d^
```

$2 + b^2c^2 - 2ab*cd)) + (B*\log((e*(a + b*x))/(c + d*x))*(a*d - b*c))/(b*d*g^{2*i}*(x/d + a/(b*d))*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))$

sympy [B] time = 2.51, size = 386, normalized size = 2.23

$$\frac{Bd \log\left(\frac{e(a+bx)}{c+dx}\right)^2}{2a^2d^2g^{2i} - 4abcdg^{2i} + 2b^2c^2g^{2i}} + \frac{B \log\left(\frac{e(a+bx)}{c+dx}\right)}{a^2dg^{2i} - abcg^{2i} + abdg^{2i}x - b^2cg^{2i}x} + (A + B) \left(\frac{d \log\left(x + \frac{-\frac{a^3d^4}{(ad-bc)^2} + \frac{3a^2bcd^3}{(ad-bc)^2} - \frac{3ab^2c}{(ad-bc)^2}}{2bd^2}\right)}{g^{2i}(ad - bc)} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)**2/(d*i*x+c*i), x)

[Out] $-B*d*\log(e*(a + b*x)/(c + d*x))**2/(2*a**2*d**2*g**2*i - 4*a*b*c*d*g**2*i + 2*b**2*c**2*g**2*i) + B*\log(e*(a + b*x)/(c + d*x))/(a**2*d*g**2*i - a*b*c*g**2*i + a*b*d*g**2*i*x - b**2*c*g**2*i*x) + (A + B)*(d*\log(x + (-a**3*d**4/(a*d - b*c)**2 + 3*a**2*b*c*d**3/(a*d - b*c)**2 - 3*a*b**2*c**2*d**2/(a*d - b*c)**2 + a*d**2 + b**3*c**3*d/(a*d - b*c)**2 + b*c*d)/(2*b*d**2)))/(g**2*i*(a*d - b*c)**2) - d*\log(x + (a**3*d**4/(a*d - b*c)**2 - 3*a**2*b*c*d**3/(a*d - b*c)**2 + 3*a*b**2*c**2*d**2/(a*d - b*c)**2 + a*d**2 - b**3*c**3*d/(a*d - b*c)**2 + b*c*d)/(2*b*d**2)))/(g**2*i*(a*d - b*c)**2) + 1/(a**2*d*g**2*i - a*b*c*g**2*i + x*(a*b*d*g**2*i - b**2*c*g**2*i))$

$$3.37 \quad \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{(ag+bgx)^3(ci+dix)} dx$$

Optimal. Leaf size=255

$$\frac{b^2(c+dx)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right) d^2 \log\left(\frac{a+bx}{c+dx}\right) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right) - 2bd(c+dx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right) - Bd^2}{2g^3i(a+bx)^2(bc-ad)^3} + \frac{d^2 \log\left(\frac{a+bx}{c+dx}\right) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{g^3i(bc-ad)^3} + \frac{2bd(c+dx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{g^3i(a+bx)(bc-ad)^3} - \frac{Bd^2}{2g^3i(bc-ad)^3}$$

[Out] $-1/4*B*(d*x+c)^2*(b-4*d*(b*x+a)/(d*x+c))^2/(-a*d+b*c)^3/g^3/i/(b*x+a)^2-1/2*B*d^2*\ln((b*x+a)/(d*x+c))^2/(-a*d+b*c)^3/g^3/i+2*b*d*(d*x+c)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^3/g^3/i/(b*x+a)-1/2*b^2*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^3/g^3/i/(b*x+a)^2+d^2*\ln((b*x+a)/(d*x+c))*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^3/g^3/i$

Rubi [C] time = 0.88, antiderivative size = 535, normalized size of antiderivative = 2.10, number of steps used = 28, number of rules used = 11, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.275$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{Bd^2 \text{PolyLog}\left(2, -\frac{d(a+bx)}{bc-ad}\right)}{g^3i(bc-ad)^3} + \frac{Bd^2 \text{PolyLog}\left(2, \frac{b(c+dx)}{bc-ad}\right)}{g^3i(bc-ad)^3} + \frac{d^2 \log(a+bx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right) d^2 \log(c+dx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{g^3i(bc-ad)^3} - \frac{Bd^2}{g^3i(bc-ad)^3}$$

Antiderivative was successfully verified.

[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x]])/((a*g + b*g*x)^3*(c*i + d*i*x)), x]

[Out] $-B/(4*(b*c - a*d)*g^3*i*(a + b*x)^2) + (3*B*d)/(2*(b*c - a*d)^2*g^3*i*(a + b*x)) + (3*B*d^2*Log[a + b*x])/(2*(b*c - a*d)^3*g^3*i) - (B*d^2*Log[a + b*x]^2)/(2*(b*c - a*d)^3*g^3*i) - (A + B*Log[(e*(a + b*x))/(c + d*x]])/(2*(b*c - a*d)*g^3*i*(a + b*x)^2) + (d*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/((b*c - a*d)^2*g^3*i*(a + b*x)) + (d^2*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/((b*c - a*d)^3*g^3*i) - (3*B*d^2*Log[c + d*x])/(2*(b*c - a*d)^3*g^3*i) + (B*d^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/((b*c - a*d)^3*g^3*i) - (d^2*(A + B*Log[(e*(a + b*x))/(c + d*x]])*Log[c + d*x])/((b*c - a*d)^3*g^3*i) - (B*d^2*Log[c + d*x]^2)/(2*(b*c - a*d)^3*g^3*i) + (B*d^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g^3*i) + (B*d^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^3*g^3*i) + (B*d^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g^3*i)$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_) /; FreeQ[b, x]]

Rule 44

```
Int[((a_) + (b_)*(x_))^(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)/(x_), x_Symbol] := Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)])*(b_)^(p_)*((f_) + (g_
)*(x_))^(q_), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_)*((d_) + (e_)*(x_))^(n_)])/(x_), x_Symbol] := -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))])*(b_)/((f_) + (g_)*(x_)), x_
Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)])*(b_)/((f_) + (g_)*(x_
)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x
), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)])*(b_)^(p_)*(RFx_), x_Sy
mbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol]
:> Simp[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^n)/e, x] - Dist[(b*n*p)/e,
Int[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.),
x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1)),
x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{(37c + 37dx)(ag + bgx)^3} dx &= \int \left(\frac{b \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{37(bc - ad)g^3(a + bx)^3} - \frac{bd \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{37(bc - ad)^2g^3(a + bx)^2} + \frac{bd^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{37(bc - ad)^3g^3(a + bx)} \right) dx \\
&= \frac{(bd^2) \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{a+bx} dx}{37(bc - ad)^3g^3} - \frac{d^3 \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{c+dx} dx}{37(bc - ad)^3g^3} - \frac{(bd) \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{(a+bx)^2} dx}{37(bc - ad)^2g^3} + \\
&= -\frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{74(bc - ad)g^3(a + bx)^2} + \frac{d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{37(bc - ad)^2g^3(a + bx)} + \frac{d^2 \log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{37(bc - ad)^3g^3} \\
&= -\frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{74(bc - ad)g^3(a + bx)^2} + \frac{d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{37(bc - ad)^2g^3(a + bx)} + \frac{d^2 \log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{37(bc - ad)^3g^3} \\
&= -\frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{74(bc - ad)g^3(a + bx)^2} + \frac{d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{37(bc - ad)^2g^3(a + bx)} + \frac{d^2 \log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{37(bc - ad)^3g^3} \\
&= -\frac{B}{148(bc - ad)g^3(a + bx)^2} + \frac{3Bd}{74(bc - ad)^2g^3(a + bx)} + \frac{3Bd^2 \log(a + bx)}{74(bc - ad)^3g^3} - \frac{A}{74(bc - ad)g^3} \\
&= -\frac{B}{148(bc - ad)g^3(a + bx)^2} + \frac{3Bd}{74(bc - ad)^2g^3(a + bx)} + \frac{3Bd^2 \log(a + bx)}{74(bc - ad)^3g^3} - \frac{A}{74(bc - ad)g^3} \\
&= -\frac{B}{148(bc - ad)g^3(a + bx)^2} + \frac{3Bd}{74(bc - ad)^2g^3(a + bx)} + \frac{3Bd^2 \log(a + bx)}{74(bc - ad)^3g^3} - \frac{Bd^2}{74(bc - ad)g^3} \\
&= -\frac{B}{148(bc - ad)g^3(a + bx)^2} + \frac{3Bd}{74(bc - ad)^2g^3(a + bx)} + \frac{3Bd^2 \log(a + bx)}{74(bc - ad)^3g^3} - \frac{Bd^2}{74(bc - ad)g^3}
\end{aligned}$$

Mathematica [C] time = 0.43, size = 418, normalized size = 1.64

$$4d^2(a + bx)^2 \log(a + bx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right) - 4d^2(a + bx)^2 \log(c + dx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right) - 2(bc - ad)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x]))/((a*g + b*g*x)^3*(c*i + d*i*x)), x]

[Out] $(-2*(b*c - a*d)^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x])) + 4*d*(b*c - a*d)*(a + b*x)*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x])) + 4*d^2*(a + b*x)^2*\text{Log}[a + b*x]*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x])) - 4*d^2*(a + b*x)^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)])*\text{Log}[c + d*x] + 4*B*d*(a + b*x)*(b*c - a*d + d*(a + b*x))*\text{Log}[a + b*x] - d*(a + b*x)*\text{Log}[c + d*x] - B*((b*c - a*d)^2 + 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d^2*(a + b*x)^2*\text{Log}[a + b*x] + 2*d^2*(a + b*x)^2*\text{Log}[c + d*x]) - 2*B*d^2*(a + b*x)^2*(\text{Log}[a + b*x]*(\text{Log}[a + b*x] - 2*\text{Log}[(b*(c + d*x))/(b*c - a*d)]) - 2*\text{PolyLog}[2, (d*(a + b*x))/(-(b*c) + a*d)]) + 2*B*d^2*(a + b*x)^2*((2*\text{Log}[(d*(a + b*x))/(-(b*c) + a*d)] - \text{Log}[c + d*x])* \text{Log}[c + d*x] + 2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/(4*(b*c - a*d)^3*g^3*i*(a + b*x)^2)$

fricas [A] time = 0.65, size = 349, normalized size = 1.37

$$\frac{(2A + B)b^2c^2 - 8(A + B)abcd + (6A + 7B)a^2d^2 - 2(Bb^2d^2x^2 + 2Babd^2x + Ba^2d^2)\log\left(\frac{bex+ae}{dx+c}\right)^2 - 2((2A + B)b^2c^2 - 8(A + B)abcd + (6A + 7B)a^2d^2)\log\left(\frac{bex+ae}{dx+c}\right) - 2((2A + B)b^2c^2 - 8(A + B)abcd + (6A + 7B)a^2d^2)\log\left(\frac{bex+ae}{dx+c}\right)^2 - 2((2A + B)b^2c^2 - 8(A + B)abcd + (6A + 7B)a^2d^2)\log\left(\frac{bex+ae}{dx+c}\right)^2}{4((b^5c^3 - 3ab^4c^2d + 3a^2b^3cd^2 - a^3b^2d^3)g^3ix^2 + 2(ab^4c^3 - 3a^2b^3cd^2)g^3ix^2 + 2(ab^4c^3 - 3a^2b^3cd^2)g^3ix^2 + 2(ab^4c^3 - 3a^2b^3cd^2)g^3ix^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^3/(d*i*x+c*i),x, algorithm="fricas")

[Out] $-1/4*((2*A + B)*b^2*c^2 - 8*(A + B)*a*b*c*d + (6*A + 7*B)*a^2*d^2 - 2*(B*b^2*d^2*x^2 + 2*B*a*b*d^2*x + B*a^2*d^2)*\log((b*e*x + a*e)/(d*x + c))^2 - 2*((2*A + 3*B)*b^2*c*d - (2*A + 3*B)*a*b*d^2)*x - 2*((2*A + 3*B)*b^2*d^2*x^2 - B*b^2*c^2 + 4*B*a*b*c*d + 2*A*a^2*d^2 + 2*(B*b^2*c*d + 2*(A + B)*a*b*d^2)*x)*\log((b*e*x + a*e)/(d*x + c)))/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*g^3*i*x^2 + 2*(a*b^4*c^3 - 3*a^2*b^3*c^2*d + 3*a^3*b^2*c*d^2 - a^4*b*d^3)*g^3*i*x + (a^2*b^3*c^3 - 3*a^3*b^2*c^2*d + 3*a^4*b*c*d^2 - a^5*d^3)*g^3*i)$

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^3/(d*i*x+c*i),x, algorithm="giac")

[Out] Timed out

maple [B] time = 0.05, size = 1040, normalized size = 4.08

$$\frac{Ba b^2 d e^2 \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{2(ad-bc)^4 \left(\frac{ae}{dx+c} - \frac{bce}{(dx+c)d} + \frac{be}{d}\right)^2} g^3 i - \frac{B b^3 c e^2 \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{2(ad-bc)^4 \left(\frac{ae}{dx+c} - \frac{bce}{(dx+c)d} + \frac{be}{d}\right)^2} g^3 i + \frac{A a b^2 d e^2}{2(ad-bc)^4 \left(\frac{ae}{dx+c} - \frac{bce}{(dx+c)d} + \frac{be}{d}\right)^2} g^3 i$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^3/(d*i*x+c*i),x)`

[Out]
$$-d^3/i/(a*d-b*c)^4/g^3*A*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+d^2/i/(a*d-b*c)^4/g^3*A*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*c-2*d^2*e/i/(a*d-b*c)^4/g^3*A*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a+2*d*e/i/(a*d-b*c)^4/g^3*A*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c+1/2*d*e^2/i/(a*d-b*c)^4/g^3*A*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a-1/2*e^2/i/(a*d-b*c)^4/g^3*A*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*c-1/2*d^3/i/(a*d-b*c)^4/g^3*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b*c-2*d^2*e/i/(a*d-b*c)^4/g^3*B*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+2*d*e/i/(a*d-b*c)^4/g^3*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-2*d^2*e/i/(a*d-b*c)^4/g^3*B*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a+2*d*e/i/(a*d-b*c)^4/g^3*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c+1/2*d*e^2/i/(a*d-b*c)^4/g^3*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-1/2*e^2/i/(a*d-b*c)^4/g^3*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+1/4*d*e^2/i/(a*d-b*c)^4/g^3*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a-1/4*e^2/i/(a*d-b*c)^4/g^3*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*c$$

maxima [B] time = 1.72, size = 885, normalized size = 3.47

$$\frac{1}{2} B \left(\frac{2 b d x - b c + 3 a d}{(b^4 c^2 - 2 a b^3 c d + a^2 b^2 d^2) g^3 i x^2 + 2 (a b^3 c^2 - 2 a^2 b^2 c d + a^3 b d^2) g^3 i x + (a^2 b^2 c^2 - 2 a^3 b c d + a^4 d^2) g^3 i} + \frac{1}{(b^3 c^3 - 2 a b^2 c^2 d + 3 a^2 b c^2 d^2 - a^3 d^3) g^3 i} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^3/(d*i*x+c*i),x, algorithm="maxima")`

[Out]
$$\frac{1}{2} B * \left(\frac{(2*b*d*x - b*c + 3*a*d)}{(b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)*g^3*i*x^2 + 2*(a*b^3*c^2 - 2*a^2*b^2*c*d + a^3*b*d^2)*g^3*i*x + (a^2*b^2*c^2 - 2*a^3*b*c*d + a^4*d^2)*g^3*i} + \frac{2*d^2*log(b*x + a)}{(b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^3*i} - \frac{2*d^2*log(d*x + c)}{(b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^3*i} \right) * \log\left(\frac{b*e*x}{d*x + c} + \frac{a*e}{d*x + c}\right) + \frac{1}{2} A * \left(\frac{(2*b*d*x - b*c + 3*a*d)}{(b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)*g^3*i*x^2 + 2*(a*b^3*c^2 - 2*a^2*b^2*c*d + a^3*b*d^2)*g^3*i*x + (a^2*b^2*c^2 - 2*a^3*b*c*d + a^4*d^2)*g^3*i} + \frac{2*d^2*log(b*x + a)}{(b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^3*i} - \frac{2*d^2*log(d*x + c)}{(b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^3*i} \right) - \frac{1}{4} * (b^2*c^2 - 8*a*b*c*d + 7*a^2*d^2 + 2*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*\log(b*x + a)^2 + 2*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*\log(d*x + c)^2 - 6*(b^2*c*d - a*b*d^2)*x - 6*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*\log(b*x + a) + 2*(3*b^2*d^2*x^2 + 6*a*b*d^2*x + 3*a^2*d^2 - 2*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*\log(b$$

$x + a) \cdot \log(dx + c) \cdot B / (a^2 b^3 c^3 g^3 i - 3 a^3 b^2 c^2 d g^3 i + 3 a^4 b c d^2 g^3 i - a^5 d^3 g^3 i + (b^5 c^3 g^3 i - 3 a b^4 c^2 d g^3 i + 3 a^2 b^3 c d^2 g^3 i - a^3 b^2 d^3 g^3 i) x^2 + 2(a b^4 c^3 g^3 i - 3 a^2 b^3 c^2 d g^3 i + 3 a^3 b^2 c d^2 g^3 i - a^4 b d^3 g^3 i) x)$

mupad [B] time = 6.93, size = 545, normalized size = 2.14

$$\frac{3 A a d}{2 g^3 i (a d - b c)^2 (a + b x)^2} - \frac{B d^2 \ln\left(\frac{e(a+b x)}{c+d x}\right)^2}{2 g^3 i (a d - b c)^3} - \frac{A b c}{2 g^3 i (a d - b c)^2 (a + b x)^2} + \frac{7 B a d}{4 g^3 i (a d - b c)^2 (a + b x)^2} - \frac{1}{4 g^3 i (a d - b c)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((A + B*log((e*(a + b*x))/(c + d*x)))/((a*g + b*g*x)^3*(c*i + d*i*x)),x)

[Out] $(A d^2 \operatorname{atan}\left(\frac{a d i + b c i + b d x 2 i}{a d - b c}\right) 2 i) / (g^3 i (a d - b c)^3) + (B d^2 \operatorname{atan}\left(\frac{a d i + b c i + b d x 2 i}{a d - b c}\right) 3 i) / (g^3 i (a d - b c)^3) - (B d^2 \log\left(\frac{e(a + b x)}{c + d x}\right)^2) / (2 g^3 i (a d - b c)^3) + (3 A a d) / (2 g^3 i (a d - b c)^2 (a + b x)^2) - (A b c) / (2 g^3 i (a d - b c)^2 (a + b x)^2) + (7 B a d) / (4 g^3 i (a d - b c)^2 (a + b x)^2) - (B b c) / (4 g^3 i (a d - b c)^2 (a + b x)^2) + (3 B a^2 d^2 \log\left(\frac{e(a + b x)}{c + d x}\right)) / (2 g^3 i (a d - b c)^3 (a + b x)^2) + (B b^2 c^2 \log\left(\frac{e(a + b x)}{c + d x}\right)) / (c + d x) / (2 g^3 i (a d - b c)^3 (a + b x)^2) + (A b d x) / (g^3 i (a d - b c)^2 (a + b x)^2) + (3 B b d x) / (2 g^3 i (a d - b c)^2 (a + b x)^2) + (B a b d^2 x \log\left(\frac{e(a + b x)}{c + d x}\right)) / (g^3 i (a d - b c)^3 (a + b x)^2) - (B b^2 c d x \log\left(\frac{e(a + b x)}{c + d x}\right)) / (g^3 i (a d - b c)^3 (a + b x)^2) - (2 B a b c d \log\left(\frac{e(a + b x)}{c + d x}\right)) / (g^3 i (a d - b c)^3 (a + b x)^2)$

sympy [B] time = 6.98, size = 889, normalized size = 3.49

$$\frac{B d^2 \log\left(\frac{e(a+b x)}{c+d x}\right)^2}{2 a^3 d^3 g^3 i - 6 a^2 b c d^2 g^3 i + 6 a b^2 c^2 d g^3 i - 2 b^3 c^3 g^3 i} + \frac{d^2 (2 A + 3 B) \log\left(x + \frac{2 A a d^3 + 2 A b c d^2 + 3 B a d^3 + 3 B b c d^2 - a^4 d^6 (2 A + 3 B) + 4 a^3 (a d - b c)^3}{(a d - b c)^3}\right)}{2 g^3 i (a d - b c)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)**3/(d*i*x+c*i),x)

[Out] $-B d^2 \log\left(\frac{e(a + b x)}{c + d x}\right)^2 / (2 a^3 d^3 g^3 i - 6 a^2 b c d^2 g^3 i + 6 a b^2 c^2 d g^3 i - 2 b^3 c^3 g^3 i) + d^2 (2 A + 3 B) \log\left(x + \frac{2 A a d^3 + 2 A b c d^2 + 3 B a d^3 + 3 B b c d^2 - a^4 d^6 (2 A + 3 B) + 4 a^3 (a d - b c)^3}{(a d - b c)^3}\right) / (2 a^3 d^3 g^3 i - 6 a^2 b c d^2 g^3 i + 6 a b^2 c^2 d g^3 i - 2 b^3 c^3 g^3 i) + 4 a^2 b^2 c^2 d^2 g^3 i (2 A + 3 B) / (a d - b c)^3 + 4 a b^3 c^3 d^3 g^3 i (2 A + 3 B) / (a d - b c)^3 + 4 a^4 b^4 c^4 d^4 g^3 i (2 A + 3 B) / (a d - b c)^3$

$$\begin{aligned}
& 3*B)/(a*d - b*c)**3 - b**4*c**4*d**2*(2*A + 3*B)/(a*d - b*c)**3)/(4*A*b*d** \\
& 3 + 6*B*b*d**3))/(2*g**3*i*(a*d - b*c)**3) - d**2*(2*A + 3*B)*\log(x + (2*A* \\
& a*d**3 + 2*A*b*c*d**2 + 3*B*a*d**3 + 3*B*b*c*d**2 + a**4*d**6*(2*A + 3*B)/(\\
& a*d - b*c)**3 - 4*a**3*b*c*d**5*(2*A + 3*B)/(a*d - b*c)**3 + 6*a**2*b**2*c* \\
& *2*d**4*(2*A + 3*B)/(a*d - b*c)**3 - 4*a*b**3*c**3*d**3*(2*A + 3*B)/(a*d - \\
& b*c)**3 + b**4*c**4*d**2*(2*A + 3*B)/(a*d - b*c)**3)/(4*A*b*d**3 + 6*B*b*d* \\
& *3))/(2*g**3*i*(a*d - b*c)**3) + (3*B*a*d - B*b*c + 2*B*b*d*x)*\log(e*(a + b \\
& *x)/(c + d*x))/(2*a**4*d**2*g**3*i - 4*a**3*b*c*d*g**3*i + 4*a**3*b*d**2*g* \\
& *3*i*x + 2*a**2*b**2*c**2*g**3*i - 8*a**2*b**2*c*d*g**3*i*x + 2*a**2*b**2*d \\
& **2*g**3*i*x**2 + 4*a*b**3*c**2*g**3*i*x - 4*a*b**3*c*d*g**3*i*x**2 + 2*b** \\
& 4*c**2*g**3*i*x**2) + (6*A*a*d - 2*A*b*c + 7*B*a*d - B*b*c + x*(4*A*b*d + 6 \\
& *B*b*d))/(4*a**4*d**2*g**3*i - 8*a**3*b*c*d*g**3*i + 4*a**2*b**2*c**2*g**3* \\
& i + x**2*(4*a**2*b**2*d**2*g**3*i - 8*a*b**3*c*d*g**3*i + 4*b**4*c**2*g**3* \\
& i) + x*(8*a**3*b*d**2*g**3*i - 16*a**2*b**2*c*d*g**3*i + 8*a*b**3*c**2*g**3 \\
& *i))
\end{aligned}$$

$$3.38 \quad \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{(ag+bgx)^4(ci+dix)} dx$$

Optimal. Leaf size=373

$$\frac{b^3(c+dx)^3 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{3g^4i(a+bx)^3(bc-ad)^4} + \frac{3b^2d(c+dx)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{2g^4i(a+bx)^2(bc-ad)^4} - \frac{d^3 \log\left(\frac{a+bx}{c+dx}\right) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{g^4i(bc-ad)^4} - \frac{3}{g^4i(bc-ad)^4}$$

[Out] $-3*b*B*d^2*(d*x+c)/(-a*d+b*c)^4/g^4/i/(b*x+a)+3/4*b^2*B*d*(d*x+c)^2/(-a*d+b*c)^4/g^4/i/(b*x+a)^2-1/9*b^3*B*(d*x+c)^3/(-a*d+b*c)^4/g^4/i/(b*x+a)^3+1/2*B*d^3*\ln((b*x+a)/(d*x+c))^2/(-a*d+b*c)^4/g^4/i-3*b*d^2*(d*x+c)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^4/g^4/i/(b*x+a)+3/2*b^2*d*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^4/g^4/i/(b*x+a)^2-1/3*b^3*(d*x+c)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^4/g^4/i/(b*x+a)^3-d^3*\ln((b*x+a)/(d*x+c))*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^4/g^4/i$

Rubi [C] time = 1.08, antiderivative size = 620, normalized size of antiderivative = 1.66, number of steps used = 32, number of rules used = 11, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.275$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{Bd^3 \text{PolyLog}\left(2, -\frac{d(a+bx)}{bc-ad}\right)}{g^4i(bc-ad)^4} - \frac{Bd^3 \text{PolyLog}\left(2, \frac{b(c+dx)}{bc-ad}\right)}{g^4i(bc-ad)^4} - \frac{d^3 \log(a+bx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{g^4i(bc-ad)^4} + \frac{d^3 \log(c+dx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{g^4i(bc-ad)^4}$$

Antiderivative was successfully verified.

[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x]))/((a*g + b*g*x)^4*(c*i + d*i*x)),x]

[Out] $-B/(9*(b*c - a*d)*g^4*i*(a + b*x)^3) + (5*B*d)/(12*(b*c - a*d)^2*g^4*i*(a + b*x)^2) - (11*B*d^2)/(6*(b*c - a*d)^3*g^4*i*(a + b*x)) - (11*B*d^3*\text{Log}[a + b*x])/((6*(b*c - a*d)^4*g^4*i) + (B*d^3*\text{Log}[a + b*x]^2)/(2*(b*c - a*d)^4*g^4*i) - (A + B*\text{Log}[(e*(a + b*x))/(c + d*x]))/(3*(b*c - a*d)*g^4*i*(a + b*x)^3) + (d*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]))/(2*(b*c - a*d)^2*g^4*i*(a + b*x)^2) - (d^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]))/((b*c - a*d)^3*g^4*i*(a + b*x)) - (d^3*\text{Log}[a + b*x]*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]))/((b*c - a*d)^4*g^4*i) + (11*B*d^3*\text{Log}[c + d*x])/((6*(b*c - a*d)^4*g^4*i) - (B*d^3*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c + d*x])/((b*c - a*d)^4*g^4*i) + (d^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]))*\text{Log}[c + d*x])/((b*c - a*d)^4*g^4*i) + (B*d^3*\text{Log}[c + d*x]^2)/(2*(b*c - a*d)^4*g^4*i) - (B*d^3*\text{Log}[a + b*x]*\text{Log}[(b*c - a*d)/(c + d*x)]/((b*c - a*d)^4*g^4*i) - (B*d^3*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^4*g^4*i) - (B*d^3*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]/((b*c - a*d)^4*g^4*i)$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 44

Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])

Rule 2301

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2418

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},

```
Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFX, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFX^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFX^p])^(n - 1)*D[RFX, x])/RFX, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFX, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFX^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFX^p])^(n - 1)*D[RFX, x])/RFX, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFX, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*RFX^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFX, x] && RationalFunctionQ[
RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{(38c + 38dx)(ag + bgx)^4} dx &= \int \left(\frac{b \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{38(bc - ad)g^4(a + bx)^4} - \frac{bd \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{38(bc - ad)^2g^4(a + bx)^3} + \frac{bd^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{38(bc - ad)^3g^4(a + bx)^2} \right) dx \\
&= -\frac{(bd^3) \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{a+bx} dx}{38(bc - ad)^4g^4} + \frac{d^4 \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{c+dx} dx}{38(bc - ad)^4g^4} + \frac{(bd^2) \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{(a+bx)^2} dx}{38(bc - ad)^3g^4} \\
&= -\frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{114(bc - ad)g^4(a + bx)^3} + \frac{d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{76(bc - ad)^2g^4(a + bx)^2} - \frac{d^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{38(bc - ad)^3g^4(a + bx)} \\
&= -\frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{114(bc - ad)g^4(a + bx)^3} + \frac{d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{76(bc - ad)^2g^4(a + bx)^2} - \frac{d^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{38(bc - ad)^3g^4(a + bx)} \\
&= -\frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{114(bc - ad)g^4(a + bx)^3} + \frac{d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{76(bc - ad)^2g^4(a + bx)^2} - \frac{d^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{38(bc - ad)^3g^4(a + bx)} \\
&= -\frac{B}{342(bc - ad)g^4(a + bx)^3} + \frac{5Bd}{456(bc - ad)^2g^4(a + bx)^2} - \frac{11Bd^2}{228(bc - ad)^3g^4(a + bx)} \\
&= -\frac{B}{342(bc - ad)g^4(a + bx)^3} + \frac{5Bd}{456(bc - ad)^2g^4(a + bx)^2} - \frac{11Bd^2}{228(bc - ad)^3g^4(a + bx)} \\
&= -\frac{B}{342(bc - ad)g^4(a + bx)^3} + \frac{5Bd}{456(bc - ad)^2g^4(a + bx)^2} - \frac{11Bd^2}{228(bc - ad)^3g^4(a + bx)} \\
&= -\frac{B}{342(bc - ad)g^4(a + bx)^3} + \frac{5Bd}{456(bc - ad)^2g^4(a + bx)^2} - \frac{11Bd^2}{228(bc - ad)^3g^4(a + bx)}
\end{aligned}$$

Mathematica [C] time = 0.71, size = 492, normalized size = 1.32

$$\frac{36Ad^2(ad-bc)}{a+bx} + \frac{18Ad(bc-ad)^2}{(a+bx)^2} - \frac{12A(bc-ad)^3}{(a+bx)^3} - 36Ad^3 \log(a + bx) - 36Bd^3 \log(a + bx) \log\left(\frac{e(a+bx)}{c+dx}\right) + 36Bd^3 \log(c + dx)$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x]))/((a*g + b*g*x)^4*(c*i + d*i*x)), x]

```
[Out] ((-12*A*(b*c - a*d)^3)/(a + b*x)^3 - (4*B*(b*c - a*d)^3)/(a + b*x)^3 + (18*
A*d*(b*c - a*d)^2)/(a + b*x)^2 + (15*B*d*(b*c - a*d)^2)/(a + b*x)^2 + (36*A
*d^2*(-(b*c) + a*d))/(a + b*x) + (66*B*d^2*(-(b*c) + a*d))/(a + b*x) - 36*A
*d^3*Log[a + b*x] - 66*B*d^3*Log[a + b*x] + 18*B*d^3*Log[a + b*x]^2 - (12*B
*(b*c - a*d)^3*Log[(e*(a + b*x))/(c + d*x)])/(a + b*x)^3 + (18*B*d*(b*c - a
*d)^2*Log[(e*(a + b*x))/(c + d*x)])/(a + b*x)^2 + (36*B*d^2*(-(b*c) + a*d)*
Log[(e*(a + b*x))/(c + d*x)])/(a + b*x) - 36*B*d^3*Log[a + b*x]*Log[(e*(a +
b*x))/(c + d*x)] + 36*A*d^3*Log[c + d*x] + 66*B*d^3*Log[c + d*x] - 36*B*d^
3*Log[(d*(a + b*x))/(-(b*c) + a*d)]*Log[c + d*x] + 36*B*d^3*Log[(e*(a + b*x
))/(c + d*x)]*Log[c + d*x] + 18*B*d^3*Log[c + d*x]^2 - 36*B*d^3*Log[a + b*x
]*Log[(b*(c + d*x))/(b*c - a*d)] - 36*B*d^3*PolyLog[2, (d*(a + b*x))/(-(b*c
) + a*d)] - 36*B*d^3*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]/(36*(b*c - a*d)
^4*g^4*i)
```

fricas [A] time = 0.64, size = 611, normalized size = 1.64

$$\frac{4(3A + B)b^3c^3 - 27(2A + B)ab^2c^2d + 108(A + B)a^2bcd^2 - (66A + 85B)a^3d^3 + 6((6A + 11B)b^3cd^2 - (6A + 11B)b^3c^3)}{36((b^7c^4 - 4ab^6c^3))}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^4/(d*i*x+c*i),x, algorit
hm="fricas")
```

```
[Out] -1/36*(4*(3*A + B)*b^3*c^3 - 27*(2*A + B)*a*b^2*c^2*d + 108*(A + B)*a^2*b*c
*d^2 - (66*A + 85*B)*a^3*d^3 + 6*((6*A + 11*B)*b^3*c*d^2 - (6*A + 11*B)*a*b
^2*d^3)*x^2 + 18*(B*b^3*d^3*x^3 + 3*B*a*b^2*d^3*x^2 + 3*B*a^2*b*d^3*x + B*a
^3*d^3)*log((b*e*x + a*e)/(d*x + c))^2 - 3*((6*A + 5*B)*b^3*c^2*d - 18*(2*A
+ 3*B)*a*b^2*c*d^2 + (30*A + 49*B)*a^2*b*d^3)*x + 6*((6*A + 11*B)*b^3*d^3*
x^3 + 2*B*b^3*c^3 - 9*B*a*b^2*c^2*d + 18*B*a^2*b*c*d^2 + 6*A*a^3*d^3 + 3*(2
*B*b^3*c*d^2 + 3*(2*A + 3*B)*a*b^2*d^3)*x^2 - 3*(B*b^3*c^2*d - 6*B*a*b^2*c*
d^2 - 6*(A + B)*a^2*b*d^3)*x)*log((b*e*x + a*e)/(d*x + c))/((b^7*c^4 - 4*a
*b^6*c^3*d + 6*a^2*b^5*c^2*d^2 - 4*a^3*b^4*c*d^3 + a^4*b^3*d^4)*g^4*i*x^3 +
3*(a*b^6*c^4 - 4*a^2*b^5*c^3*d + 6*a^3*b^4*c^2*d^2 - 4*a^4*b^3*c*d^3 + a^5
*b^2*d^4)*g^4*i*x^2 + 3*(a^2*b^5*c^4 - 4*a^3*b^4*c^3*d + 6*a^4*b^3*c^2*d^2
- 4*a^5*b^2*c*d^3 + a^6*b*d^4)*g^4*i*x + (a^3*b^4*c^4 - 4*a^4*b^3*c^3*d + 6
*a^5*b^2*c^2*d^2 - 4*a^6*b*c*d^3 + a^7*d^4)*g^4*i)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^4/(d*i*x+c*i),x, algorit
hm="giac")
```

[Out] Timed out

maple [B] time = 0.05, size = 1474, normalized size = 3.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{int}((B*\ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^4/(d*i*x+c*i), x)$

[Out]
$$-d^4/i/(a*d-b*c)^5/g^4*A*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+d^3/i/(a*d-b*c)^5/g^4*A*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*c-3*d^3*e/i/(a*d-b*c)^5/g^4*A*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a+3*d^2*e/i/(a*d-b*c)^5/g^4*A*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c+3/2*d^2*e^2/i/(a*d-b*c)^5/g^4*A*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a-3/2*d^2*e^2/i/(a*d-b*c)^5/g^4*A*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*c-1/3*d^2*e^3/i/(a*d-b*c)^5/g^4*A*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*a+1/3*e^3/i/(a*d-b*c)^5/g^4*A*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*c-1/2*d^4/i/(a*d-b*c)^5/g^4*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a+1/2*d^3/i/(a*d-b*c)^5/g^4*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b*c-3*d^3*e/i/(a*d-b*c)^5/g^4*B*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+3*d^2*e/i/(a*d-b*c)^5/g^4*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-3*d^3*e/i/(a*d-b*c)^5/g^4*B*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a+3*d^2*e/i/(a*d-b*c)^5/g^4*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c+3/2*d^2*e^2/i/(a*d-b*c)^5/g^4*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-3/2*d^2*e^2/i/(a*d-b*c)^5/g^4*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+3/4*d^2*e^2/i/(a*d-b*c)^5/g^4*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a-3/4*d^2*e^2/i/(a*d-b*c)^5/g^4*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*c-1/3*d^2*e^3/i/(a*d-b*c)^5/g^4*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+1/3*e^3/i/(a*d-b*c)^5/g^4*B*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-1/9*d^2*e^3/i/(a*d-b*c)^5/g^4*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*a+1/9*e^3/i/(a*d-b*c)^5/g^4*B*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*c$$

maxima [B] time = 2.41, size = 1469, normalized size = 3.94

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{integrate}((A+B*\log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^4/(d*i*x+c*i), x, \text{algorithm}="maxima")$

[Out]
$$-1/6*B*((6*b^2*d^2*x^2 + 2*b^2*c^2 - 7*a*b*c*d + 11*a^2*d^2 - 3*(b^2*c*d - 5*a*b*d^2)*x)/((b^6*c^3 - 3*a*b^5*c^2*d + 3*a^2*b^4*c*d^2 - a^3*b^3*d^3)*g^4$$


```

4*i*x^3 + 3*(a*b^5*c^3 - 3*a^2*b^4*c^2*d + 3*a^3*b^3*c*d^2 - a^4*b^2*d^3)*g
^4*i*x^2 + 3*(a^2*b^4*c^3 - 3*a^3*b^3*c^2*d + 3*a^4*b^2*c*d^2 - a^5*b*d^3)*
g^4*i*x + (a^3*b^3*c^3 - 3*a^4*b^2*c^2*d + 3*a^5*b*c*d^2 - a^6*d^3)*g^4*i
+ 6*d^3*log(b*x + a)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3
b*c*d^3 + a^4*d^4)*g^4*i) - 6*d^3*log(d*x + c)/((b^4*c^4 - 4*a*b^3*c^3*d +
6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^4*i))*log(b*e*x/(d*x + c) +
a*e/(d*x + c)) - 1/6*A*((6*b^2*d^2*x^2 + 2*b^2*c^2 - 7*a*b*c*d + 11*a^2*d^2
- 3*(b^2*c*d - 5*a*b*d^2)*x)/((b^6*c^3 - 3*a*b^5*c^2*d + 3*a^2*b^4*c*d^2 -
a^3*b^3*d^3)*g^4*i*x^3 + 3*(a*b^5*c^3 - 3*a^2*b^4*c^2*d + 3*a^3*b^3*c*d^2
- a^4*b^2*d^3)*g^4*i*x^2 + 3*(a^2*b^4*c^3 - 3*a^3*b^3*c^2*d + 3*a^4*b^2*c*d
^2 - a^5*b*d^3)*g^4*i*x + (a^3*b^3*c^3 - 3*a^4*b^2*c^2*d + 3*a^5*b*c*d^2 -
a^6*d^3)*g^4*i) + 6*d^3*log(b*x + a)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2
c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^4*i) - 6*d^3*log(d*x + c)/((b^4*c^4 -
4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^4*i)) - 1/36
*(4*b^3*c^3 - 27*a*b^2*c^2*d + 108*a^2*b*c*d^2 - 85*a^3*d^3 + 66*(b^3*c*d^2
- a*b^2*d^3)*x^2 - 18*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3
d^3)*log(b*x + a)^2 - 18*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x +
a^3*d^3)*log(d*x + c)^2 - 3*(5*b^3*c^2*d - 54*a*b^2*c*d^2 + 49*a^2*b*d^3)*x
+ 66*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*log(b*x + a
) - 6*(11*b^3*d^3*x^3 + 33*a*b^2*d^3*x^2 + 33*a^2*b*d^3*x + 11*a^3*d^3 - 6
(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*log(b*x + a))*log
(d*x + c))*B/(a^3*b^4*c^4*g^4*i - 4*a^4*b^3*c^3*d*g^4*i + 6*a^5*b^2*c^2*d^2
*g^4*i - 4*a^6*b*c*d^3*g^4*i + a^7*d^4*g^4*i + (b^7*c^4*g^4*i - 4*a*b^6*c^3
*d*g^4*i + 6*a^2*b^5*c^2*d^2*g^4*i - 4*a^3*b^4*c*d^3*g^4*i + a^4*b^3*d^4*g^
4*i)*x^3 + 3*(a*b^6*c^4*g^4*i - 4*a^2*b^5*c^3*d*g^4*i + 6*a^3*b^4*c^2*d^2*g
^4*i - 4*a^4*b^3*c*d^3*g^4*i + a^5*b^2*d^4*g^4*i)*x^2 + 3*(a^2*b^5*c^4*g^4
i - 4*a^3*b^4*c^3*d*g^4*i + 6*a^4*b^3*c^2*d^2*g^4*i - 4*a^5*b^2*c*d^3*g^4*i
+ a^6*b*d^4*g^4*i)*x)

```

mupad [B] time = 9.51, size = 970, normalized size = 2.60

$$\frac{11 A a^2 d^2}{6 g^4 i (a d - b c)^3 (a + b x)^3} - \frac{B d^3 \ln\left(\frac{e(a+bx)}{c+dx}\right)^2}{2 g^4 i (a d - b c)^4} + \frac{A b^2 c^2}{3 g^4 i (a d - b c)^3 (a + b x)^3} + \frac{85 B a^2 d^2}{36 g^4 i (a d - b c)^3 (a + b x)^3} + \frac{11 A a^2 d^2}{9 g^4 i (a d - b c)^3 (a + b x)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((A + B*log((e*(a + b*x))/(c + d*x)))/((a*g + b*g*x)^4*(c*i + d*i*x)),x)

[Out] (A*d^3*atan((a*d*1i + b*c*1i + b*d*x*2i)/(a*d - b*c))*2i)/(g^4*i*(a*d - b*c)^4) + (B*d^3*atan((a*d*1i + b*c*1i + b*d*x*2i)/(a*d - b*c))*11i)/(3*g^4*i*(a*d - b*c)^4) - (B*d^3*log((e*(a + b*x))/(c + d*x))^2)/(2*g^4*i*(a*d - b*c)^4) + (11*A*a^2*d^2)/(6*g^4*i*(a*d - b*c)^3*(a + b*x)^3) + (A*b^2*c^2)/(3*g^4*i*(a*d - b*c)^3*(a + b*x)^3) + (85*B*a^2*d^2)/(36*g^4*i*(a*d - b*c)^3*(a + b*x)^3) + (B*b^2*c^2)/(9*g^4*i*(a*d - b*c)^3*(a + b*x)^3) + (11*B*a^3*d

$$\begin{aligned} &^3 \log\left(\frac{e(a+bx)}{c+dx}\right) / (6g^4 i (ad-bc)^4 (a+bx)^3) - (Bb \\ &^3 c^3 \log\left(\frac{e(a+bx)}{c+dx}\right) / (3g^4 i (ad-bc)^4 (a+bx)^3) + \\ &(A^2 b^2 d^2 x^2) / (g^4 i (ad-bc)^3 (a+bx)^3) + (11B^2 b^2 d^2 x^2) / (6g^4 i (ad-bc)^3 (a+bx)^3) - (7A^2 a^2 b^2 c^2 d) / (6g^4 i (ad-bc)^3 (a+bx)^3) - (23B^2 a^2 b^2 c^2 d) / (36g^4 i (ad-bc)^3 (a+bx)^3) + (5A^2 a^2 b^2 d^2 x^2) / (2g^4 i (ad-bc)^3 (a+bx)^3) + (49B^2 a^2 b^2 d^2 x^2) / (12g^4 i (ad-bc)^3 (a+bx)^3) - (A^2 b^2 c^2 d^2 x^2) / (2g^4 i (ad-bc)^3 (a+bx)^3) - (5B^2 b^2 c^2 d^2 x^2) / (12g^4 i (ad-bc)^3 (a+bx)^3) + (3B^2 a^2 b^2 c^2 d^2 x^2 \log\left(\frac{e(a+bx)}{c+dx}\right) / (2g^4 i (ad-bc)^4 (a+bx)^3) - (3B^2 a^2 b^2 c^2 d^2 x^2 \log\left(\frac{e(a+bx)}{c+dx}\right) / (g^4 i (ad-bc)^4 (a+bx)^3) + (5B^2 a^2 b^2 d^2 x^2 \log\left(\frac{e(a+bx)}{c+dx}\right) / (2g^4 i (ad-bc)^4 (a+bx)^3) + (B^2 b^3 c^2 d^2 x^2 \log\left(\frac{e(a+bx)}{c+dx}\right) / (2g^4 i (ad-bc)^4 (a+bx)^3) + (B^2 a^2 b^2 d^2 x^2 \log\left(\frac{e(a+bx)}{c+dx}\right) / (g^4 i (ad-bc)^4 (a+bx)^3) - (B^2 b^3 c^2 d^2 x^2 \log\left(\frac{e(a+bx)}{c+dx}\right) / (g^4 i (ad-bc)^4 (a+bx)^3) - (3B^2 a^2 b^2 c^2 d^2 x^2 \log\left(\frac{e(a+bx)}{c+dx}\right) / (g^4 i (ad-bc)^4 (a+bx)^3) - (3B^2 a^2 b^2 c^2 d^2 x^2 \log\left(\frac{e(a+bx)}{c+dx}\right) / (g^4 i (ad-bc)^4 (a+bx)^3) \end{aligned}$$

sympy [B] time = 20.69, size = 1392, normalized size = 3.73

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)**4/(d*i*x+c*i),x)

[Out]
$$\begin{aligned} &-B^3 d^3 \log\left(\frac{e(a+bx)}{c+dx}\right)^2 / (2a^4 d^4 g^4 i - 8a^3 b^2 c^2 d^3 g^4 i + 12a^2 b^2 c^2 d^2 g^4 i - 8a^2 b^3 c^3 d g^4 i + 2b^4 c^4 g^4 i) + d^3 (6A + 11B) \log(x + (6A^2 a^2 d^4 + 6A^2 b^2 c^2 d^3 + 11B^2 a^2 d^4 + 11B^2 b^2 c^2 d^3 - a^5 d^8 (6A + 11B)) / (ad-bc)^4 + 5a^4 b^2 c^2 d^7 (6A + 11B) / (ad-bc)^4 - 10a^3 b^2 c^2 d^6 (6A + 11B) / (ad-bc)^4 + 10a^2 b^3 c^3 d^5 (6A + 11B) / (ad-bc)^4 - 5a^2 b^4 c^4 d^4 (6A + 11B) / (ad-bc)^4 + b^5 c^5 d^3 (6A + 11B) / (ad-bc)^4) / (12A^2 b^2 d^4 + 22B^2 b^2 d^4) / (6g^4 i (ad-bc)^4) - d^3 (6A + 11B) \log(x + (6A^2 a^2 d^4 + 6A^2 b^2 c^2 d^3 + 11B^2 a^2 d^4 + 11B^2 b^2 c^2 d^3 + a^5 d^8 (6A + 11B)) / (ad-bc)^4 - 5a^4 b^2 c^2 d^7 (6A + 11B) / (ad-bc)^4 + 10a^3 b^2 c^2 d^6 (6A + 11B) / (ad-bc)^4 - 10a^2 b^3 c^3 d^5 (6A + 11B) / (ad-bc)^4 + 5a^2 b^4 c^4 d^4 (6A + 11B) / (ad-bc)^4 - b^5 c^5 d^3 (6A + 11B) / (ad-bc)^4) / (12A^2 b^2 d^4 + 22B^2 b^2 d^4) / (6g^4 i (ad-bc)^4) + (11B^2 a^2 d^2 - 7B^2 a^2 b^2 c^2 d + 15B^2 a^2 b^2 d^2 x + 2B^2 b^2 c^2 - 3B^2 b^2 c^2 d^2 x + 6B^2 b^2 d^2 x^2) \log\left(\frac{e(a+bx)}{c+dx}\right) / (6a^6 d^3 g^4 i - 18a^5 b^2 c^2 d^2 g^4 i + 18a^5 b^2 d^3 g^4 i x + 18a^4 b^2 c^2 d^2 g^4 i - 54a^4 b^2 c^2 d^2 g^4 i x + 18a^4 b^2 d^3 g^4 i x^2 - 6a^3 b^3 c^3 g^4 i + 54a^3 b^3 c^3 d^2 g^4 i x - 54a^3 b^3 c^3 d^2 g^4 i x^2 + 6a^3 b^3 d^3 g^4 i x^3 - 18a^2 b^4 c^3 g^4 i x + 54a^2 b^4 c^3 d^2 g^4 i x^2 - 18a^2 b^4 c^3 d^2 g^4 i x^3 - 18a^2 b^5 c^3 g^4 i x^2 + 18a^2 b^5 c^3 \end{aligned}$$

$$\begin{aligned}
& 2*d*g^{4*i}*x^{3} - 6*b^{6}*c^{3}*g^{4*i}*x^{3}) + (66*A*a^{2}*d^{2} - 42*A*a*b*c*d \\
& + 12*A*b^{2}*c^{2} + 85*B*a^{2}*d^{2} - 23*B*a*b*c*d + 4*B*b^{2}*c^{2} + x^{2}*(3 \\
& 6*A*b^{2}*d^{2} + 66*B*b^{2}*d^{2}) + x*(90*A*a*b*d^{2} - 18*A*b^{2}*c*d + 147*B* \\
& a*b*d^{2} - 15*B*b^{2}*c*d))/(36*a^{6}*d^{3}*g^{4*i} - 108*a^{5}*b*c*d^{2}*g^{4*i} \\
& + 108*a^{4}*b^{2}*c^{2}*d*g^{4*i} - 36*a^{3}*b^{3}*c^{3}*g^{4*i} + x^{3}*(36*a^{3}*b* \\
& *3*d^{3}*g^{4*i} - 108*a^{2}*b^{4}*c*d^{2}*g^{4*i} + 108*a*b^{5}*c^{2}*d*g^{4*i} - 3 \\
& 6*b^{6}*c^{3}*g^{4*i}) + x^{2}*(108*a^{4}*b^{2}*d^{3}*g^{4*i} - 324*a^{3}*b^{3}*c*d^{2} \\
& *g^{4*i} + 324*a^{2}*b^{4}*c^{2}*d*g^{4*i} - 108*a*b^{5}*c^{3}*g^{4*i}) + x*(108*a \\
& *^{5}*b*d^{3}*g^{4*i} - 324*a^{4}*b^{2}*c*d^{2}*g^{4*i} + 324*a^{3}*b^{3}*c^{2}*d*g^{4} \\
& *i - 108*a^{2}*b^{4}*c^{3}*g^{4*i}))
\end{aligned}$$

$$3.39 \quad \int \frac{(ag+bgx)^3 \left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{(ci+dix)^2} dx$$

Optimal. Leaf size=341

$$\frac{bg^3(bc-ad)^2 \log\left(\frac{bc-ad}{b(c+dx)}\right) \left(6B \log\left(\frac{e(a+bx)}{c+dx}\right) + 6A + 5B\right)}{2d^4i^2} - \frac{g^3(6A+5B)(a+bx)(bc-ad)^2}{2d^3i^2(c+dx)} - \frac{g^3(a+bx)^2(bc-ad)}{2d^2}$$

[Out] $3*B*(-a*d+b*c)^2*g^3*(b*x+a)/d^3/i^2/(d*x+c) - 1/2*(6*A+5*B)*(-a*d+b*c)^2*g^3*(b*x+a)/d^3/i^2/(d*x+c) - 3*B*(-a*d+b*c)^2*g^3*(b*x+a)*\ln(e*(b*x+a)/(d*x+c))/d^3/i^2/(d*x+c) + 1/2*g^3*(b*x+a)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))/d/i^2/(d*x+c) - 1/2*(-a*d+b*c)*g^3*(b*x+a)^2*(3*A+B+3*B*\ln(e*(b*x+a)/(d*x+c)))/d^2/i^2/(d*x+c) - 1/2*b*(-a*d+b*c)^2*g^3*\ln((-a*d+b*c)/b/(d*x+c))*(6*A+5*B+6*B*\ln(e*(b*x+a)/(d*x+c)))/d^4/i^2 - 3*b*B*(-a*d+b*c)^2*g^3*\text{polylog}(2,d*(b*x+a)/b/(d*x+c))/d^4/i^2$

Rubi [A] time = 0.73, antiderivative size = 519, normalized size of antiderivative = 1.52, number of steps used = 22, number of rules used = 14, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.350$, Rules used = {2528, 2486, 31, 2525, 12, 72, 44, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$-\frac{3bBg^3(bc-ad)^2 \text{PolyLog}\left(2, \frac{b(c+dx)}{bc-ad}\right)}{d^4i^2} - \frac{a^2bBg^3 \log(a+bx)}{2d^2i^2} + \frac{b^3g^3x^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{2d^2i^2} - \frac{Ab^2g^3x(2bc-3ad)}{d^3i^2} + \dots$$

Antiderivative was successfully verified.

[In] Int[((a*g + b*g*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(c*i + d*i*x)^2, x]

[Out] $-((A*b^2*(2*b*c - 3*a*d)*g^3*x)/(d^3*i^2)) - (b^2*B*(b*c - a*d)*g^3*x)/(2*d^3*i^2) - (B*(b*c - a*d)^3*g^3)/(d^4*i^2*(c + d*x)) - (a^2*b*B*g^3*\text{Log}[a + b*x])/(2*d^2*i^2) - (b*B*(b*c - a*d)^2*g^3*\text{Log}[a + b*x])/(d^4*i^2) - (b*B*(2*b*c - 3*a*d)*g^3*(a + b*x)*\text{Log}[(e*(a + b*x))/(c + d*x)]/(d^3*i^2) + (b^3*g^3*x^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(2*d^2*i^2) + ((b*c - a*d)^3*g^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(d^4*i^2*(c + d*x)) + (b^3*B*c^2*g^3*\text{Log}[c + d*x])/(2*d^4*i^2) + (b*B*(2*b*c - 3*a*d)*(b*c - a*d)*g^3*\text{Log}[c + d*x])/(d^4*i^2) + (b*B*(b*c - a*d)^2*g^3*\text{Log}[c + d*x])/(d^4*i^2) - (3*b*B*(b*c - a*d)^2*g^3*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c + d*x])/(d^4*i^2) + (3*b*(b*c - a*d)^2*g^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)])*\text{Log}[c + d*x])/(d^4*i^2) + (3*b*B*(b*c - a*d)^2*g^3*\text{Log}[c + d*x]^2)/(2*d^4*i^2) - (3*b*B*(b*c - a*d)^2*g^3*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/(d^4*i^2)$

Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 31

```
Int[((a_) + (b_)*(x_))^(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 44

```
Int[((a_) + (b_)*(x_))^(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 72

```
Int[((e_) + (f_)*(x_))^(p_)/(((a_) + (b_)*(x_))*((c_) + (d_)*(x_))),
x_Symbol] := Int[ExpandIntegrand[(e + f*x)^p/((a + b*x)*(c + d*x)), x], x]
/; FreeQ[{a, b, c, d, e, f}, x] && IntegerQ[p]
```

Rule 2301

```
Int[((a_) + Log[(c_)*(x_)]^(n_))*((b_))/(x_), x_Symbol] := Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_))*((b_))^(p_)*((f_) + (g_
)*(x_))^(q_), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_)*((d_) + (e_)*(x_))^(n_)]/(x_), x_Symbol] := -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))])*((b_))/((f_) + (g_)*(x_)), x_
Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)]^(r_.)]^(s_.), x_Symbol] := Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s, x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.))/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.))*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(ag + bgx)^3 \left(A + B \log \left(\frac{e^{(a+bx)}}{c+dx} \right) \right)}{(39c + 39dx)^2} dx &= \int \left(-\frac{b^2(2bc - 3ad)g^3 \left(A + B \log \left(\frac{e^{(a+bx)}}{c+dx} \right) \right)}{1521d^3} + \frac{b^3g^3x \left(A + B \log \left(\frac{e^{(a+bx)}}{c+dx} \right) \right)}{1521d^2} \right) dx \\
&= \frac{(b^3g^3) \int x \left(A + B \log \left(\frac{e^{(a+bx)}}{c+dx} \right) \right) dx}{1521d^2} - \frac{(b^2(2bc - 3ad)g^3) \int \left(A + B \log \left(\frac{e^{(a+bx)}}{c+dx} \right) \right) dx}{1521d^3} \\
&= -\frac{Ab^2(2bc - 3ad)g^3x}{1521d^3} + \frac{b^3g^3x^2 \left(A + B \log \left(\frac{e^{(a+bx)}}{c+dx} \right) \right)}{3042d^2} + \frac{(bc - ad)^3g^3 \left(A + B \log \left(\frac{e^{(a+bx)}}{c+dx} \right) \right)}{1521d^3} \\
&= -\frac{Ab^2(2bc - 3ad)g^3x}{1521d^3} - \frac{bB(2bc - 3ad)g^3(a + bx) \log \left(\frac{e^{(a+bx)}}{c+dx} \right)}{1521d^3} + \frac{b^3g^3x^2 \left(A + B \log \left(\frac{e^{(a+bx)}}{c+dx} \right) \right)}{3042d^2} \\
&= -\frac{Ab^2(2bc - 3ad)g^3x}{1521d^3} - \frac{bB(2bc - 3ad)g^3(a + bx) \log \left(\frac{e^{(a+bx)}}{c+dx} \right)}{1521d^3} + \frac{b^3g^3x^2 \left(A + B \log \left(\frac{e^{(a+bx)}}{c+dx} \right) \right)}{3042d^2} \\
&= -\frac{Ab^2(2bc - 3ad)g^3x}{1521d^3} - \frac{b^2B(bc - ad)g^3x}{3042d^3} - \frac{B(bc - ad)^3g^3}{1521d^4(c + dx)} - \frac{a^2bBg^3}{3042d^3} \\
&= -\frac{Ab^2(2bc - 3ad)g^3x}{1521d^3} - \frac{b^2B(bc - ad)g^3x}{3042d^3} - \frac{B(bc - ad)^3g^3}{1521d^4(c + dx)} - \frac{a^2bBg^3}{3042d^3} \\
&= -\frac{Ab^2(2bc - 3ad)g^3x}{1521d^3} - \frac{b^2B(bc - ad)g^3x}{3042d^3} - \frac{B(bc - ad)^3g^3}{1521d^4(c + dx)} - \frac{a^2bBg^3}{3042d^3} \\
&= -\frac{Ab^2(2bc - 3ad)g^3x}{1521d^3} - \frac{b^2B(bc - ad)g^3x}{3042d^3} - \frac{B(bc - ad)^3g^3}{1521d^4(c + dx)} - \frac{a^2bBg^3}{3042d^3}
\end{aligned}$$

Mathematica [A] time = 0.42, size = 359, normalized size = 1.05

$$g^3 \left(bB \left(dx(ad - bc) + bc^2 \log(c + dx) \right) - a^2d^2 \log(a + bx) \right) + b^3d^2x^2 \left(B \log \left(\frac{e^{(a+bx)}}{c+dx} \right) + A \right) - 2Ab^2dx(2bc - 3ad)$$

Antiderivative was successfully verified.

[In] Integrate[((a*g + b*g*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(c*i + d*i*x)^2,x]

[Out] (g^3*(-2*A*b^2*d*(2*b*c - 3*a*d)*x - 2*b*B*d*(2*b*c - 3*a*d)*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)] + b^3*d^2*x^2*(A + B*Log[(e*(a + b*x))/(c + d*x)] + (2*(b*c - a*d)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])))/(c + d*x) + 2*b*B*(2*b*c - 3*a*d)*(b*c - a*d)*Log[c + d*x] + 6*b*(b*c - a*d)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x] - 2*B*(b*c - a*d)^2*((b*c - a*d)/(c + d*x) + b*Log[a + b*x] - b*Log[c + d*x]) + b*B*(-(a^2*d^2*Log[a + b*x]) + b*(d*(-(b*c) + a*d)*x + b*c^2*Log[c + d*x])) - 3*b*B*(b*c - a*d)^2*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(2*d^4*i^2)

fricas [F] time = 0.93, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{Ab^3g^3x^3 + 3Aab^2g^3x^2 + 3Aa^2bg^3x + Aa^3g^3 + (Bb^3g^3x^3 + 3Bab^2g^3x^2 + 3Ba^2bg^3x + Ba^3g^3) \log\left(\frac{bex+}{dx+}\right)}{d^2i^2x^2 + 2cdi^2x + c^2i^2} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^2,x, algorithm="fricas")

[Out] integral((A*b^3*g^3*x^3 + 3*A*a*b^2*g^3*x^2 + 3*A*a^2*b*g^3*x + A*a^3*g^3 + (B*b^3*g^3*x^3 + 3*B*a*b^2*g^3*x^2 + 3*B*a^2*b*g^3*x + B*a^3*g^3)*log((b*e*x + a*e)/(d*x + c)))/(d^2*i^2*x^2 + 2*c*d*i^2*x + c^2*i^2), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^2,x, algorithm="giac")

[Out] Timed out

maple [B] time = 0.16, size = 2973, normalized size = 8.72

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)/(d*i*x+c*i)^2,x)

[Out]
$$\frac{9}{d^3} e^B g^3 i^2 b^3 \ln\left(\frac{b}{d} e + (a d - b^2 c)\right) / (d x + c) / d e / \left(\frac{1}{(d x + c)} a^d e^{-1} / (d x + c) b^c e\right) c^2 / (d x + c) a + 1 / d B g^3 i^2 a^3 / (d x + c) - 1 / d A g^3 i^2 a^3 / (d x + c) + 2 / d e^2 B g^3 i^2 b^2 \ln\left(\frac{b}{d} e + (a d - b^2 c)\right) / (d x + c) / d e / \left(\frac{1}{(d x + c)} a^d e^{-1} / (d x + c) b^c e\right)^2 a^3 / (d x + c)^2 c - 3 / d^2 e^2 B g^3 i^2 b^3 \ln\left(\frac{b}{d} e + (a d - b^2 c)\right) / (d x + c) / d e / \left(\frac{1}{(d x + c)} a^d e^{-1} / (d x + c) b^c e\right)^2 a^2 / (d x + c)^2 c^2 + 2 / d^3 e^2 B g^3 i^2 b^4 \ln\left(\frac{b}{d} e + (a d - b^2 c)\right) / (d x + c) / d e / \left(\frac{1}{(d x + c)} a^d e^{-1} / (d x + c) b^c e\right)^2 a / (d x + c)^2 c^3 - 9 / d^2 e^2 B g^3 i^2 b^2 \ln\left(\frac{b}{d} e + (a d - b^2 c)\right) / (d x + c) / d e / \left(\frac{1}{(d x + c)} a^d e^{-1} / (d x + c) b^c e\right) c / (d x + c) a^2 - 3 / d^4 A g^3 i^2 b^3 \ln\left(-b e + \left(\frac{b}{d} e + (a d - b^2 c)\right) / (d x + c) / d e\right) d) c^2 - 3 / d^2 A g^3 i^2 b \ln\left(-b e + \left(\frac{b}{d} e + (a d - b^2 c)\right) / (d x + c) / d e\right) d) a^2 - 1 / d B g^3 i^2 \ln\left(\frac{b}{d} e + (a d - b^2 c)\right) / (d x + c) / d e) a^3 / (d x + c) - 1 / d^4 B g^3 i^2 \ln\left(\frac{b}{d} e + (a d - b^2 c)\right) / (d x + c) / d e) b^3 c^2 - 1 / d^2 B g^3 i^2 \ln\left(\frac{b}{d} e + (a d - b^2 c)\right) / (d x + c) / d e) a^2 b - 5 / 2 / d^4 B g^3 i^2 b^3 \ln\left(-b e + \left(\frac{b}{d} e + (a d - b^2 c)\right) / (d x + c) / d e\right) d) c^2 - 3 / d^4 B g^3 i^2 b^3 \operatorname{dilog}\left(-\left(-b e + \left(\frac{b}{d} e + (a d - b^2 c)\right) / (d x + c) / d e\right) d\right) / b e) c^2 - 5 / 2 / d^2 B g^3 i^2 b \ln\left(-b e + \left(\frac{b}{d} e + (a d - b^2 c)\right) / (d x + c) / d e\right) d) a^2 - 3 / d^2 B g^3 i^2 b \operatorname{dilog}\left(-\left(-b e + \left(\frac{b}{d} e + (a d - b^2 c)\right) / (d x + c) / d e\right) d\right) / b e) a^2 - 2 / d^3 B g^3 i^2 a b^2 c^2 + 2 / d^3 A g^3 i^2 b^2 a c - 3 / d^4 e^B g^3 i^2 b^4 \ln\left(\frac{b}{d} e + (a d - b^2 c)\right) / (d x + c) / d e) / \left(\frac{1}{(d x + c)} a^d e^{-1} / (d x + c) b^c e\right) c^3 / (d x + c) - 6 / d^3 e^B g^3 i^2 b^3 \ln\left(\frac{b}{d} e + (a d - b^2 c)\right) / (d x + c) / d e) / \left(\frac{1}{(d x + c)} a^d e^{-1} / (d x + c) b^c e\right) a^c + 3 / d e B g^3 i^2 b \ln\left(\frac{b}{d} e + (a d - b^2 c)\right) / (d x + c) / d e) / \left(\frac{1}{(d x + c)} a^d e^{-1} / (d x + c) b^c e\right) a^3 / (d x + c) - 1 / 2 / d^4 e^2 B g^3 i^2 b^5 \ln\left(\frac{b}{d} e + (a d - b^2 c)\right) / (d x + c) / d e) / \left(\frac{1}{(d x + c)} a^d e^{-1} / (d x + c) b^c e\right)^2 c^4 / (d x + c)^2 - 1 / d^3 e^2 B g^3 i^2 b^4 \ln\left(\frac{b}{d} e + (a d - b^2 c)\right) / (d x + c) / d e) / \left(\frac{1}{(d x + c)} a^d e^{-1} / (d x + c) b^c e\right)^2 a^c + 1 / d^2 B g^3 i^2 a^2 b - 1 / d^2 A g^3 i^2 b a^2 - 1 / d^4 A g^3 i^2 b^3 c^2 + 3 / d^2 B g^3 i^2 \ln\left(\frac{b}{d} e + (a d - b^2 c)\right) / (d x + c) / d e) b^c / (d x + c) a^2 - 3 / d^3 B g^3 i^2 \ln\left(\frac{b}{d} e + (a d - b^2 c)\right) / (d x + c) / d e) b^2 c^2 / (d x + c) a - 1 / 2 e^2 B g^3 i^2 b \ln\left(\frac{b}{d} e + (a d - b^2 c)\right) / (d x + c) / d e) / \left(\frac{1}{(d x + c)} a^d e^{-1} / (d x + c) b^c e\right)^2 a^4 / (d x + c)^2 + 6 / d^3 B g^3 i^2 b^2 \ln\left(\frac{b}{d} e + (a d - b^2 c)\right) / (d x + c) / d e) \ln\left(-\left(-b e + \left(\frac{b}{d} e + (a d - b^2 c)\right) / (d x + c) / d e\right) d\right) / b e) a^c + 1 / 2 / d^4 e^2 B g^3 i^2 b^5 \ln\left(\frac{b}{d} e + (a d - b^2 c)\right) / (d x + c) / d e) / \left(\frac{1}{(d x + c)} a^d e^{-1} / (d x + c) b^c e\right)^2 c^2 + 3 / d^2 e^B g^3 i^2 b^2 \ln\left(\frac{b}{d} e + (a d - b^2 c)\right) / (d x + c) / d e) / \left(\frac{1}{(d x + c)} a^d e^{-1} / (d x + c) b^c e\right) a^2 + 3 / d^4 e^B g^3 i^2 b^4 \ln\left(\frac{b}{d} e + (a d - b^2 c)\right) / (d x + c) / d e) / \left(\frac{1}{(d x + c)} a^d e^{-1} / (d x + c) b^c e\right) c^2 + 1 / 2 / d^2 e^2 B g^3 i^2 b^3 \ln\left(\frac{b}{d} e + (a d - b^2 c)\right) / (d x + c) / d e) / \left(\frac{1}{(d x + c)} a^d e^{-1} / (d x + c) b^c e\right)^2 a^2 - 6 / d^3 e^A g^3 i^2 b^3 / \left(\frac{1}{(d x + c)} a^d e^{-1} / (d x + c) b^c e\right) a^c - 1 / d^3 e^B g^3 i^2 b^3 / \left(\frac{1}{(d x + c)} a^d e^{-1} / (d x + c) b^c e\right) c^2 a - 1 / d^3 e^2 A g^3 i^2 b^4 / \left(\frac{1}{(d x + c)} a^d e^{-1} / (d x + c) b^c e\right)^2 c^2 a - 3 / d^4 B g^3 i^2 b^3 \ln\left(\frac{b}{d} e + (a d - b^2 c)\right) / (d x + c) / d e) \ln\left(-\left(-b e + \left(\frac{b}{d} e + (a d - b^2 c)\right) / (d x + c) / d e\right) d\right) / b e) c^2 + 2 / d^3 B g^3 i^2 \ln\left(\frac{b}{d} e + (a d - b^2 c)\right) / (d x + c) / d e) b^2 c^2 a + 1 / d^4 B g^3 i^2 \ln\left(\frac{b}{d} e + (a d - b^2 c)\right) / (d x + c) / d e) b^3 c^3 / (d x + c) + 5 / d^3 B g^3 i^2 b^2 \ln\left(-b e + \left(\frac{b}{d} e + (a d - b^2 c)\right) / (d x + c) / d e\right) d) c^2 a + 6 / d^3 B g^3 i^2 b^2 \operatorname{dilog}\left(-\left(-b e + \left(\frac{b}{d} e + (a d - b^2 c)\right) / (d x + c) / d e\right) d\right) / b e) c^2 a + 6 / d^3 A g^3 i^2 b^2 \ln\left(-b e + \left(\frac{b}{d} e + (a d - b^2 c)\right) / (d x + c) / d e\right) d) a^c - 3 / d^2 B g^3 i^2 b^3 c / (d x + c) a^2 + 1 / 2 / d^4 e^2 A g^3 i^2 b^5 / \left(\frac{1}{(d x + c)} a^d e^{-1} / (d x + c) b^c e\right)^2 c^2 + 3 / d^3 B g^3 i^2 b^2 c^2 / (d x + c) a + 3 / d^2 A g^3 i^2 b^3 c / (d x + c) a^2 - 3 / d^3 A g^3 i^2 b^2 c^2 / (d x + c) a + 1 / 2 / d^2 e^2 A g^3 i^2 b^3 / \left(\frac{1}{(d x + c)} a^d e^{-1} / (d x + c) b^c e\right)^2 a^2 + 3 / d^2 e^A g^3 i^2$$

$$b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^2+1/2/d^4*e*B*g^3/i^2*b^4/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*c^2+1/2/d^2*e*B*g^3/i^2*b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^2+3/d^4*e*A*g^3/i^2*b^4/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*c^2-3/d^2*B*g^3/i^2*b*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*\ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a^2+1/d^4*B*g^3/i^2*b^3*c^2+1/d^4*A*g^3/i^2*b^3*c^3/(d*x+c)-1/d^4*B*g^3/i^2*b^3*c^3/(d*x+c)$$

maxima [B] time = 1.89, size = 1341, normalized size = 3.93

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^2,x, algorithm="maxima")

[Out] $1/2*(2*c^3/(d^5*i^2*x + c*d^4*i^2) + 6*c^2*\log(d*x + c)/(d^4*i^2) + (d*x^2 - 4*c*x)/(d^3*i^2))*A*b^3*g^3 - 3*A*a*b^2*(c^2/(d^4*i^2*x + c*d^3*i^2) - x/(d^2*i^2) + 2*c*\log(d*x + c)/(d^3*i^2))*g^3 + 3*A*a^2*b*g^3*(c/(d^3*i^2*x + c*d^2*i^2) + \log(d*x + c)/(d^2*i^2)) - B*a^3*g^3*(\log(b*e*x/(d*x + c) + a*e/(d*x + c))/(d^2*i^2*x + c*d*i^2) - 1/(d^2*i^2*x + c*d*i^2) - b*\log(b*x + a)/((b*c*d - a*d^2)*i^2) + b*\log(d*x + c)/((b*c*d - a*d^2)*i^2)) - A*a^3*g^3/(d^2*i^2*x + c*d*i^2) - 1/2*(6*a^3*b*d^3*g^3*\log(e) - (6*g^3*\log(e) + 7*g^3)*b^4*c^3 + (18*g^3*\log(e) + 17*g^3)*a*b^3*c^2*d - 6*(3*g^3*\log(e) + 2*g^3)*a^2*b^2*c*d^2)*B*\log(d*x + c)/(b*c*d^4*i^2 - a*d^5*i^2) + 1/2*((b^4*c*d^3*g^3*\log(e) - a*b^3*d^4*g^3*\log(e))*B*x^3 - ((3*g^3*\log(e) + g^3)*b^4*c^2*d^2 - (9*g^3*\log(e) + 2*g^3)*a*b^3*c*d^3 + (6*g^3*\log(e) + g^3)*a^2*b^2*d^4)*B*x^2 - ((4*g^3*\log(e) + g^3)*b^4*c^3*d - 2*(5*g^3*\log(e) + g^3)*a*b^3*c^2*d^2 + (6*g^3*\log(e) + g^3)*a^2*b^2*c*d^3)*B*x - 3*((b^4*c^3*d*g^3 - 3*a*b^3*c^2*d^2*g^3 + 3*a^2*b^2*c*d^3*g^3 - a^3*b*d^4*g^3)*B*x + (b^4*c^4*g^3 - 3*a*b^3*c^3*d*g^3 + 3*a^2*b^2*c^2*d^2*g^3 - a^3*b*c*d^3*g^3)*B)*\log(d*x + c)^2 + 2*((g^3*\log(e) - g^3)*b^4*c^4 - 4*(g^3*\log(e) - g^3)*a*b^3*c^3*d + 6*(g^3*\log(e) - g^3)*a^2*b^2*c^2*d^2 - 3*(g^3*\log(e) - g^3)*a^3*b*c*d^3)*B + ((b^4*c*d^3*g^3 - a*b^3*d^4*g^3)*B*x^3 - 3*(b^4*c^2*d^2*g^3 - 3*a*b^3*c*d^3*g^3 + 2*a^2*b^2*d^4*g^3)*B*x^2 - (6*b^4*c^3*d*g^3 - 12*a*b^3*c^2*d^2*g^3 + 3*a^2*b^2*c*d^3*g^3 + 5*a^3*b*d^4*g^3)*B*x - (6*a*b^3*c^3*d*g^3 - 15*a^2*b^2*c^2*d^2*g^3 + 11*a^3*b*c*d^3*g^3)*B)*\log(b*x + a) - ((b^4*c*d^3*g^3 - a*b^3*d^4*g^3)*B*x^3 - 3*(b^4*c^2*d^2*g^3 - 3*a*b^3*c*d^3*g^3 + 2*a^2*b^2*d^4*g^3)*B*x^2 - 2*(2*b^4*c^3*d*g^3 - 5*a*b^3*c^2*d^2*g^3 + 3*a^2*b^2*c*d^3*g^3)*B*x + 2*(b^4*c^4*g^3 - 4*a*b^3*c^3*d*g^3 + 6*a^2*b^2*c^2*d^2*g^3 - 3*a^3*b*c*d^3*g^3)*B)*\log(d*x + c))/(b*c^2*d^4*i^2 - a*c*d^5*i^2 + (b*c*d^5*i^2 - a*d^6*i^2)*x) + 3*(b^3*c^2*g^3 - 2*a*b^2*c*d*g^3 + a^2*b*d^2*g^3)*(\log(b*x + a)*\log((b*d*x + a*d)/(b*c - a*d) + 1) + \operatorname{dilog}(-(b*d*x + a*d)/(b*c - a*d)))*B/(d^4*i^2)$

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ag + bgx)^3 \left(A + B \ln \left(\frac{e^{(a+bx)}}{c+dx} \right) \right)}{(ci + dix)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((a*g + b*g*x)^3*(A + B*log((e*(a + b*x))/(c + d*x))))/(c*i + d*i*x)^2, x)

[Out] int(((a*g + b*g*x)^3*(A + B*log((e*(a + b*x))/(c + d*x))))/(c*i + d*i*x)^2, x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)**3*(A+B*ln(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)**2,x)

[Out] Timed out

$$3.40 \quad \int \frac{(ag+bgx)^2 \left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{(ci+dx)^2} dx$$

Optimal. Leaf size=260

$$\frac{bg^2(bc-ad) \log\left(\frac{bc-ad}{b(c+dx)}\right) \left(2B \log\left(\frac{e(a+bx)}{c+dx}\right) + 2A + B \right)}{d^3 i^2} + \frac{g^2(2A+B)(a+bx)(bc-ad)}{d^2 i^2 (c+dx)} + \frac{g^2(a+bx)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{d i^2 (c+dx)}$$

[Out] $-2*B*(-a*d+b*c)*g^2*(b*x+a)/d^2/i^2/(d*x+c)+(2*A+B)*(-a*d+b*c)*g^2*(b*x+a)/d^2/i^2/(d*x+c)+2*B*(-a*d+b*c)*g^2*(b*x+a)*\ln(e*(b*x+a)/(d*x+c))/d^2/i^2/(d*x+c)+g^2*(b*x+a)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/d/i^2/(d*x+c)+b*(-a*d+b*c)*g^2*\ln((-a*d+b*c)/b/(d*x+c))*(2*A+B+2*B*\ln(e*(b*x+a)/(d*x+c)))/d^3/i^2+2*b*B*(-a*d+b*c)*g^2*\text{polylog}(2,d*(b*x+a)/b/(d*x+c))/d^3/i^2$

Rubi [A] time = 0.53, antiderivative size = 336, normalized size of antiderivative = 1.29, number of steps used = 18, number of rules used = 13, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.325$, Rules used = {2528, 2486, 31, 2525, 12, 44, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$\frac{2bBg^2(bc-ad)\text{PolyLog}\left(2, \frac{b(c+dx)}{bc-ad}\right)}{d^3 i^2} - \frac{g^2(bc-ad)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{d^3 i^2 (c+dx)} - \frac{2bg^2(bc-ad) \log(c+dx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{d^3 i^2}$$

Antiderivative was successfully verified.

[In] $\text{Int}[(a*g + b*g*x)^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]])/(c*i + d*i*x)^2, x]$

[Out] $(A*b^2*g^2*x)/(d^2*i^2) + (B*(b*c - a*d)^2*g^2)/(d^3*i^2*(c + d*x)) + (b*B*(b*c - a*d)*g^2*\text{Log}[a + b*x])/(d^3*i^2) + (b*B*g^2*(a + b*x)*\text{Log}[(e*(a + b*x))/(c + d*x]])/(d^2*i^2) - ((b*c - a*d)^2*g^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]]))/(d^3*i^2*(c + d*x)) - (2*b*B*(b*c - a*d)*g^2*\text{Log}[c + d*x])/(d^3*i^2) + (2*b*B*(b*c - a*d)*g^2*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c + d*x])/(d^3*i^2) - (2*b*(b*c - a*d)*g^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]])*\text{Log}[c + d*x])/(d^3*i^2) - (b*B*(b*c - a*d)*g^2*\text{Log}[c + d*x]^2)/(d^3*i^2) + (2*b*B*(b*c - a*d)*g^2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/(d^3*i^2)$

Rule 12

$\text{Int}[(a_*)(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \ \&\& \ !\text{MatchQ}[u, (b_)*(v_)] /; \text{FreeQ}[b, x]$

Rule 31

```
Int[((a_) + (b_)*(x_))^-1), x_Symbol] := Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 44

```
Int[((a_) + (b_)*(x_))^(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_))/(x_), x_Symbol] := Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)])*(b_)^(p_)*((f_) + (g_
)*(x_))^(q_), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_)*((d_) + (e_)*(x_))^(n_)])/(x_), x_Symbol] := -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))])*(b_))/((f_) + (g_)*(x_)), x_
Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)])*(b_))/((f_) + (g_)*(x_
)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n])/g, x] - Dist[(b*e^n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)])*(b_)^(p_)*(RFx_), x_Sy
mbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
```

```
Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFX, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] := Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q]^r]^s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFX^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFX^p])^(n - 1)*D[RFX, x])/RFX, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFX, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFX^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*
(a + b*Log[c*RFX^p])^(n - 1)*D[RFX, x])/RFX, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFX, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*RFX^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFX, x] && RationalFunci
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(ag + bgx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{(40c + 40dx)^2} dx &= \int \left(\frac{b^2 g^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{1600d^2} + \frac{(-bc + ad)^2 g^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{1600d^2(c + dx)^2} \right) dx \\
&= \frac{(b^2 g^2) \int \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) dx}{1600d^2} - \frac{(b(bc - ad)g^2) \int \frac{A+B \log \left(\frac{e(a+bx)}{c+dx} \right)}{c+dx} dx}{800d^2} \\
&= \frac{Ab^2 g^2 x}{1600d^2} - \frac{(bc - ad)^2 g^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{1600d^3(c + dx)} - \frac{b(bc - ad)g^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{800d^2} \\
&= \frac{Ab^2 g^2 x}{1600d^2} + \frac{bB g^2 (a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{1600d^2} - \frac{(bc - ad)^2 g^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{1600d^3(c + dx)} \\
&= \frac{Ab^2 g^2 x}{1600d^2} + \frac{bB g^2 (a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{1600d^2} - \frac{(bc - ad)^2 g^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{1600d^3(c + dx)} \\
&= \frac{Ab^2 g^2 x}{1600d^2} + \frac{B(bc - ad)^2 g^2}{1600d^3(c + dx)} + \frac{bB(bc - ad)g^2 \log(a + bx)}{1600d^3} + \frac{bB g^2 (a + bx)}{1600d^3} \\
&= \frac{Ab^2 g^2 x}{1600d^2} + \frac{B(bc - ad)^2 g^2}{1600d^3(c + dx)} + \frac{bB(bc - ad)g^2 \log(a + bx)}{1600d^3} + \frac{bB g^2 (a + bx)}{1600d^3} \\
&= \frac{Ab^2 g^2 x}{1600d^2} + \frac{B(bc - ad)^2 g^2}{1600d^3(c + dx)} + \frac{bB(bc - ad)g^2 \log(a + bx)}{1600d^3} + \frac{bB g^2 (a + bx)}{1600d^3} \\
&= \frac{Ab^2 g^2 x}{1600d^2} + \frac{B(bc - ad)^2 g^2}{1600d^3(c + dx)} + \frac{bB(bc - ad)g^2 \log(a + bx)}{1600d^3} + \frac{bB g^2 (a + bx)}{1600d^3}
\end{aligned}$$

Mathematica [A] time = 0.24, size = 239, normalized size = 0.92

$$g^2 \left(-2b(bc - ad) \log(c + dx) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right) - \frac{(bc-ad)^2 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{c+dx} + bBd(a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right) + bB(bc - ad) \log(c + dx) \right)$$

Antiderivative was successfully verified.

[In] Integrate[((a*g + b*g*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(c*i + d*i*x)^2,x]

```
[Out] (g^2*(A*b^2*d*x + (B*(b*c - a*d)^2)/(c + d*x) + b*B*(b*c - a*d)*Log[a + b*x]
+ b*B*d*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)] - ((b*c - a*d)^2*(A + B*Log
g[(e*(a + b*x))/(c + d*x)]))/(c + d*x) - 2*b*B*(b*c - a*d)*Log[c + d*x] - 2
*b*(b*c - a*d)*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x] + b*B*(b*c
- a*d)*((2*Log[(d*(a + b*x))/(-b*c) + a*d]) - Log[c + d*x])*Log[c + d*x]
+ 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)))/(d^3*i^2)
```

fricas [F] time = 1.07, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{Ab^2g^2x^2 + 2Aabg^2x + Aa^2g^2 + (Bb^2g^2x^2 + 2Babg^2x + Ba^2g^2) \log\left(\frac{bex+ae}{dx+c}\right)}{d^2i^2x^2 + 2cdi^2x + c^2i^2}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^2,x, algor
ithm="fricas")
```

```
[Out] integral((A*b^2*g^2*x^2 + 2*A*a*b*g^2*x + A*a^2*g^2 + (B*b^2*g^2*x^2 + 2*B*
a*b*g^2*x + B*a^2*g^2)*log((b*e*x + a*e)/(d*x + c)))/(d^2*i^2*x^2 + 2*c*d*i
^2*x + c^2*i^2), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^2,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.14, size = 1382, normalized size = 5.32

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)/(d*i*x+c*i)^2,x)
```

```
[Out] -2*e/d^2*g^2/i^2*B*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(
d*x+c)*b*c*e)/(d*x+c)*a*c+2/d^2*g^2/i^2*A/(d*x+c)*a*b*c-1/d^3*g^2/i^2*B*ln(
b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*b^2*c^2+2/d^3*g^2/i^2*B*b^2*ln(b/d*e+(
a*d-b*c)/(d*x+c)/d*e)*ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*c-2/d
^2*g^2/i^2*B*b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*ln(-(-b*e+(b/d*e+(a*d-b*c)/(
d*x+c)/d*e)*d)/b/e)*a+e/d^2*g^2/i^2*A*b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)
```



```

*a-e/d^3*g^2/i^2*A*b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*c-2/d^2*g^2/i^2*B/
(d*x+c)*a*b*c+e/d^2*g^2/i^2*B*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)
)*a*d*e-1/(d*x+c)*b*c*e)*a+2/d^2*g^2/i^2*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/
(d*x+c)*a*b*c-e/d^3*g^2/i^2*B*b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)
)*a*d*e-1/(d*x+c)*b*c*e)*c-1/d*g^2/i^2*A/(d*x+c)*a^2+1/d*g^2/i^2*B/(d*x+c)*
a^2+1/d^3*g^2/i^2*B/(d*x+c)*b^2*c^2-1/d^3*g^2/i^2*A/(d*x+c)*b^2*c^2+1/d^3*g
^2/i^2*B*b^2*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c-1/d^2*g^2/i^2*B*ln(
b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*a-1/d^2*g^2/i^2*B*b*ln(-b*e+(b/d*e+(a*d-b*c)
)/(d*x+c)/d*e)*d)*a+1/d^3*g^2/i^2*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2*c-1/
d*g^2/i^2*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*a^2-2/d^2*g^2/i^2*B*b*d
ilog(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a+2/d^3*g^2/i^2*B*b^2*dil
og(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*c+2/d^3*g^2/i^2*A*b^2*ln(-b
*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c-2/d^2*g^2/i^2*A*b*ln(-b*e+(b/d*e+(a*d
-b*c)/(d*x+c)/d*e)*d)*a+e/d*g^2/i^2*B*b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/
(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)/(d*x+c)*a^2+e/d^3*g^2/i^2*B*b^3*ln(b/d*e+(a*
d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)/(d*x+c)*c^2-1/d^2*g^2
/i^2*A*b*a+1/d^3*g^2/i^2*A*b^2*c+1/d^2*g^2/i^2*B*b*a-1/d^3*g^2/i^2*B*b^2*c

```

maxima [B] time = 1.90, size = 886, normalized size = 3.41

$$-Ab^2 \left(\frac{c^2}{d^4 i^2 x + cd^3 i^2} - \frac{x}{d^2 i^2} + \frac{2c \log(dx+c)}{d^3 i^2} \right) g^2 + 2Aabg^2 \left(\frac{c}{d^3 i^2 x + cd^2 i^2} + \frac{\log(dx+c)}{d^2 i^2} \right) - Ba^2 g^2 \left(\frac{\log\left(\frac{bex}{dx+c} + \frac{1}{d}\right)}{d^2 i^2 x + cd} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^2,x, algorithm="maxima")

```

[Out] -A*b^2*(c^2/(d^4*i^2*x + c*d^3*i^2) - x/(d^2*i^2) + 2*c*log(d*x + c)/(d^3*i
^2))*g^2 + 2*A*a*b*g^2*(c/(d^3*i^2*x + c*d^2*i^2) + log(d*x + c)/(d^2*i^2))
- B*a^2*g^2*(log(b*e*x/(d*x + c) + a*e/(d*x + c))/(d^2*i^2*x + c*d*i^2) -
1/(d^2*i^2*x + c*d*i^2) - b*log(b*x + a)/((b*c*d - a*d^2)*i^2) + b*log(d*x
+ c)/((b*c*d - a*d^2)*i^2)) - A*a^2*g^2/(d^2*i^2*x + c*d*i^2) - (2*a^2*b*d^
2*g^2*log(e) + 2*(g^2*log(e) + g^2)*b^3*c^2 - (4*g^2*log(e) + 3*g^2)*a*b^2*
c*d)*B*log(d*x + c)/(b*c*d^3*i^2 - a*d^4*i^2) + ((b^3*c*d^2*g^2*log(e) - a*
b^2*d^3*g^2*log(e))*B*x^2 + (b^3*c^2*d*g^2*log(e) - a*b^2*c*d^2*g^2*log(e))
*B*x + ((b^3*c^2*d*g^2 - 2*a*b^2*c*d^2*g^2 + a^2*b*d^3*g^2)*B*x + (b^3*c^3*
g^2 - 2*a*b^2*c^2*d*g^2 + a^2*b*c*d^2*g^2)*B)*log(d*x + c)^2 - ((g^2*log(e)
- g^2)*b^3*c^3 - 3*(g^2*log(e) - g^2)*a*b^2*c^2*d + 2*(g^2*log(e) - g^2)*a
^2*b*c*d^2)*B + ((b^3*c*d^2*g^2 - a*b^2*d^3*g^2)*B*x^2 + (2*b^3*c^2*d*g^2 -
2*a*b^2*c*d^2*g^2 - a^2*b*d^3*g^2)*B*x + (2*a*b^2*c^2*d*g^2 - 3*a^2*b*c*d^
2*g^2)*B)*log(b*x + a) - ((b^3*c*d^2*g^2 - a*b^2*d^3*g^2)*B*x^2 + (b^3*c^2*
d*g^2 - a*b^2*c*d^2*g^2)*B*x - (b^3*c^3*g^2 - 3*a*b^2*c^2*d*g^2 + 2*a^2*b*c
d^2*g^2)*B)*log(d*x + c)/(b*c^2*d^3*i^2 - a*c*d^4*i^2 + (b*c*d^4*i^2 - a*

```

$d^{5i^2}x) - 2*(b^2*c*g^2 - a*b*d*g^2)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d)))*B/(d^3*i^2)$

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ag + bgx)^2 \left(A + B \ln \left(\frac{e^{(a+bx)}}{c+dx} \right) \right)}{(ci + dix)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((a*g + b*g*x)^2*(A + B*log((e*(a + b*x))/(c + d*x))))/(c*i + d*i*x)^2, x)

[Out] int(((a*g + b*g*x)^2*(A + B*log((e*(a + b*x))/(c + d*x))))/(c*i + d*i*x)^2, x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)**2*(A+B*ln(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)**2,x)

[Out] Timed out

$$3.41 \quad \int \frac{(ag+bgx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(ci+dix)^2} dx$$

Optimal. Leaf size=160

$$\frac{bg \log\left(\frac{bc-ad}{b(c+dx)}\right)\left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{d^2 i^2} - \frac{Ag(a+bx)}{di^2(c+dx)} - \frac{bBgLi_2\left(\frac{d(a+bx)}{b(c+dx)}\right)}{d^2 i^2} - \frac{Bg(a+bx) \log\left(\frac{e(a+bx)}{c+dx}\right)}{di^2(c+dx)} + \frac{Bg(a+bx)}{di^2(c+dx)}$$

[Out] $-A*g*(b*x+a)/d/i^2/(d*x+c)+B*g*(b*x+a)/d/i^2/(d*x+c)-B*g*(b*x+a)*\ln(e*(b*x+a)/(d*x+c))/d/i^2/(d*x+c)-b*g*\ln((-a*d+b*c)/b/(d*x+c))*(A+B*\ln(e*(b*x+a)/(d*x+c)))/d^2/i^2-b*B*g*polylog(2,d*(b*x+a)/b/(d*x+c))/d^2/i^2$

Rubi [A] time = 0.40, antiderivative size = 222, normalized size of antiderivative = 1.39, number of steps used = 15, number of rules used = 11, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}} = 0.290$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$-\frac{bBgPolyLog\left(2, \frac{b(c+dx)}{bc-ad}\right)}{d^2 i^2} + \frac{bg \log(c+dx)\left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{d^2 i^2} + \frac{g(bc-ad)\left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{d^2 i^2(c+dx)} - \frac{Bg(bc-ad)}{d^2 i^2(c+dx)}$$

Antiderivative was successfully verified.

[In] $\text{Int}[(a*g + b*g*x)*(A + B*Log[(e*(a + b*x))/(c + d*x]))/(c*i + d*i*x)^2, x]$

[Out] $-\left(\frac{B*(b*c - a*d)*g}{d^2*i^2*(c + d*x)}\right) - \frac{(b*B*g*Log[a + b*x])}{(d^2*i^2)} + \left(\frac{(b*c - a*d)*g*(A + B*Log[(e*(a + b*x))/(c + d*x)])}{d^2*i^2*(c + d*x)}\right) + \frac{(b*B*g*Log[c + d*x])}{(d^2*i^2)} - \frac{(b*B*g*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])}{(d^2*i^2)} + \frac{(b*g*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])}{(d^2*i^2)} + \frac{(b*B*g*Log[c + d*x]^2)}{(2*d^2*i^2)} - \frac{(b*B*g*PolyLog[2, (b*(c + d*x))/(b*c - a*d])}{(d^2*i^2)}$

Rule 12

$\text{Int}[(a_)*(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \ \&\amp; \ !\text{MatchQ}[u, (b_)*(v_)] /; \text{FreeQ}[b, x]$

Rule 44

$\text{Int}[(a_)+(b_)*(x_)]^{(m_)}*((c_)+(d_)*(x_)]^{(n_)}, x_Symbol] \rightarrow \text{Int}[\text{ExpandIntegrand}[(a + b*x)^m*(c + d*x)^n, x], x] /; \text{FreeQ}[\{a, b, c, d\}, x] \ \&\amp; \ \&\amp; \ \text{NeQ}[b*c - a*d, 0] \ \&\amp; \ \text{ILtQ}[m, 0] \ \&\amp; \ \text{IntegerQ}[n] \ \&\amp; \ !(\text{IGtQ}[n, 0] \ \&\amp; \ \text{LtQ}[m + n + 2, 0])$

Rule 2301

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*((f_) + (g_.)*(x_)^(q_.)), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2418

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]

Rule 2524

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]

Rule 2525

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_.))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(ag + bgx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{(41c + 41dx)^2} dx &= \int \left(\frac{(-bc + ad)g \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{1681d(c + dx)^2} + \frac{bg \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{1681d(c + dx)} \right) dx \\
&= \frac{(bg) \int \frac{A+B \log \left(\frac{e(a+bx)}{c+dx} \right)}{c+dx} dx}{1681d} - \frac{((bc - ad)g) \int \frac{A+B \log \left(\frac{e(a+bx)}{c+dx} \right)}{(c+dx)^2} dx}{1681d} \\
&= \frac{(bc - ad)g \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{1681d^2(c + dx)} + \frac{bg \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) \log(c + dx)}{1681d^2} \\
&= \frac{(bc - ad)g \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{1681d^2(c + dx)} + \frac{bg \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) \log(c + dx)}{1681d^2} \\
&= \frac{(bc - ad)g \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{1681d^2(c + dx)} + \frac{bg \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) \log(c + dx)}{1681d^2} \\
&= -\frac{B(bc - ad)g}{1681d^2(c + dx)} - \frac{bBg \log(a + bx)}{1681d^2} + \frac{(bc - ad)g \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{1681d^2(c + dx)} \\
&= -\frac{B(bc - ad)g}{1681d^2(c + dx)} - \frac{bBg \log(a + bx)}{1681d^2} + \frac{(bc - ad)g \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{1681d^2(c + dx)} \\
&= -\frac{B(bc - ad)g}{1681d^2(c + dx)} - \frac{bBg \log(a + bx)}{1681d^2} + \frac{(bc - ad)g \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{1681d^2(c + dx)} \\
&= -\frac{B(bc - ad)g}{1681d^2(c + dx)} - \frac{bBg \log(a + bx)}{1681d^2} + \frac{(bc - ad)g \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{1681d^2(c + dx)}
\end{aligned}$$

Mathematica [A] time = 0.16, size = 175, normalized size = 1.09

$$\frac{g \left(2b \log(c + dx) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right) + \frac{2(bc-ad) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{c+dx} - bB \left(2\text{Li}_2 \left(\frac{b(c+dx)}{bc-ad} \right) + \log(c + dx) \right) \left(2 \log \left(\frac{d(a+bx)}{ad-bc} \right) \right) \right)}{2d^2i^2}$$

Antiderivative was successfully verified.

[In] Integrate[((a*g + b*g*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(c*i + d*i*x)^2,x]

[Out] $(g*((2*(b*c - a*d)*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)])))/(c + d*x) + 2*b*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)])*\text{Log}[c + d*x] - 2*B*((b*c - a*d)/(c + d*x) + b*\text{Log}[a + b*x] - b*\text{Log}[c + d*x]) - b*B*((2*\text{Log}[(d*(a + b*x))/(-(b*c) + a*d)] - \text{Log}[c + d*x])*\text{Log}[c + d*x] + 2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])))/(2*d^2*i^2)$

fricas [F] time = 0.86, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{Abgx + Aag + (Bbgx + Bag) \log\left(\frac{bex+ae}{dx+c}\right)}{d^2i^2x^2 + 2cdi^2x + c^2i^2}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((b*g*x+a*g)*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^2,x, algorithm="fricas")`

[Out] `integral((A*b*g*x + A*a*g + (B*b*g*x + B*a*g)*log((b*e*x + a*e)/(d*x + c)))/(d^2*i^2*x^2 + 2*c*d*i^2*x + c^2*i^2), x)`

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((b*g*x+a*g)*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^2,x, algorithm="giac")`

[Out] Timed out

maple [B] time = 0.06, size = 978, normalized size = 6.11

$$\frac{B a^2 g \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{(ad-bc)(dx+c)i^2} + \frac{2Babcg \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{(ad-bc)(dx+c)d i^2} - \frac{Babg \ln\left(-\frac{-be+\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)d}{be}\right) \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{(ad-bc)d i^2} - \frac{B b^2 c^2 g \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{(ad-bc)(d$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((b*g*x+a*g)*(B*ln((b*x+a)/(d*x+c)*e)+A)/(d*i*x+c*i)^2,x)`

[Out] `-1/d*g/(a*d-b*c)/i^2*A*b*a+1/d^2*g/(a*d-b*c)/i^2*A*b^2*c-g/(a*d-b*c)/i^2*A/(d*x+c)*a^2+2/d*g/(a*d-b*c)/i^2*A/(d*x+c)*a*b*c-1/d^2*g/(a*d-b*c)/i^2*A/(d*x+c)*b^2*c^2-1/d*g/(a*d-b*c)/i^2*A*b*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a+1/d^2*g/(a*d-b*c)/i^2*A*b^2*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c-1/d*g/(a*d-b*c)/i^2*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*a+1/d^2*g/(a*d-b*c`

)/i^2*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2*c-g/(a*d-b*c)/i^2*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*a^2+2/d*g/(a*d-b*c)/i^2*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*a*b*c-1/d^2*g/(a*d-b*c)/i^2*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*b^2*c^2+1/d*g/(a*d-b*c)/i^2*B*b*a-1/d^2*g/(a*d-b*c)/i^2*B*b^2*c+g/(a*d-b*c)/i^2*B/(d*x+c)*a^2-2/d*g/(a*d-b*c)/i^2*B/(d*x+c)*a*b*c+1/d^2*g/(a*d-b*c)/i^2*B/(d*x+c)*b^2*c^2-1/d*g/(a*d-b*c)/i^2*B*b*dilog(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a+1/d^2*g/(a*d-b*c)/i^2*B*b^2*dilog(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*c-1/d*g/(a*d-b*c)/i^2*B*b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a+1/d^2*g/(a*d-b*c)/i^2*B*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*c

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2} Bbg \left(\frac{(dx+c) \log(dx+c)^2 + 2c \log(dx+c)}{d^3 i^2 x + cd^2 i^2} - 2 \int \frac{dx \log(bx+a) + dx \log(e) + c}{d^3 i^2 x^2 + 2cd^2 i^2 x + c^2 d i^2} dx \right) + Abg \left(\frac{c}{d^3 i^2 x + cd^2 i^2} + \right.$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^2,x, algorithm="maxima")

[Out] -1/2*B*b*g*(((d*x + c)*log(d*x + c)^2 + 2*c*log(d*x + c))/(d^3*i^2*x + c*d^2*i^2) - 2*integrate((d*x*log(b*x + a) + d*x*log(e) + c)/(d^3*i^2*x^2 + 2*c*d^2*i^2*x + c^2*d*i^2), x)) + A*b*g*(c/(d^3*i^2*x + c*d^2*i^2) + log(d*x + c)/(d^2*i^2)) - B*a*g*(log(b*e*x/(d*x + c) + a*e/(d*x + c))/(d^2*i^2*x + c*d*i^2) - 1/(d^2*i^2*x + c*d*i^2) - b*log(b*x + a)/((b*c*d - a*d^2)*i^2) + b*log(d*x + c)/((b*c*d - a*d^2)*i^2)) - A*a*g/(d^2*i^2*x + c*d*i^2)

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(ag + bgx) \left(A + B \ln \left(\frac{e(a+bx)}{c+dx} \right) \right)}{(ci + dix)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((a*g + b*g*x)*(A + B*log((e*(a + b*x))/(c + d*x))))/(c*i + d*i*x)^2,x)

[Out] int(((a*g + b*g*x)*(A + B*log((e*(a + b*x))/(c + d*x))))/(c*i + d*i*x)^2, x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*ln(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)**2,x)
```

```
[Out] Timed out
```

$$3.42 \quad \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{(ci+dx)^2} dx$$

Optimal. Leaf size=98

$$\frac{A(a+bx)}{i^2(c+dx)(bc-ad)} + \frac{B(a+bx) \log\left(\frac{e(a+bx)}{c+dx}\right)}{i^2(c+dx)(bc-ad)} - \frac{B(a+bx)}{i^2(c+dx)(bc-ad)}$$

[Out] $A*(b*x+a)/(-a*d+b*c)/i^2/(d*x+c) - B*(b*x+a)/(-a*d+b*c)/i^2/(d*x+c) + B*(b*x+a)*\ln(e*(b*x+a)/(d*x+c))/(-a*d+b*c)/i^2/(d*x+c)$

Rubi [A] time = 0.07, antiderivative size = 101, normalized size of antiderivative = 1.03, number of steps used = 4, number of rules used = 3, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.100$, Rules used = {2525, 12, 44}

$$-\frac{B \log\left(\frac{e(a+bx)}{c+dx}\right) + A}{di^2(c+dx)} + \frac{bB \log(a+bx)}{di^2(bc-ad)} - \frac{bB \log(c+dx)}{di^2(bc-ad)} + \frac{B}{di^2(c+dx)}$$

Antiderivative was successfully verified.

[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x]))/(c*i + d*i*x)^2,x]

[Out] $B/(d*i^2*(c + d*x)) + (b*B*Log[a + b*x])/(d*(b*c - a*d)*i^2) - (A + B*Log[(e*(a + b*x))/(c + d*x)])/(d*i^2*(c + d*x)) - (b*B*Log[c + d*x])/(d*(b*c - a*d)*i^2)$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 44

Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])

Rule 2525

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d}

, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]

Rubi steps

$$\begin{aligned}
 \int \frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{(42c + 42dx)^2} dx &= -\frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{1764d(c + dx)} + \frac{B \int \frac{bc-ad}{42(a+bx)(c+dx)^2} dx}{42d} \\
 &= -\frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{1764d(c + dx)} + \frac{(B(bc - ad)) \int \frac{1}{(a+bx)(c+dx)^2} dx}{1764d} \\
 &= -\frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{1764d(c + dx)} + \frac{(B(bc - ad)) \int \left(\frac{b^2}{(bc-ad)^2(a+bx)} - \frac{d}{(bc-ad)(c+dx)^2} - \frac{bd}{(bc-ad)^2(c+dx)}\right) dx}{1764d} \\
 &= \frac{B}{1764d(c + dx)} + \frac{bB \log(a + bx)}{1764d(bc - ad)} - \frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{1764d(c + dx)} - \frac{bB \log(c + dx)}{1764d(bc - ad)}
 \end{aligned}$$

Mathematica [A] time = 0.05, size = 104, normalized size = 1.06

$$\frac{-aAd + B(bc - ad) \log\left(\frac{e(a+bx)}{c+dx}\right) - bB(c + dx) \log(a + bx) + aBd + Abc + bBc \log(c + dx) + bBdx \log(c + dx) - b^2d \log(c + dx)}{d^2(c + dx)(ad - bc)}$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x]))/(c*i + d*i*x)^2,x]

[Out] (A*b*c - b*B*c - a*A*d + a*B*d - b*B*(c + d*x)*Log[a + b*x] + B*(b*c - a*d)*Log[(e*(a + b*x))/(c + d*x)] + b*B*c*Log[c + d*x] + b*B*d*x*Log[c + d*x])/(d*(-(b*c) + a*d)*i^2*(c + d*x))

fricas [A] time = 0.91, size = 88, normalized size = 0.90

$$-\frac{(A - B)bc - (A - B)ad - (Bbdx + Bad) \log\left(\frac{bex+ae}{dx+c}\right)}{(bcd^2 - ad^3)i^2x + (bc^2d - acd^2)i^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^2,x, algorithm="fricas")

[Out] -((A - B)*b*c - (A - B)*a*d - (B*b*d*x + B*a*d)*log((b*e*x + a*e)/(d*x + c)))/((b*c*d^2 - a*d^3)*i^2*x + (b*c^2*d - a*c*d^2)*i^2)

giac [A] time = 0.74, size = 120, normalized size = 1.22

$$-\left(\frac{(bxe + ae)B \log\left(\frac{bxe+ae}{dx+c}\right)}{dx+c} + \frac{(bxe + ae)(A - B)}{dx+c}\right) \left(\frac{bc}{(bce - ade)(bc - ad)} - \frac{ad}{(bce - ade)(bc - ad)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^2,x, algorithm="giac")

[Out] -((b*x*e + a*e)*B*log((b*x*e + a*e)/(d*x + c))/(d*x + c) + (b*x*e + a*e)*(A - B)/(d*x + c))*(b*c/((b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))

maple [B] time = 0.05, size = 515, normalized size = 5.26

$$-\frac{B a^2 d \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{(ad-bc)^2 (dx+c) i^2} + \frac{2Babc \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{(ad-bc)^2 (dx+c) i^2} - \frac{B b^2 c^2 \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{(ad-bc)^2 (dx+c) d i^2} - \frac{A a^2 d}{(ad-bc)^2 (dx+c) i^2} + \frac{2Aabc}{(ad-bc)^2 (dx+c) i^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)/(d*i*x+c*i)^2,x)

[Out] -1/(a*d-b*c)^2/i^2*A*b*a+1/d/(a*d-b*c)^2/i^2*A*b^2*c-d/(a*d-b*c)^2/i^2*A/(d*x+c)*a^2+2/(a*d-b*c)^2/i^2*A/(d*x+c)*a*b*c-1/d/(a*d-b*c)^2/i^2*A/(d*x+c)*b^2*c^2-1/(a*d-b*c)^2/i^2*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*a+1/d/(a*d-b*c)^2/i^2*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2*c-d/(a*d-b*c)^2/i^2*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*a^2+2/(a*d-b*c)^2/i^2*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*a*b*c-1/d/(a*d-b*c)^2/i^2*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*b^2*c^2+d/(a*d-b*c)^2/i^2*B/(d*x+c)*a^2-2/(a*d-b*c)^2/i^2*B/(d*x+c)*a*b*c+1/d/(a*d-b*c)^2/i^2*B/(d*x+c)*b^2*c^2+1/(a*d-b*c)^2/i^2*B*b*a-1/d/(a*d-b*c)^2/i^2*B*b^2*c

maxima [A] time = 1.10, size = 134, normalized size = 1.37

$$-B \left(\frac{\log\left(\frac{bex}{dx+c} + \frac{ae}{dx+c}\right)}{d^2 i^2 x + c d i^2} - \frac{1}{d^2 i^2 x + c d i^2} - \frac{b \log(bx + a)}{(bcd - ad^2) i^2} + \frac{b \log(dx + c)}{(bcd - ad^2) i^2} \right) - \frac{A}{d^2 i^2 x + c d i^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^2,x, algorithm="maxima")

[Out] -B*(log(b*e*x/(d*x + c) + a*e/(d*x + c))/(d^2*i^2*x + c*d*i^2) - 1/(d^2*i^2*x + c*d*i^2) - b*log(b*x + a)/((b*c*d - a*d^2)*i^2) + b*log(d*x + c)/((b*c*d - a*d^2)*i^2)) - A/(d^2*i^2*x + c*d*i^2)

mupad [B] time = 4.89, size = 106, normalized size = 1.08

$$-\frac{A - B}{x d^2 i^2 + c d i^2} - \frac{B \ln\left(\frac{e^{(a+bx)}}{c+dx}\right)}{d^2 i^2 \left(x + \frac{c}{d}\right)} + \frac{B b \operatorname{atan}\left(\frac{bc2i+bdx2i}{ad-bc} + 1i\right) 2i}{d i^2 (ad - bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((A + B*log((e*(a + b*x))/(c + d*x)))/(c*i + d*i*x)^2,x)

[Out] (B*b*atan((b*c*2i + b*d*x*2i)/(a*d - b*c) + 1i)*2i)/(d*i^2*(a*d - b*c)) - (B*log((e*(a + b*x))/(c + d*x)))/(d^2*i^2*(x + c/d)) - (A - B)/(d^2*i^2*x + c*d*i^2)

sympy [B] time = 1.52, size = 231, normalized size = 2.36

$$\frac{B b \log\left(x + \frac{-\frac{B a^2 b d^2}{a d - b c} + \frac{2 B a b^2 c d}{a d - b c} + B a b d - \frac{B b^3 c^2}{a d - b c} + B b^2 c}{2 B b^2 d}\right)}{d i^2 (a d - b c)} - \frac{B b \log\left(x + \frac{\frac{B a^2 b d^2}{a d - b c} - \frac{2 B a b^2 c d}{a d - b c} + B a b d + \frac{B b^3 c^2}{a d - b c} + B b^2 c}{2 B b^2 d}\right)}{d i^2 (a d - b c)} - \frac{B \log\left(\frac{e^{(a+bx)}}{c+dx}\right)}{c d i^2 + d^2 i^2 x} + \frac{-A + B}{c d i^2 + d^2 i^2 x}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)**2,x)

[Out] B*b*log(x + (-B*a**2*b*d**2/(a*d - b*c) + 2*B*a*b**2*c*d/(a*d - b*c) + B*a*b*d - B*b**3*c**2/(a*d - b*c) + B*b**2*c)/(2*B*b**2*d))/(d*i**2*(a*d - b*c)) - B*b*log(x + (B*a**2*b*d**2/(a*d - b*c) - 2*B*a*b**2*c*d/(a*d - b*c) + B*a*b*d + B*b**3*c**2/(a*d - b*c) + B*b**2*c)/(2*B*b**2*d))/(d*i**2*(a*d - b*c)) - B*log(e*(a + b*x)/(c + d*x))/(c*d*i**2 + d**2*i**2*x) + (-A + B)/(c*d*i**2 + d**2*i**2*x)

$$3.43 \quad \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{(ag+bgx)(ci+dix)^2} dx$$

Optimal. Leaf size=156

$$\frac{b \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)^2}{2Bgi^2(bc-ad)^2} - \frac{Ad(a+bx)}{gi^2(c+dx)(bc-ad)^2} - \frac{Bd(a+bx) \log\left(\frac{e(a+bx)}{c+dx}\right)}{gi^2(c+dx)(bc-ad)^2} + \frac{Bd(a+bx)}{gi^2(c+dx)(bc-ad)^2}$$

[Out] $-A*d*(b*x+a)/(-a*d+b*c)^2/g/i^2/(d*x+c)+B*d*(b*x+a)/(-a*d+b*c)^2/g/i^2/(d*x+c)-B*d*(b*x+a)*\ln(e*(b*x+a)/(d*x+c))/(-a*d+b*c)^2/g/i^2/(d*x+c)+1/2*b*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/B/(-a*d+b*c)^2/g/i^2$

Rubi [C] time = 0.71, antiderivative size = 432, normalized size of antiderivative = 2.77, number of steps used = 24, number of rules used = 11, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.275$, Rules used = {2528, 2524, 12, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 44}

$$\frac{bBPolyLog\left(2, -\frac{d(a+bx)}{bc-ad}\right)}{gi^2(bc-ad)^2} + \frac{bBPolyLog\left(2, \frac{b(c+dx)}{bc-ad}\right)}{gi^2(bc-ad)^2} + \frac{b \log(a+bx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{gi^2(bc-ad)^2} + \frac{B \log\left(\frac{e(a+bx)}{c+dx}\right) + A}{gi^2(c+dx)(bc-ad)}$$

Antiderivative was successfully verified.

[In] $\text{Int}[(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]))/((a*g + b*g*x)*(c*i + d*i*x)^2), x]$

[Out] $-(B/((b*c - a*d)*g*i^2*(c + d*x))) - (b*B*\text{Log}[a + b*x])/((b*c - a*d)^2*g*i^2) - (b*B*\text{Log}[a + b*x]^2)/(2*(b*c - a*d)^2*g*i^2) + (A + B*\text{Log}[(e*(a + b*x))/(c + d*x]))/((b*c - a*d)*g*i^2*(c + d*x)) + (b*\text{Log}[a + b*x]*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x])))/((b*c - a*d)^2*g*i^2) + (b*B*\text{Log}[c + d*x])/((b*c - a*d)^2*g*i^2) + (b*B*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c + d*x])/((b*c - a*d)^2*g*i^2) - (b*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]))*\text{Log}[c + d*x])/((b*c - a*d)^2*g*i^2) - (b*B*\text{Log}[c + d*x]^2)/(2*(b*c - a*d)^2*g*i^2) + (b*B*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^2*g*i^2) + (b*B*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))]/((b*c - a*d)^2*g*i^2) + (b*B*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^2*g*i^2)$

Rule 12

$\text{Int}[(a_*)(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \ \&\amp; \ !\text{MatchQ}[u, (b_*)(v_)] /; \text{FreeQ}[b, x]$

Rule 44

$\text{Int}(((a_*) + (b_*)(x_))^{(m_*)}*((c_*) + (d_*)(x_))^{(n_*)}, x_Symbol] \rightarrow \text{Int}[\text{ExpandIntegrand}[(a + b*x)^m*(c + d*x)^n, x], x] /; \text{FreeQ}[\{a, b, c, d\}, x] \ \&$

& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])

Rule 2301

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.)]*(b_.))^(p_.)*((f_) + (g_.)*(x_)^(q_.)), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.)]*(b_.))/((f_.) + (g_.)*(x_))), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2418

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]

Rule 2524

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e

```
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.),
x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)),
x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{(43c + 43dx)^2(ag + bgx)} dx &= \int \left(\frac{b^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{1849(bc - ad)^2 g(a + bx)} - \frac{d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{1849(bc - ad)g(c + dx)^2} - \frac{bd \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{1849(bc - ad)^2 g(c + dx)} \right) dx \\
&= \frac{b^2 \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{a+bx} dx}{1849(bc - ad)^2 g} - \frac{(bd) \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{c+dx} dx}{1849(bc - ad)^2 g} - \frac{d \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{(c+dx)^2} dx}{1849(bc - ad)g} \\
&= \frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{1849(bc - ad)g(c + dx)} + \frac{b \log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{1849(bc - ad)^2 g} - \frac{b \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{1849(bc - ad)g} \\
&= \frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{1849(bc - ad)g(c + dx)} + \frac{b \log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{1849(bc - ad)^2 g} - \frac{b \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{1849(bc - ad)g} \\
&= \frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{1849(bc - ad)g(c + dx)} + \frac{b \log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{1849(bc - ad)^2 g} - \frac{b \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{1849(bc - ad)g} \\
&= -\frac{B}{1849(bc - ad)g(c + dx)} - \frac{bB \log(a + bx)}{1849(bc - ad)^2 g} + \frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{1849(bc - ad)g(c + dx)} + \frac{b \log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{1849(bc - ad)^2 g} \\
&= -\frac{B}{1849(bc - ad)g(c + dx)} - \frac{bB \log(a + bx)}{1849(bc - ad)^2 g} + \frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{1849(bc - ad)g(c + dx)} + \frac{b \log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{1849(bc - ad)^2 g} \\
&= -\frac{B}{1849(bc - ad)g(c + dx)} - \frac{bB \log(a + bx)}{1849(bc - ad)^2 g} - \frac{bB \log^2(a + bx)}{3698(bc - ad)^2 g} + \frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{1849(bc - ad)g(c + dx)} + \frac{b \log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{1849(bc - ad)^2 g} \\
&= -\frac{B}{1849(bc - ad)g(c + dx)} - \frac{bB \log(a + bx)}{1849(bc - ad)^2 g} - \frac{bB \log^2(a + bx)}{3698(bc - ad)^2 g} + \frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{1849(bc - ad)g(c + dx)} + \frac{b \log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{1849(bc - ad)^2 g}
\end{aligned}$$

Mathematica [C] time = 0.28, size = 292, normalized size = 1.87

$$\frac{2(bc - ad) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right) + 2b(c + dx) \log(a + bx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right) - 2b(c + dx) \log(c + dx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{(43c + 43dx)^2 (ag + bgx)}$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x])]/((a*g + b*g*x)*(c*i + d*i*x)^2), x]

[Out] $(2*(b*c - a*d)*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]) + 2*b*(c + d*x)*\text{Log}[a + b*x]*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]) - 2*b*(c + d*x)*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)])*\text{Log}[c + d*x] - 2*B*(b*c - a*d + b*(c + d*x)*\text{Log}[a + b*x] - b*(c + d*x)*\text{Log}[c + d*x]) - b*B*(c + d*x)*(\text{Log}[a + b*x]*(\text{Log}[a + b*x] - 2*\text{Log}[(b*(c + d*x))/(b*c - a*d)]) - 2*\text{PolyLog}[2, (d*(a + b*x))/(-b*c) + a*d]) + b*B*(c + d*x)*((2*\text{Log}[(d*(a + b*x))/(-b*c) + a*d]) - \text{Log}[c + d*x])*\text{Log}[c + d*x] + 2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/(2*(b*c - a*d)^2 *g*i^2*(c + d*x))$

fricas [A] time = 0.89, size = 151, normalized size = 0.97

$$\frac{2(A - B)bc - 2(A - B)ad + (Bbdx + Bbc) \log\left(\frac{bex+ae}{dx+c}\right)^2 + 2((A - B)bdx + Abc - Bad) \log\left(\frac{bex+ae}{dx+c}\right)}{2\left((b^2c^2d - 2abcd^2 + a^2d^3)gi^2x + (b^2c^3 - 2abc^2d + a^2cd^2)gi^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)/(d*i*x+c*i)^2,x, algorithm="fricas")

[Out] $1/2*(2*(A - B)*b*c - 2*(A - B)*a*d + (B*b*d*x + B*b*c)*\log((b*e*x + a*e)/(d*x + c))^2 + 2*((A - B)*b*d*x + A*b*c - B*a*d)*\log((b*e*x + a*e)/(d*x + c)))/(b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*g*i^2*x + (b^2*c^3 - 2*a*b*c^2*d + a^2*c*d^2)*g*i^2)$

giac [A] time = 1.00, size = 204, normalized size = 1.31

$$\frac{\left(Bbe \log\left(\frac{bxe+ae}{dx+c}\right)^2 + 2Abe \log\left(\frac{bxe+ae}{dx+c}\right) - \frac{2(bxe+ae)Bd \log\left(\frac{bxe+ae}{dx+c}\right)}{dx+c} - \frac{2(bxe+ae)Ad}{dx+c} + \frac{2(bxe+ae)Bd}{dx+c}\right)\left(\frac{bc}{(bce-ade)(bc-ad)} - \frac{a}{(bce-ade)}\right)}{2(bcg - adg)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)/(d*i*x+c*i)^2,x, algorithm="giac")

[Out] $-1/2*(B*b*e*\log((b*x*e + a*e)/(d*x + c))^2 + 2*A*b*e*\log((b*x*e + a*e)/(d*x + c)) - 2*(b*x*e + a*e)*B*d*\log((b*x*e + a*e)/(d*x + c))/(d*x + c) - 2*(b*x*e + a*e)*A*d/(d*x + c) + 2*(b*x*e + a*e)*B*d/(d*x + c))*(b*c/((b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))/(b*c*g - a*d*g)$

maple [B] time = 0.05, size = 759, normalized size = 4.87

$$\frac{B a^2 d^2 \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{(ad-bc)^3 (dx+c) g i^2} + \frac{2Babcd \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{(ad-bc)^3 (dx+c) g i^2} + \frac{Babd \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)^2}{2(ad-bc)^3 g i^2} - \frac{B b^2 c^2 \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{(ad-bc)^3 (dx+c) g i^2} - \frac{B b^2 c \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{2(ad-bc)^3 (dx+c) g i^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)/(d*i*x+c*i)^2,x)`

[Out]
$$-d/i^2/(a*d-b*c)^3/g*A*b*a+1/i^2/(a*d-b*c)^3/g*A*b^2*c-d^2/i^2/(a*d-b*c)^3/g*A/(d*x+c)*a^2+2*d/i^2/(a*d-b*c)^3/g*A/(d*x+c)*a*b*c-1/i^2/(a*d-b*c)^3/g*A/(d*x+c)*b^2*c^2+d/i^2/(a*d-b*c)^3/g*A*b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-1/i^2/(a*d-b*c)^3/g*A*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-d/i^2/(a*d-b*c)^3/g*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*a+1/i^2/(a*d-b*c)^3/g*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2*c-d^2/i^2/(a*d-b*c)^3/g*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*a^2+2*d/i^2/(a*d-b*c)^3/g*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*a*b*c-1/i^2/(a*d-b*c)^3/g*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*b^2*c^2+d^2/i^2/(a*d-b*c)^3/g*B/(d*x+c)*a^2-2*d/i^2/(a*d-b*c)^3/g*B/(d*x+c)*a*b*c+1/i^2/(a*d-b*c)^3/g*B/(d*x+c)*b^2*c^2+d/i^2/(a*d-b*c)^3/g*B*b*a-1/i^2/(a*d-b*c)^3/g*B*b^2*c+1/2*d/i^2/(a*d-b*c)^3/g*B*b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a-1/2/i^2/(a*d-b*c)^3/g*B*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c$$

maxima [B] time = 1.32, size = 421, normalized size = 2.70

$$B \left(\frac{1}{(bcd - ad^2)gi^2x + (bc^2 - acd)gi^2} + \frac{b \log(bx + a)}{(b^2c^2 - 2abcd + a^2d^2)gi^2} - \frac{b \log(dx + c)}{(b^2c^2 - 2abcd + a^2d^2)gi^2} \right) \log \left(\frac{bex}{dx + c} + \frac{a}{dx} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)/(d*i*x+c*i)^2,x, algorithm="maxima")`

[Out]
$$B*(1/((b*c*d - a*d^2)*g*i^2*x + (b*c^2 - a*c*d)*g*i^2) + b*\log(b*x + a)/((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*g*i^2) - b*\log(d*x + c)/((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*g*i^2))*\log(b*e*x/(d*x + c) + a*e/(d*x + c)) + A*(1/((b*c*d - a*d^2)*g*i^2*x + (b*c^2 - a*c*d)*g*i^2) + b*\log(b*x + a)/((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*g*i^2) - b*\log(d*x + c)/((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*g*i^2)) - 1/2*((b*d*x + b*c)*\log(b*x + a)^2 + (b*d*x + b*c)*\log(d*x + c)^2 + 2*b*c - 2*a*d + 2*(b*d*x + b*c)*\log(b*x + a) - 2*(b*d*x + b*c + (b*d*x + b*c)*\log(b*x + a))*\log(d*x + c))*B/(b^2*c^3*g*i^2 - 2*a*b*c^2*d*g*i^2 + a^2*c*d^2*g*i^2 + (b^2*c^2*d*g*i^2 - 2*a*b*c*d^2*g*i^2 + a^2*d^3*g*i^2)*x)$$

mupad [B] time = 5.81, size = 247, normalized size = 1.58

$$\frac{B b \ln \left(\frac{e^{(a+bx)}}{c+dx} \right)^2}{2 g i^2 (a^2 d^2 - 2 a b c d + b^2 c^2)} - \frac{A - B}{(a d - b c) (c g i^2 + d g i^2 x)} - \frac{B \ln \left(\frac{e^{(a+bx)}}{c+dx} \right) (a d - b c)}{b d g i^2 \left(\frac{x}{b} + \frac{c}{b d} \right) (a^2 d^2 - 2 a b c d + b^2 c^2)} - \frac{b \operatorname{atan} \left(\frac{e^{(a+bx)}}{c+dx} \right)}{b d g i^2 \left(\frac{x}{b} + \frac{c}{b d} \right) (a^2 d^2 - 2 a b c d + b^2 c^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((A + B*log((e*(a + b*x))/(c + d*x)))/((a*g + b*g*x)*(c*i + d*i*x)^2),x)

[Out] (B*b*log((e*(a + b*x))/(c + d*x))^2)/(2*g*i^2*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) - (b*atan(((2*b*d*x + (a^2*d^2*g*i^2 - b^2*c^2*g*i^2)/(g*i^2*(a*d - b*c))) * 1i)/(a*d - b*c))*(A - B)*2i)/(g*i^2*(a*d - b*c)^2) - (A - B)/((a*d - b*c)*(c*g*i^2 + d*g*i^2*x)) - (B*log((e*(a + b*x))/(c + d*x))*(a*d - b*c))/(b*d*g*i^2*(x/b + c/(b*d))*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))

sympy [B] time = 2.50, size = 386, normalized size = 2.47

$$\frac{Bb \log\left(\frac{e(a+bx)}{c+dx}\right)^2}{2a^2d^2gi^2 - 4abcdgi^2 + 2b^2c^2gi^2} - \frac{B \log\left(\frac{e(a+bx)}{c+dx}\right)}{acdgi^2 + ad^2gi^2x - bc^2gi^2 - bcdgi^2x} + (A - B) \left(- \frac{b \log\left(x + \frac{-\frac{a^3bd^3}{(ad-bc)^2} + \frac{3a^2b^2cd^2}{(ad-bc)^2} - \frac{3ab^3c}{(ad-bc)^2}}{2b^2d}\right)}{gi^2(ad-bc)^2} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)/(d*i*x+c*i)**2,x)

[Out] B*b*log(e*(a + b*x)/(c + d*x))**2/(2*a**2*d**2*g*i**2 - 4*a*b*c*d*g*i**2 + 2*b**2*c**2*g*i**2) - B*log(e*(a + b*x)/(c + d*x))/(a*c*d*g*i**2 + a*d**2*g*i**2*x - b*c**2*g*i**2 - b*c*d*g*i**2*x) + (A - B)*(-b*log(x + (-a**3*b*d**3/(a*d - b*c)**2 + 3*a**2*b**2*c*d**2/(a*d - b*c)**2 - 3*a*b**3*c**2*d/(a*d - b*c)**2 + a*b*d + b**4*c**3/(a*d - b*c)**2 + b**2*c)/(2*b**2*d))/(g*i**2*(a*d - b*c)**2) + b*log(x + (a**3*b*d**3/(a*d - b*c)**2 - 3*a**2*b**2*c*d**2/(a*d - b*c)**2 + 3*a*b**3*c**2*d/(a*d - b*c)**2 + a*b*d - b**4*c**3/(a*d - b*c)**2 + b**2*c)/(2*b**2*d))/(g*i**2*(a*d - b*c)**2) - 1/(a*c*d*g*i**2 - b*c**2*g*i**2 + x*(a*d**2*g*i**2 - b*c*d*g*i**2))

$$3.44 \quad \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{(ag+bgx)^2(ci+dix)^2} dx$$

Optimal. Leaf size=261

$$\frac{b^2(c+dx)\left(B \log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{g^2i^2(a+bx)(bc-ad)^3} + \frac{d^2(a+bx)\left(B \log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{g^2i^2(c+dx)(bc-ad)^3} - \frac{2bd \log\left(\frac{a+bx}{c+dx}\right)\left(B \log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{g^2i^2(bc-ad)^3} - \frac{b}{g^2i^2}$$

[Out] $-B*d^2*(b*x+a)/(-a*d+b*c)^3/g^2/i^2/(d*x+c)-b^2*B*(d*x+c)/(-a*d+b*c)^3/g^2/i^2/(b*x+a)+b*B*d*\ln((b*x+a)/(d*x+c))^2/(-a*d+b*c)^3/g^2/i^2+d^2*(b*x+a)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^3/g^2/i^2/(d*x+c)-b^2*(d*x+c)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^3/g^2/i^2/(b*x+a)-2*b*d*\ln((b*x+a)/(d*x+c))*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^3/g^2/i^2$

Rubi [C] time = 0.87, antiderivative size = 462, normalized size of antiderivative = 1.77, number of steps used = 28, number of rules used = 11, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.275$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{2bBd \text{PolyLog}\left(2, -\frac{d(a+bx)}{bc-ad}\right)}{g^2i^2(bc-ad)^3} - \frac{2bBd \text{PolyLog}\left(2, \frac{b(c+dx)}{bc-ad}\right)}{g^2i^2(bc-ad)^3} - \frac{2bd \log(a+bx)\left(B \log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{g^2i^2(bc-ad)^3} - \frac{b\left(B \log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{g^2i^2(a+bx)(bc-ad)^3}$$

Antiderivative was successfully verified.

[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x]))/((a*g + b*g*x)^2*(c*i + d*i*x)^2), x]

[Out] $-((b*B)/((b*c - a*d)^2*g^2*i^2*(a + b*x))) + (B*d)/((b*c - a*d)^2*g^2*i^2*(c + d*x)) + (b*B*d*\text{Log}[a + b*x]^2)/((b*c - a*d)^3*g^2*i^2) - (b*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]]))/((b*c - a*d)^2*g^2*i^2*(a + b*x)) - (d*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]]))/((b*c - a*d)^2*g^2*i^2*(c + d*x)) - (2*b*d*\text{Log}[a + b*x]*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]]))/((b*c - a*d)^3*g^2*i^2) - (2*b*B*d*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c + d*x])/((b*c - a*d)^3*g^2*i^2) + (2*b*d*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]])*\text{Log}[c + d*x])/((b*c - a*d)^3*g^2*i^2) + (b*B*d*\text{Log}[c + d*x]^2)/((b*c - a*d)^3*g^2*i^2) - (2*b*B*d*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g^2*i^2) - (2*b*B*d*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))]/((b*c - a*d)^3*g^2*i^2) - (2*b*B*d*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g^2*i^2)$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_) /; FreeQ[b, x]]

Rule 44

```
Int[((a_) + (b_)*(x_))^(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_))/(x_), x_Symbol] := Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)])*(b_)^(p_)*((f_) + (g_
)*(x_))^(q_), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_)*((d_) + (e_)*(x_))^(n_)])/(x_), x_Symbol] := -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))])*(b_))/((f_) + (g_)*(x_)), x_
Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)])*(b_))/((f_) + (g_)*(x_
)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x
), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)])*(b_)^(p_)*(RFx_), x_Sy
mbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol]
:> Simp[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol]
:> With[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{(44c + 44dx)^2(ag + bgx)^2} dx &= \int \left(\frac{b^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{1936(bc - ad)^2 g^2 (a + bx)^2} - \frac{b^2 d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{968(bc - ad)^3 g^2 (a + bx)} + \frac{d^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{1936(bc - ad)^2 g^2} \right) dx \\
&= -\frac{(b^2 d) \int \frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{a+bx} dx}{968(bc - ad)^3 g^2} + \frac{(bd^2) \int \frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{c+dx} dx}{968(bc - ad)^3 g^2} + \frac{b^2 \int \frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{(a+bx)^2} dx}{1936(bc - ad)^2 g^2} \\
&= -\frac{b \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{1936(bc - ad)^2 g^2 (a + bx)} - \frac{d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{1936(bc - ad)^2 g^2 (c + dx)} - \frac{bd \log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{968(bc - ad)^3 g^2} \\
&= -\frac{b \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{1936(bc - ad)^2 g^2 (a + bx)} - \frac{d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{1936(bc - ad)^2 g^2 (c + dx)} - \frac{bd \log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{968(bc - ad)^3 g^2} \\
&= -\frac{b \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{1936(bc - ad)^2 g^2 (a + bx)} - \frac{d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{1936(bc - ad)^2 g^2 (c + dx)} - \frac{bd \log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{968(bc - ad)^3 g^2} \\
&= -\frac{bB}{1936(bc - ad)^2 g^2 (a + bx)} + \frac{Bd}{1936(bc - ad)^2 g^2 (c + dx)} - \frac{b \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{1936(bc - ad)^2 g^2 (a + bx)} \\
&= -\frac{bB}{1936(bc - ad)^2 g^2 (a + bx)} + \frac{Bd}{1936(bc - ad)^2 g^2 (c + dx)} - \frac{b \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{1936(bc - ad)^2 g^2 (a + bx)} \\
&= -\frac{bB}{1936(bc - ad)^2 g^2 (a + bx)} + \frac{Bd}{1936(bc - ad)^2 g^2 (c + dx)} + \frac{bBd \log^2(a + bx)}{1936(bc - ad)^3 g^2} \\
&= -\frac{bB}{1936(bc - ad)^2 g^2 (a + bx)} + \frac{Bd}{1936(bc - ad)^2 g^2 (c + dx)} + \frac{bBd \log^2(a + bx)}{1936(bc - ad)^3 g^2}
\end{aligned}$$

Mathematica [C] time = 0.43, size = 324, normalized size = 1.24

$$\frac{-2bd \log(a + bx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right) - \frac{b(bc-ad) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{a+bx} + 2bd \log(c + dx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right) + \frac{d(ad-bc)}{1936(bc-ad)^2 g^2}}{1936(bc-ad)^2 g^2}$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x]))/((a*g + b*g*x)^2*(c*i + d*i*x)^2), x]


```
[Out] (-((b^2*B*c)/(a + b*x)) + (a*b*B*d)/(a + b*x) + (b*B*c*d)/(c + d*x) - (a*B*d^2)/(c + d*x) - (b*(b*c - a*d)*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(a + b*x) + (d*(-(b*c) + a*d)*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(c + d*x) - 2*b*d*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x]]) + 2*b*d*(A + B*Log[(e*(a + b*x))/(c + d*x]])*Log[c + d*x] + b*B*d*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d]])) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) - b*B*d*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d]]))/((b*c - a*d)^3*g^2*i^2)
```

fricas [A] time = 0.91, size = 334, normalized size = 1.28

$$\frac{(A + B)b^2c^2 - 2Babcd - (A - B)a^2d^2 + (Bb^2d^2x^2 + Babcd + (Bb^2cd + Babd^2)x) \log\left(\frac{bex+ae}{dx+c}\right)^2 + 2(Ab^2cd - A)}{(b^4c^3d - 3ab^3c^2d^2 + 3a^2b^2cd^3 - a^3bd^4)g^2i^2x^2 + (b^4c^4 - 2ab^3c^3d + 2a^3bcd^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^2/(d*i*x+c*i)^2,x, algorithm="fricas")
```

```
[Out] -((A + B)*b^2*c^2 - 2*B*a*b*c*d - (A - B)*a^2*d^2 + (B*b^2*d^2*x^2 + B*a*b*c*d + (B*b^2*c*d + B*a*b*d^2)*x)*log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*b^2*c*d - A*a*b*d^2)*x + (2*A*b^2*d^2*x^2 + B*b^2*c^2 + 2*A*a*b*c*d - B*a^2*d^2 + 2*((A + B)*b^2*c*d + (A - B)*a*b*d^2)*x)*log((b*e*x + a*e)/(d*x + c)))/((b^4*c^3*d - 3*a*b^3*c^2*d^2 + 3*a^2*b^2*c*d^3 - a^3*b*d^4)*g^2*i^2*x^2 + (b^4*c^4 - 2*a*b^3*c^3*d + 2*a^3*b*c*d^3 - a^4*d^4)*g^2*i^2*x + (a*b^3*c^4 - 3*a^2*b^2*c^3*d + 3*a^3*b*c^2*d^2 - a^4*c*d^3)*g^2*i^2)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^2/(d*i*x+c*i)^2,x, algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.05, size = 1187, normalized size = 4.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^2/(d*i*x+c*i)^2,x)
```

```
[Out] -d/i^2/(a*d-b*c)^4/g^2*B*b^2*c+d*e/i^2/(a*d-b*c)^4/g^2*A*b^2/(1/(d*x+c)*a*e
-1/(d*x+c)*b*c/d*e+b/d*e)*a+d^2/i^2/(a*d-b*c)^4/g^2*B*b*ln(b/d*e+(a*d-b*c)/
(d*x+c)/d*e)^2*a-2*d^2/i^2/(a*d-b*c)^4/g^2*B/(d*x+c)*a*b*c+2*d^2/i^2/(a*d-b
*c)^4/g^2*A/(d*x+c)*a*b*c-e/i^2/(a*d-b*c)^4/g^2*B*b^3/(1/(d*x+c)*a*e-1/(d*x
+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-d/i^2/(a*d-b*c)^4/g^2*
B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*b^2*c^2+d*e/i^2/(a*d-b*c)^4/g^2*B
*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a-d^2/i^2/(a*d-b*c)^4/g^2*B*ln
(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*a-d/i^2/(a*d-b*c)^4/g^2*B*b^2*ln(b/d*e+(a*d
-b*c)/(d*x+c)/d*e)^2*c+2*d^2/i^2/(a*d-b*c)^4/g^2*A*b*ln(b/d*e+(a*d-b*c)/(d*
x+c)/d*e)*a-2*d/i^2/(a*d-b*c)^4/g^2*A*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c
-d^2/i^2/(a*d-b*c)^4/g^2*A*b*a+d/i^2/(a*d-b*c)^4/g^2*A*b^2*c+d^2/i^2/(a*d-b
*c)^4/g^2*B*b*a-d^3/i^2/(a*d-b*c)^4/g^2*A/(d*x+c)*a^2+d^3/i^2/(a*d-b*c)^4/g
^2*B/(d*x+c)*a^2+2*d^2/i^2/(a*d-b*c)^4/g^2*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e
)/(d*x+c)*a*b*c+d*e/i^2/(a*d-b*c)^4/g^2*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/
d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+d/i^2/(a*d-b*c)^4/g^2*B/(d*x+c
)*b^2*c^2-d^3/i^2/(a*d-b*c)^4/g^2*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)
*a^2-e/i^2/(a*d-b*c)^4/g^2*A*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c-
d/i^2/(a*d-b*c)^4/g^2*A/(d*x+c)*b^2*c^2+d/i^2/(a*d-b*c)^4/g^2*B*ln(b/d*e+(a
*d-b*c)/(d*x+c)/d*e)*b^2*c-e/i^2/(a*d-b*c)^4/g^2*B*b^3/(1/(d*x+c)*a*e-1/(d*
x+c)*b*c/d*e+b/d*e)*c
```

maxima [B] time = 1.41, size = 859, normalized size = 3.29

$$-B \left(\frac{2bdx + bc + ad}{(b^3c^2d - 2ab^2cd^2 + a^2bd^3)g^2i^2x^2 + (b^3c^3 - ab^2c^2d - a^2bcd^2 + a^3d^3)g^2i^2x + (ab^2c^3 - 2a^2bc^2d + a^3cd^2)g^2i^2} \right) +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^2/(d*i*x+c*i)^2,x, algor
ithm="maxima")
```

```
[Out] -B*((2*b*d*x + b*c + a*d)/((b^3*c^2*d - 2*a*b^2*c*d^2 + a^2*b*d^3)*g^2*i^2*
x^2 + (b^3*c^3 - a*b^2*c^2*d - a^2*b*c*d^2 + a^3*d^3)*g^2*i^2*x + (a*b^2*c^
3 - 2*a^2*b*c^2*d + a^3*c*d^2)*g^2*i^2) + 2*b*d*log(b*x + a)/((b^3*c^3 - 3*
a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^2*i^2) - 2*b*d*log(d*x + c)/((b^3*
c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^2*i^2))*log(b*e*x/(d*x + c
) + a*e/(d*x + c)) - A*((2*b*d*x + b*c + a*d)/((b^3*c^2*d - 2*a*b^2*c*d^2 +
a^2*b*d^3)*g^2*i^2*x^2 + (b^3*c^3 - a*b^2*c^2*d - a^2*b*c*d^2 + a^3*d^3)*g
^2*i^2*x + (a*b^2*c^3 - 2*a^2*b*c^2*d + a^3*c*d^2)*g^2*i^2) + 2*b*d*log(b*x
+ a)/((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^2*i^2) - 2*b*d
*log(d*x + c)/((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^2*i^2)
) - (b^2*c^2 - 2*a*b*c*d + a^2*d^2 - (b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a*
b*d^2)*x)*log(b*x + a)^2 + 2*(b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a*b*d^2)*x
)*log(b*x + a)*log(d*x + c) - (b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a*b*d^2)*
x)*log(d*x + c)^2)*B/(a*b^3*c^4*g^2*i^2 - 3*a^2*b^2*c^3*d*g^2*i^2 + 3*a^3*b
```

$*c^2*d^2*g^2*i^2 - a^4*c*d^3*g^2*i^2 + (b^4*c^3*d*g^2*i^2 - 3*a*b^3*c^2*d^2$
 $*g^2*i^2 + 3*a^2*b^2*c*d^3*g^2*i^2 - a^3*b*d^4*g^2*i^2)*x^2 + (b^4*c^4*g^2*$
 $i^2 - 2*a*b^3*c^3*d*g^2*i^2 + 2*a^3*b*c*d^3*g^2*i^2 - a^4*d^4*g^2*i^2)*x$

mupad [B] time = 6.18, size = 415, normalized size = 1.59

$$\frac{Bbd \ln\left(\frac{e^{(a+bx)}}{c+dx}\right)^2}{g^2 i^2 (ad-bc)^3} - \frac{Aad}{g^2 i^2 (ad-bc)^2 (a+bx)(c+dx)} - \frac{Abc}{g^2 i^2 (ad-bc)^2 (a+bx)(c+dx)} + \frac{Bad}{g^2 i^2 (ad-bc)^2 (a+bx)(c+dx)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((A + B*log((e*(a + b*x))/(c + d*x)))/((a*g + b*g*x)^2*(c*i + d*i*x)^2), x)`

[Out] $(B*b*d*\log((e*(a + b*x))/(c + d*x))^2)/(g^2*i^2*(a*d - b*c)^3) - (A*b*d*\operatorname{atan}((a*d*i + b*c*i + b*d*x*2i)/(a*d - b*c))*4i)/(g^2*i^2*(a*d - b*c)^3) - (A*a*d)/(g^2*i^2*(a*d - b*c)^2*(a + b*x)*(c + d*x)) - (A*b*c)/(g^2*i^2*(a*d - b*c)^2*(a + b*x)*(c + d*x)) + (B*a*d)/(g^2*i^2*(a*d - b*c)^2*(a + b*x)*(c + d*x)) - (B*b*c)/(g^2*i^2*(a*d - b*c)^2*(a + b*x)*(c + d*x)) - (2*A*b*d*x)/(g^2*i^2*(a*d - b*c)^2*(a + b*x)*(c + d*x)) - (B*a*d*\log((e*(a + b*x))/(c + d*x)))/(g^2*i^2*(a*d - b*c)^2*(a + b*x)*(c + d*x)) - (B*b*c*\log((e*(a + b*x))/(c + d*x)))/(g^2*i^2*(a*d - b*c)^2*(a + b*x)*(c + d*x)) - (2*B*b*d*x*\log((e*(a + b*x))/(c + d*x)))/(g^2*i^2*(a*d - b*c)^2*(a + b*x)*(c + d*x))$

sympy [B] time = 5.84, size = 828, normalized size = 3.17

$$\frac{2Abd \log\left(x + \frac{\frac{2Aa^4bd^5}{(ad-bc)^3} + \frac{8Aa^3b^2cd^4}{(ad-bc)^3} - \frac{12Aa^2b^3c^2d^3}{(ad-bc)^3} + \frac{8Aab^4c^3d^2}{(ad-bc)^3} + 2Aabd^2 - \frac{2Ab^5c^4d}{(ad-bc)^3} + 2Ab^2cd}{4Ab^2d^2}\right)}{g^2 i^2 (ad-bc)^3} + \frac{2Abd \log\left(x + \frac{\frac{2Aa^4bd^5}{(ad-bc)^3} - \frac{8Aa^3b^2cd^4}{(ad-bc)^3} + \frac{12Aa^2b^3c^2d^3}{(ad-bc)^3} - \frac{8Aa^2b^4c^3d^2}{(ad-bc)^3} + 2Aabd^2 - \frac{2Ab^5c^4d}{(ad-bc)^3} + 2Ab^2cd}{4Ab^2d^2}\right)}{g^2 i^2 (ad-bc)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)**2/(d*i*x+c*i)**2,x)`

[Out] $-2*A*b*d*\log(x + (-2*A*a**4*b*d**5/(a*d - b*c)**3 + 8*A*a**3*b**2*c*d**4/(a*d - b*c)**3 - 12*A*a**2*b**3*c**2*d**3/(a*d - b*c)**3 + 8*A*a*b**4*c**3*d**2/(a*d - b*c)**3 + 2*A*a*b*d**2 - 2*A*b**5*c**4*d/(a*d - b*c)**3 + 2*A*b**2*c*d)/(4*A*b**2*d**2))/(g**2*i**2*(a*d - b*c)**3) + 2*A*b*d*\log(x + (2*A*a**4*b*d**5/(a*d - b*c)**3 - 8*A*a**3*b**2*c*d**4/(a*d - b*c)**3 + 12*A*a**2*b**3*c**2*d**3/(a*d - b*c)**3 - 8*A*a*b**4*c**3*d**2/(a*d - b*c)**3 + 2*A*a*b*d**2 + 2*A*b**5*c**4*d/(a*d - b*c)**3 + 2*A*b**2*c*d)/(4*A*b**2*d**2))/(g**2*i**2*(a*d - b*c)**3) + B*b*d*\log(e*(a + b*x)/(c + d*x))**2/(a**3*d**3*g**2*i**2 - 3*a**2*b*c*d**2*g**2*i**2 + 3*a*b**2*c**2*d*g**2*i**2 - b**3*c$

$$\begin{aligned}
& **3*g**2*i**2) + (-B*a*d - B*b*c - 2*B*b*d*x)*\log(e*(a + b*x)/(c + d*x))/(a \\
& **3*c*d**2*g**2*i**2 + a**3*d**3*g**2*i**2*x - 2*a**2*b*c**2*d*g**2*i**2 - \\
& a**2*b*c*d**2*g**2*i**2*x + a**2*b*d**3*g**2*i**2*x**2 + a*b**2*c**3*g**2*i \\
& **2 - a*b**2*c**2*d*g**2*i**2*x - 2*a*b**2*c*d**2*g**2*i**2*x**2 + b**3*c** \\
& 3*g**2*i**2*x + b**3*c**2*d*g**2*i**2*x**2) - (A*a*d + A*b*c + 2*A*b*d*x - \\
& B*a*d + B*b*c)/(a**3*c*d**2*g**2*i**2 - 2*a**2*b*c**2*d*g**2*i**2 + a*b**2* \\
& c**3*g**2*i**2 + x**2*(a**2*b*d**3*g**2*i**2 - 2*a*b**2*c*d**2*g**2*i**2 + \\
& b**3*c**2*d*g**2*i**2) + x*(a**3*d**3*g**2*i**2 - a**2*b*c*d**2*g**2*i**2 - \\
& a*b**2*c**2*d*g**2*i**2 + b**3*c**3*g**2*i**2))
\end{aligned}$$

$$3.45 \quad \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{(ag+bgx)^3(ci+dix)^2} dx$$

Optimal. Leaf size=364

$$\frac{b^3(c+dx)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{2g^3i^2(a+bx)^2(bc-ad)^4} + \frac{3b^2d(c+dx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{g^3i^2(a+bx)(bc-ad)^4} - \frac{d^3(a+bx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{g^3i^2(c+dx)(bc-ad)^4} + \frac{3bd^2}{g^3i^2(c+dx)(bc-ad)^4}$$

[Out] $B*d^3*(b*x+a)/(-a*d+b*c)^4/g^3/i^2/(d*x+c)+3*b^2*B*d*(d*x+c)/(-a*d+b*c)^4/g^3/i^2/(b*x+a)-1/4*b^3*B*(d*x+c)^2/(-a*d+b*c)^4/g^3/i^2/(b*x+a)^2-3/2*b*B*d^2*\ln((b*x+a)/(d*x+c))^2/(-a*d+b*c)^4/g^3/i^2-d^3*(b*x+a)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^4/g^3/i^2/(d*x+c)+3*b^2*d*(d*x+c)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^4/g^3/i^2/(b*x+a)-1/2*b^3*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^4/g^3/i^2/(b*x+a)^2+3*b*d^2*\ln((b*x+a)/(d*x+c))*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^4/g^3/i^2$

Rubi [C] time = 1.12, antiderivative size = 630, normalized size of antiderivative = 1.73, number of steps used = 32, number of rules used = 11, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.275$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{3bBd^2 \text{PolyLog}\left(2, -\frac{d(a+bx)}{bc-ad}\right)}{g^3i^2(bc-ad)^4} + \frac{3bBd^2 \text{PolyLog}\left(2, \frac{b(c+dx)}{bc-ad}\right)}{g^3i^2(bc-ad)^4} + \frac{3bd^2 \log(a+bx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{g^3i^2(bc-ad)^4} + \frac{d^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{g^3i^2(c+dx)(bc-ad)^4}$$

Antiderivative was successfully verified.

[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x]))/((a*g + b*g*x)^3*(c*i + d*i*x)^2), x]

[Out] $-(b*B)/(4*(b*c - a*d)^2*g^3*i^2*(a + b*x)^2) + (5*b*B*d)/(2*(b*c - a*d)^3*g^3*i^2*(a + b*x)) - (B*d^2)/((b*c - a*d)^3*g^3*i^2*(c + d*x)) + (3*b*B*d^2*\text{Log}[a + b*x])/(2*(b*c - a*d)^4*g^3*i^2) - (3*b*B*d^2*\text{Log}[a + b*x]^2)/(2*(b*c - a*d)^4*g^3*i^2) - (b*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x])))/(2*(b*c - a*d)^2*g^3*i^2*(a + b*x)^2) + (2*b*d*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x])))/((b*c - a*d)^3*g^3*i^2*(a + b*x)) + (d^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x])))/((b*c - a*d)^3*g^3*i^2*(c + d*x)) + (3*b*d^2*\text{Log}[a + b*x]*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x])))/((b*c - a*d)^4*g^3*i^2) - (3*b*B*d^2*\text{Log}[c + d*x])/(2*(b*c - a*d)^4*g^3*i^2) + (3*b*B*d^2*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c + d*x])/((b*c - a*d)^4*g^3*i^2) - (3*b*d^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]))*\text{Log}[c + d*x])/((b*c - a*d)^4*g^3*i^2) - (3*b*B*d^2*\text{Log}[c + d*x]^2)/(2*(b*c - a*d)^4*g^3*i^2) + (3*b*B*d^2*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^4*g^3*i^2) + (3*b*B*d^2*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^4*g^3*i^2) + (3*b*B*d^2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^4*g^3*i^2)$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 44

Int[((a_) + (b_)*(x_))^(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])

Rule 2301

Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2390

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)])*(b_)^(p_)*((f_) + (g_)*(x_))^(q_), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_)*((d_) + (e_)*(x_))^(n_)]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))])*(b_)/((f_) + (g_)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)])*(b_)/((f_) + (g_)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e^n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n]^p, RFx, x]}, Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{(45c + 45dx)^2(ag + bgx)^3} dx &= \int \left(\frac{b^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{2025(bc - ad)^2 g^3 (a + bx)^3} - \frac{2b^2 d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{2025(bc - ad)^3 g^3 (a + bx)^2} + \frac{b^2 d^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{675(bc - ad)^4 g^3} \right) dx \\
&= \frac{(b^2 d^2) \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{a+bx} dx}{675(bc - ad)^4 g^3} - \frac{(bd^3) \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{c+dx} dx}{675(bc - ad)^4 g^3} - \frac{(2b^2 d) \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{(a+bx)^2} dx}{2025(bc - ad)^3 g^3} \\
&= -\frac{b \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{4050(bc - ad)^2 g^3 (a + bx)^2} + \frac{2bd \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{2025(bc - ad)^3 g^3 (a + bx)} + \frac{d^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{2025(bc - ad)^3 g^3 (a + bx)} \\
&= -\frac{b \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{4050(bc - ad)^2 g^3 (a + bx)^2} + \frac{2bd \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{2025(bc - ad)^3 g^3 (a + bx)} + \frac{d^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{2025(bc - ad)^3 g^3 (a + bx)} \\
&= -\frac{b \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{4050(bc - ad)^2 g^3 (a + bx)^2} + \frac{2bd \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{2025(bc - ad)^3 g^3 (a + bx)} + \frac{d^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{2025(bc - ad)^3 g^3 (a + bx)} \\
&= -\frac{bB}{8100(bc - ad)^2 g^3 (a + bx)^2} + \frac{bBd}{810(bc - ad)^3 g^3 (a + bx)} - \frac{Bd^2}{2025(bc - ad)^3 g^3 (a + bx)} \\
&= -\frac{bB}{8100(bc - ad)^2 g^3 (a + bx)^2} + \frac{bBd}{810(bc - ad)^3 g^3 (a + bx)} - \frac{Bd^2}{2025(bc - ad)^3 g^3 (a + bx)} \\
&= -\frac{bB}{8100(bc - ad)^2 g^3 (a + bx)^2} + \frac{bBd}{810(bc - ad)^3 g^3 (a + bx)} - \frac{Bd^2}{2025(bc - ad)^3 g^3 (a + bx)} \\
&= -\frac{bB}{8100(bc - ad)^2 g^3 (a + bx)^2} + \frac{bBd}{810(bc - ad)^3 g^3 (a + bx)} - \frac{Bd^2}{2025(bc - ad)^3 g^3 (a + bx)}
\end{aligned}$$

Mathematica [C] time = 0.73, size = 453, normalized size = 1.24

$$\frac{12bd^2 \log(a + bx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right) + \frac{4d^2(bc-ad) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{c+dx} - 12bd^2 \log(c + dx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right) + \frac{8bd^2 \log(a + bx)}{c+dx}}{(45c + 45dx)^2 (ag + bgx)^3}$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x]))/((a*g + b*g*x)^3*(c*i + d*i*x)^2), x]


```
[Out] (-((b*B*(b*c - a*d)^2)/(a + b*x)^2) + (8*b^2*B*c*d)/(a + b*x) - (8*a*b*B*d^2)/(a + b*x) + (2*b*B*d*(b*c - a*d))/(a + b*x) - (4*b*B*c*d^2)/(c + d*x) + (4*a*B*d^3)/(c + d*x) + 6*b*B*d^2*Log[a + b*x] - (2*b*(b*c - a*d)^2*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(a + b*x)^2 + (8*b*d*(b*c - a*d)*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(a + b*x) + (4*d^2*(b*c - a*d)*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(c + d*x) + 12*b*d^2*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x])) - 6*b*B*d^2*Log[c + d*x] - 12*b*d^2*(A + B*Log[(e*(a + b*x))/(c + d*x]])*Log[c + d*x] - 6*b*B*d^2*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-b*c + a*d)]) + 6*b*B*d^2*((2*Log[(d*(a + b*x))/(-b*c + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))/(4*(b*c - a*d)^4*g^3*i^2)
```

fricas [A] time = 0.88, size = 664, normalized size = 1.82

$$\frac{(2A + B)b^3c^3 - 12(A + B)ab^2c^2d + 3(2A + 5B)a^2bcd^2 + 4(A - B)a^3d^3 - 6((2A + B)b^3cd^2 - (2A + B)ab^2d^2)}{4((b^6c^4d - 4ab^5c^3d^2 + 6a^2b^4c^2d^3 - 4a^3b^3c^2d^4 + a^4b^2d^5)*g^3i^2x^3 + (b^6c^5 - 2a^2b^5c^4d - 2a^2b^4c^3d^2 + 8a^3b^3c^2d^3 - 7a^4b^2c^4d + 8a^3b^3c^3d^2 - 2a^4b^2c^2d^3 - 2a^5b^2c^2d^4 + a^6d^5)*g^3i^2x + (a^2b^4c^5 - 4a^3b^3c^4d + 6a^4b^2c^3d^2 - 4a^5b^2c^2d^3 + a^6c^2d^4)*g^3i^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^3/(d*i*x+c*i)^2,x, algorithm="fricas")
```

```
[Out] -1/4*((2*A + B)*b^3*c^3 - 12*(A + B)*a*b^2*c^2*d + 3*(2*A + 5*B)*a^2*b*c*d^2 + 4*(A - B)*a^3*d^3 - 6*((2*A + B)*b^3*c*d^2 - (2*A + B)*a*b^2*d^3)*x^2 - 6*(B*b^3*d^3*x^3 + B*a^2*b*c*d^2 + (B*b^3*c*d^2 + 2*B*a*b^2*d^3)*x^2 + (2*B*a*b^2*c*d^2 + B*a^2*b*d^3)*x)*log((b*e*x + a*e)/(d*x + c))^2 - 3*((2*A + 3*B)*b^3*c^2*d + 2*(2*A - B)*a*b^2*c*d^2 - (6*A + B)*a^2*b*d^3)*x - 2*(3*(2*A + B)*b^3*d^3*x^3 - B*b^3*c^3 + 6*B*a*b^2*c^2*d + 6*A*a^2*b*c*d^2 - 2*B*a^3*d^3 + 3*((2*A + 3*B)*b^3*c*d^2 + 4*A*a*b^2*d^3)*x^2 + 3*(B*b^3*c^2*d + 4*(A + B)*a*b^2*c*d^2 + 2*(A - B)*a^2*b*d^3)*x)*log((b*e*x + a*e)/(d*x + c)))/((b^6*c^4*d - 4*a*b^5*c^3*d^2 + 6*a^2*b^4*c^2*d^3 - 4*a^3*b^3*c^2*d^4 + a^4*b^2*d^5)*g^3*i^2*x^3 + (b^6*c^5 - 2*a*b^5*c^4*d - 2*a^2*b^4*c^3*d^2 + 8*a^3*b^3*c^2*d^3 - 7*a^4*b^2*c^4*d + 2*a^5*b^2*d^5)*g^3*i^2*x^2 + (2*a*b^5*c^5 - 7*a^2*b^4*c^4*d + 8*a^3*b^3*c^3*d^2 - 2*a^4*b^2*c^2*d^3 - 2*a^5*b^2*c^2*d^4 + a^6*d^5)*g^3*i^2*x + (a^2*b^4*c^5 - 4*a^3*b^3*c^4*d + 6*a^4*b^2*c^3*d^2 - 4*a^5*b^2*c^2*d^3 + a^6*c^2*d^4)*g^3*i^2)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^3/(d*i*x+c*i)^2,x, algorithm="giac")
```

[Out] Timed out

maple [B] time = 0.05, size = 1635, normalized size = 4.49

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{int}((B*\ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^3/(d*i*x+c*i)^2,x)$

[Out] $3*d^3/i^2/(a*d-b*c)^5/g^3*A*b*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-3*d^2/i^2/(a*d-b*c)^5/g^3*A*b^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-d^3/i^2/(a*d-b*c)^5/g^3*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2*c-d^4/i^2/(a*d-b*c)^5/g^3*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*a^2+3/2*d^3/i^2/(a*d-b*c)^5/g^3*B*b*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a-3/2*d^2/i^2/(a*d-b*c)^5/g^3*B*b^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c-1/4*d*e^2/i^2/(a*d-b*c)^5/g^3*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a+d^3/i^2/(a*d-b*c)^5/g^3*B*b*a-d^2/i^2/(a*d-b*c)^5/g^3*B*b^2*c-d^3/i^2/(a*d-b*c)^5/g^3*A*b*a+d^2/i^2/(a*d-b*c)^5/g^3*A*b^2*c-d^2/i^2/(a*d-b*c)^5/g^3*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*b^2*c^2-d^4/i^2/(a*d-b*c)^5/g^3*A/(d*x+c)*a^2+d^4/i^2/(a*d-b*c)^5/g^3*B/(d*x+c)*a^2+2*d^3/i^2/(a*d-b*c)^5/g^3*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*a*b*c-3*d*e/i^2/(a*d-b*c)^5/g^3*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-1/2*d*e^2/i^2/(a*d-b*c)^5/g^3*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+3*d^2*e/i^2/(a*d-b*c)^5/g^3*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-d^2/i^2/(a*d-b*c)^5/g^3*A/(d*x+c)*b^2*c^2+1/2*e^2/i^2/(a*d-b*c)^5/g^3*A*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*c+d^2/i^2/(a*d-b*c)^5/g^3*B/(d*x+c)*b^2*c^2+1/4*e^2/i^2/(a*d-b*c)^5/g^3*B*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*c-3*d*e/i^2/(a*d-b*c)^5/g^3*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c-1/2*d*e^2/i^2/(a*d-b*c)^5/g^3*A*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a-3*d*e/i^2/(a*d-b*c)^5/g^3*A*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c+3*d^2*e/i^2/(a*d-b*c)^5/g^3*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a+2*d^3/i^2/(a*d-b*c)^5/g^3*A/(d*x+c)*a*b*c+3*d^2*e/i^2/(a*d-b*c)^5/g^3*A*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a-2*d^3/i^2/(a*d-b*c)^5/g^3*B/(d*x+c)*a*b*c+1/2*e^2/i^2/(a*d-b*c)^5/g^3*B*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c$

maxima [B] time = 2.37, size = 1721, normalized size = 4.73

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{integrate}((A+B*\log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^3/(d*i*x+c*i)^2,x, \text{algorithm}="maxima")$

```
[Out] 1/2*B*((6*b^2*d^2*x^2 - b^2*c^2 + 5*a*b*c*d + 2*a^2*d^2 + 3*(b^2*c*d + 3*a*
b*d^2)*x)/((b^5*c^3*d - 3*a*b^4*c^2*d^2 + 3*a^2*b^3*c*d^3 - a^3*b^2*d^4)*g^
3*i^2*x^3 + (b^5*c^4 - a*b^4*c^3*d - 3*a^2*b^3*c^2*d^2 + 5*a^3*b^2*c*d^3 -
2*a^4*b*d^4)*g^3*i^2*x^2 + (2*a*b^4*c^4 - 5*a^2*b^3*c^3*d + 3*a^3*b^2*c^2*d
^2 + a^4*b*c*d^3 - a^5*d^4)*g^3*i^2*x + (a^2*b^3*c^4 - 3*a^3*b^2*c^3*d + 3*
a^4*b*c^2*d^2 - a^5*c*d^3)*g^3*i^2) + 6*b*d^2*log(b*x + a)/((b^4*c^4 - 4*a*
b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^3*i^2) - 6*b*d^2
*log(d*x + c)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3
+ a^4*d^4)*g^3*i^2))*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 1/2*A*((6*b^2*
d^2*x^2 - b^2*c^2 + 5*a*b*c*d + 2*a^2*d^2 + 3*(b^2*c*d + 3*a*b*d^2)*x)/((b^
5*c^3*d - 3*a*b^4*c^2*d^2 + 3*a^2*b^3*c*d^3 - a^3*b^2*d^4)*g^3*i^2*x^3 + (b
^5*c^4 - a*b^4*c^3*d - 3*a^2*b^3*c^2*d^2 + 5*a^3*b^2*c*d^3 - 2*a^4*b*d^4)*g
^3*i^2*x^2 + (2*a*b^4*c^4 - 5*a^2*b^3*c^3*d + 3*a^3*b^2*c^2*d^2 + a^4*b*c*d
^3 - a^5*d^4)*g^3*i^2*x + (a^2*b^3*c^4 - 3*a^3*b^2*c^3*d + 3*a^4*b*c^2*d^2
- a^5*c*d^3)*g^3*i^2) + 6*b*d^2*log(b*x + a)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*
a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^3*i^2) - 6*b*d^2*log(d*x + c)/
((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^
3*i^2)) - 1/4*(b^3*c^3 - 12*a*b^2*c^2*d + 15*a^2*b*c*d^2 - 4*a^3*d^3 - 6*(b
^3*c*d^2 - a*b^2*d^3)*x^2 + 6*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2*a
*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x)*log(b*x + a)^2 + 6*(b^3*d^3*x
^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*
d^3)*x)*log(d*x + c)^2 - 3*(3*b^3*c^2*d - 2*a*b^2*c*d^2 - a^2*b*d^3)*x - 6*
(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2
+ a^2*b*d^3)*x)*log(b*x + a) + 6*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 +
2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x - 2*(b^3*d^3*x^3 + a^2*b*
c*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x)*log(
b*x + a))*log(d*x + c))*B/(a^2*b^4*c^5*g^3*i^2 - 4*a^3*b^3*c^4*d*g^3*i^2 +
6*a^4*b^2*c^3*d^2*g^3*i^2 - 4*a^5*b*c^2*d^3*g^3*i^2 + a^6*c*d^4*g^3*i^2 + (
b^6*c^4*d*g^3*i^2 - 4*a*b^5*c^3*d^2*g^3*i^2 + 6*a^2*b^4*c^2*d^3*g^3*i^2 - 4
*a^3*b^3*c*d^4*g^3*i^2 + a^4*b^2*d^5*g^3*i^2)*x^3 + (b^6*c^5*g^3*i^2 - 2*a*
b^5*c^4*d*g^3*i^2 - 2*a^2*b^4*c^3*d^2*g^3*i^2 + 8*a^3*b^3*c^2*d^3*g^3*i^2 -
7*a^4*b^2*c*d^4*g^3*i^2 + 2*a^5*b*d^5*g^3*i^2)*x^2 + (2*a*b^5*c^5*g^3*i^2
- 7*a^2*b^4*c^4*d*g^3*i^2 + 8*a^3*b^3*c^3*d^2*g^3*i^2 - 2*a^4*b^2*c^2*d^3*g
^3*i^2 - 2*a^5*b*c*d^4*g^3*i^2 + a^6*d^5*g^3*i^2)*x)
```

mupad [B] time = 9.11, size = 984, normalized size = 2.70

$$\frac{3 B b d^2 \ln\left(\frac{e^{(a+bx)}}{c+dx}\right)^2}{2 g^3 i^2 (ad-bc)^4} - \frac{A a^2 d^2}{g^3 i^2 (ad-bc)^3 (a+bx)^2 (c+dx)} + \frac{A b^2 c^2}{2 g^3 i^2 (ad-bc)^3 (a+bx)^2 (c+dx)} + \frac{1}{g^3 i^2 (ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x))/(c + d*x)))/((a*g + b*g*x)^3*(c*i + d*i*x)^2),
x)
```

```
[Out] (3*B*b*d^2*log((e*(a + b*x))/(c + d*x))^2)/(2*g^3*i^2*(a*d - b*c)^4) - (A*b
*d^2*atan((a*d*i + b*c*i + b*d*x^2i)/(a*d - b*c))*6i)/(g^3*i^2*(a*d - b*c
)^4) - (B*b*d^2*atan((a*d*i + b*c*i + b*d*x^2i)/(a*d - b*c))*3i)/(g^3*i^2
*(a*d - b*c)^4) - (A*a^2*d^2)/(g^3*i^2*(a*d - b*c)^3*(a + b*x)^2*(c + d*x))
+ (A*b^2*c^2)/(2*g^3*i^2*(a*d - b*c)^3*(a + b*x)^2*(c + d*x)) + (B*a^2*d^2
)/(g^3*i^2*(a*d - b*c)^3*(a + b*x)^2*(c + d*x)) + (B*b^2*c^2)/(4*g^3*i^2*(a
*d - b*c)^3*(a + b*x)^2*(c + d*x)) - (B*a*d*log((e*(a + b*x))/(c + d*x)))/(
g^3*i^2*(a*d - b*c)^2*(a + b*x)^2*(c + d*x)) - (B*b*c*log((e*(a + b*x))/(c
+ d*x)))/(2*g^3*i^2*(a*d - b*c)^2*(a + b*x)^2*(c + d*x)) - (3*A*b^2*d^2*x^2
)/(g^3*i^2*(a*d - b*c)^3*(a + b*x)^2*(c + d*x)) - (3*B*b^2*d^2*x^2)/(2*g^3*
i^2*(a*d - b*c)^3*(a + b*x)^2*(c + d*x)) - (5*A*a*b*c*d)/(2*g^3*i^2*(a*d -
b*c)^3*(a + b*x)^2*(c + d*x)) - (11*B*a*b*c*d)/(4*g^3*i^2*(a*d - b*c)^3*(a
+ b*x)^2*(c + d*x)) - (3*B*b*d*x*log((e*(a + b*x))/(c + d*x)))/(2*g^3*i^2*(
a*d - b*c)^2*(a + b*x)^2*(c + d*x)) - (3*B*b^2*d^2*x^2*log((e*(a + b*x))/(c
+ d*x)))/(g^3*i^2*(a*d - b*c)^3*(a + b*x)^2*(c + d*x)) - (9*A*a*b*d^2*x)/(
2*g^3*i^2*(a*d - b*c)^3*(a + b*x)^2*(c + d*x)) - (3*B*a*b*d^2*x)/(4*g^3*i^2
*(a*d - b*c)^3*(a + b*x)^2*(c + d*x)) - (3*A*b^2*c*d*x)/(2*g^3*i^2*(a*d - b
*c)^3*(a + b*x)^2*(c + d*x)) - (9*B*b^2*c*d*x)/(4*g^3*i^2*(a*d - b*c)^3*(a
+ b*x)^2*(c + d*x)) - (3*B*a*b*c*d*log((e*(a + b*x))/(c + d*x)))/(g^3*i^2*(
a*d - b*c)^3*(a + b*x)^2*(c + d*x)) - (3*B*a*b*d^2*x*log((e*(a + b*x))/(c +
d*x)))/(g^3*i^2*(a*d - b*c)^3*(a + b*x)^2*(c + d*x)) - (3*B*b^2*c*d*x*log(
(e*(a + b*x))/(c + d*x)))/(g^3*i^2*(a*d - b*c)^3*(a + b*x)^2*(c + d*x))
```

sympy [B] time = 52.28, size = 1562, normalized size = 4.29

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)**3/(d*i*x+c*i)**2,x)
```

```
[Out] 3*B*b*d**2*log(e*(a + b*x)/(c + d*x))**2/(2*a**4*d**4*g**3*i**2 - 8*a**3*b*
c*d**3*g**3*i**2 + 12*a**2*b**2*c**2*d**2*g**3*i**2 - 8*a*b**3*c**3*d*g**3*
i**2 + 2*b**4*c**4*g**3*i**2) - 3*b*d**2*(2*A + B)*log(x + (6*A*a*b*d**3 +
6*A*b**2*c*d**2 + 3*B*a*b*d**3 + 3*B*b**2*c*d**2 - 3*a**5*b*d**7*(2*A + B)/
(a*d - b*c)**4 + 15*a**4*b**2*c*d**6*(2*A + B)/(a*d - b*c)**4 - 30*a**3*b**
3*c**2*d**5*(2*A + B)/(a*d - b*c)**4 + 30*a**2*b**4*c**3*d**4*(2*A + B)/(a*
d - b*c)**4 - 15*a*b**5*c**4*d**3*(2*A + B)/(a*d - b*c)**4 + 3*b**6*c**5*d*
**2*(2*A + B)/(a*d - b*c)**4)/(12*A*b**2*d**3 + 6*B*b**2*d**3))/(2*g**3*i**2
*(a*d - b*c)**4) + 3*b*d**2*(2*A + B)*log(x + (6*A*a*b*d**3 + 6*A*b**2*c*d*
**2 + 3*B*a*b*d**3 + 3*B*b**2*c*d**2 + 3*a**5*b*d**7*(2*A + B)/(a*d - b*c)**
4 - 15*a**4*b**2*c*d**6*(2*A + B)/(a*d - b*c)**4 + 30*a**3*b**3*c**2*d**5*(
2*A + B)/(a*d - b*c)**4 - 30*a**2*b**4*c**3*d**4*(2*A + B)/(a*d - b*c)**4 +
15*a*b**5*c**4*d**3*(2*A + B)/(a*d - b*c)**4 - 3*b**6*c**5*d**2*(2*A + B)/
(a*d - b*c)**4)/(12*A*b**2*d**3 + 6*B*b**2*d**3))/(2*g**3*i**2*(a*d - b*c)*
**4) + (-2*B*a**2*d**2 - 5*B*a*b*c*d - 9*B*a*b*d**2*x + B*b**2*c**2 - 3*B*b*
```

$$\begin{aligned}
& *2*c*d*x - 6*B*b**2*d**2*x**2)*\log(e*(a + b*x)/(c + d*x))/(2*a**5*c*d**3*g* \\
& *3*i**2 + 2*a**5*d**4*g**3*i**2*x - 6*a**4*b*c**2*d**2*g**3*i**2 - 2*a**4*b \\
& *c*d**3*g**3*i**2*x + 4*a**4*b*d**4*g**3*i**2*x**2 + 6*a**3*b**2*c**3*d*g** \\
& 3*i**2 - 6*a**3*b**2*c**2*d**2*g**3*i**2*x - 10*a**3*b**2*c*d**3*g**3*i**2* \\
& x**2 + 2*a**3*b**2*d**4*g**3*i**2*x**3 - 2*a**2*b**3*c**4*g**3*i**2 + 10*a* \\
& *2*b**3*c**3*d*g**3*i**2*x + 6*a**2*b**3*c**2*d**2*g**3*i**2*x**2 - 6*a**2* \\
& b**3*c*d**3*g**3*i**2*x**3 - 4*a*b**4*c**4*g**3*i**2*x + 2*a*b**4*c**3*d*g* \\
& *3*i**2*x**2 + 6*a*b**4*c**2*d**2*g**3*i**2*x**3 - 2*b**5*c**4*g**3*i**2*x* \\
& *2 - 2*b**5*c**3*d*g**3*i**2*x**3) - (4*A*a**2*d**2 + 10*A*a*b*c*d - 2*A*b* \\
& *2*c**2 - 4*B*a**2*d**2 + 11*B*a*b*c*d - B*b**2*c**2 + x**2*(12*A*b**2*d**2 \\
& + 6*B*b**2*d**2) + x*(18*A*a*b*d**2 + 6*A*b**2*c*d + 3*B*a*b*d**2 + 9*B*b* \\
& *2*c*d))/(4*a**5*c*d**3*g**3*i**2 - 12*a**4*b*c**2*d**2*g**3*i**2 + 12*a**3 \\
& *b**2*c**3*d*g**3*i**2 - 4*a**2*b**3*c**4*g**3*i**2 + x**3*(4*a**3*b**2*d** \\
& 4*g**3*i**2 - 12*a**2*b**3*c*d**3*g**3*i**2 + 12*a*b**4*c**2*d**2*g**3*i**2 \\
& - 4*b**5*c**3*d*g**3*i**2) + x**2*(8*a**4*b*d**4*g**3*i**2 - 20*a**3*b**2* \\
& c*d**3*g**3*i**2 + 12*a**2*b**3*c**2*d**2*g**3*i**2 + 4*a*b**4*c**3*d*g**3* \\
& i**2 - 4*b**5*c**4*g**3*i**2) + x*(4*a**5*d**4*g**3*i**2 - 4*a**4*b*c*d**3* \\
& g**3*i**2 - 12*a**3*b**2*c**2*d**2*g**3*i**2 + 20*a**2*b**3*c**3*d*g**3*i** \\
& 2 - 8*a*b**4*c**4*g**3*i**2))
\end{aligned}$$

$$3.46 \quad \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{(ag+bgx)^4(ci+dix)^2} dx$$

Optimal. Leaf size=457

$$\frac{b^4(c+dx)^3 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{3g^4i^2(a+bx)^3(bc-ad)^5} + \frac{2b^3d(c+dx)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{g^4i^2(a+bx)^2(bc-ad)^5} - \frac{6b^2d^2(c+dx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{g^4i^2(a+bx)(bc-ad)^5} + \dots$$

[Out] $-B*d^4*(b*x+a)/(-a*d+b*c)^5/g^4/i^2/(d*x+c)-6*b^2*B*d^2*(d*x+c)/(-a*d+b*c)^5/g^4/i^2/(b*x+a)+b^3*B*d*(d*x+c)^2/(-a*d+b*c)^5/g^4/i^2/(b*x+a)^2-1/9*b^4*B*(d*x+c)^3/(-a*d+b*c)^5/g^4/i^2/(b*x+a)^3+2*b*B*d^3*\ln((b*x+a)/(d*x+c))^2/(-a*d+b*c)^5/g^4/i^2+d^4*(b*x+a)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^5/g^4/i^2/(d*x+c)-6*b^2*d^2*(d*x+c)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^5/g^4/i^2/(b*x+a)+2*b^3*d*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^5/g^4/i^2/(b*x+a)^2-1/3*b^4*(d*x+c)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^5/g^4/i^2/(b*x+a)^3-4*b*d^3*\ln((b*x+a)/(d*x+c))*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^5/g^4/i^2$

Rubi [C] time = 1.36, antiderivative size = 705, normalized size of antiderivative = 1.54, number of steps used = 36, number of rules used = 11, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.275$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{4bBd^3 \text{PolyLog}\left(2, -\frac{d(a+bx)}{bc-ad}\right)}{g^4i^2(bc-ad)^5} - \frac{4bBd^3 \text{PolyLog}\left(2, \frac{b(c+dx)}{bc-ad}\right)}{g^4i^2(bc-ad)^5} - \frac{4bd^3 \log(a+bx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{g^4i^2(bc-ad)^5} - \frac{d^3 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{g^4i^2(c+dx)}$$

Antiderivative was successfully verified.

[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x]))/((a*g + b*g*x)^4*(c*i + d*i*x)^2), x]

[Out] $-(b*B)/(9*(b*c - a*d)^2*g^4*i^2*(a + b*x)^3) + (2*b*B*d)/(3*(b*c - a*d)^3*g^4*i^2*(a + b*x)^2) - (13*b*B*d^2)/(3*(b*c - a*d)^4*g^4*i^2*(a + b*x)) + (B*d^3)/((b*c - a*d)^4*g^4*i^2*(c + d*x)) - (10*b*B*d^3*\text{Log}[a + b*x])/((b*c - a*d)^5*g^4*i^2) + (2*b*B*d^3*\text{Log}[a + b*x]^2)/((b*c - a*d)^5*g^4*i^2) - (b*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]]))/((b*c - a*d)^2*g^4*i^2*(a + b*x)^3) + (b*d*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]]))/((b*c - a*d)^3*g^4*i^2*(a + b*x)^2) - (3*b*d^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]]))/((b*c - a*d)^4*g^4*i^2*(a + b*x)) - (d^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]]))/((b*c - a*d)^4*g^4*i^2*(c + d*x)) - (4*b*d^3*\text{Log}[a + b*x]*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]]))/((b*c - a*d)^5*g^4*i^2) + (10*b*B*d^3*\text{Log}[c + d*x])/((b*c - a*d)^5*g^4*i^2) - (4*b*B*d^3*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c + d*x])/((b*c - a*d)^5*g^4*i^2) + (4*b*d^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]])*\text{Log}[c + d*x])/((b*c - a*d)^5*g^4*i^2) + (2*b*B*d^3*\text{Log}[c + d*x]^2)/((b*c - a*d)^5$

$$*g^{4i^2}) - (4*b*B*d^3*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^5*g^{4i^2}) - (4*b*B*d^3*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))]/((b*c - a*d)^5*g^{4i^2}) - (4*b*B*d^3*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^5*g^{4i^2})$$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 44

Int[((a_) + (b_)*(x_))^(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])

Rule 2301

Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2390

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)])*(b_)^(p_)*((f_) + (g_)*(x_))^(q_), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_)*((d_) + (e_)*(x_))^(n_)]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))])*(b_)/((f_) + (g_)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)])*(b_)/((f_) + (g_)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)

, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2418

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]

Rule 2524

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]

Rule 2525

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]

Rule 2528

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]

Rubi steps

$$\begin{aligned}
\int \frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{(46c + 46dx)^2(ag + bgx)^4} dx &= \int \left(\frac{b^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{2116(bc - ad)^2 g^4 (a + bx)^4} - \frac{b^2 d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{1058(bc - ad)^3 g^4 (a + bx)^3} + \frac{3b^2 d^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{2116(bc - ad)^4 g^4} \right) dx \\
&= -\frac{(b^2 d^3) \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{a+bx} dx}{529(bc - ad)^5 g^4} + \frac{(bd^4) \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{c+dx} dx}{529(bc - ad)^5 g^4} + \frac{(3b^2 d^2) \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{(a+bx)^2} dx}{2116(bc - ad)^5 g^4} \\
&= -\frac{b \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{6348(bc - ad)^2 g^4 (a + bx)^3} + \frac{bd \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{2116(bc - ad)^3 g^4 (a + bx)^2} - \frac{3bd^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{2116(bc - ad)^4 g^4} \\
&= -\frac{b \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{6348(bc - ad)^2 g^4 (a + bx)^3} + \frac{bd \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{2116(bc - ad)^3 g^4 (a + bx)^2} - \frac{3bd^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{2116(bc - ad)^4 g^4} \\
&= -\frac{b \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{6348(bc - ad)^2 g^4 (a + bx)^3} + \frac{bd \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{2116(bc - ad)^3 g^4 (a + bx)^2} - \frac{3bd^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{2116(bc - ad)^4 g^4} \\
&= -\frac{bB}{19044(bc - ad)^2 g^4 (a + bx)^3} + \frac{bBd}{3174(bc - ad)^3 g^4 (a + bx)^2} - \frac{13bBd^2}{6348(bc - ad)^4 g^4} \\
&= -\frac{bB}{19044(bc - ad)^2 g^4 (a + bx)^3} + \frac{bBd}{3174(bc - ad)^3 g^4 (a + bx)^2} - \frac{13bBd^2}{6348(bc - ad)^4 g^4} \\
&= -\frac{bB}{19044(bc - ad)^2 g^4 (a + bx)^3} + \frac{bBd}{3174(bc - ad)^3 g^4 (a + bx)^2} - \frac{13bBd^2}{6348(bc - ad)^4 g^4} \\
&= -\frac{bB}{19044(bc - ad)^2 g^4 (a + bx)^3} + \frac{bBd}{3174(bc - ad)^3 g^4 (a + bx)^2} - \frac{13bBd^2}{6348(bc - ad)^4 g^4}
\end{aligned}$$

Mathematica [C] time = 1.34, size = 520, normalized size = 1.14

$$\frac{36bd^3 \log(a + bx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right) - \frac{9d^3(ad-bc) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{c+dx} - 36bd^3 \log(c + dx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right) + \dots}{\dots}$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x]))/((a*g + b*g*x)^4*(c*i + d*i*x)^2), x]

```
[Out] -1/9*((b*B*(b*c - a*d)^3)/(a + b*x)^3 - (6*b*B*d*(b*c - a*d)^2)/(a + b*x)^2
+ (27*b^2*B*c*d^2)/(a + b*x) - (27*a*b*B*d^3)/(a + b*x) + (12*b*B*d^2*(b*c
- a*d))/(a + b*x) - (9*b*B*c*d^3)/(c + d*x) + (9*a*B*d^4)/(c + d*x) + 30*b
*B*d^3*Log[a + b*x] + (3*b*(b*c - a*d)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)
]))/(a + b*x)^3 - (9*b*d*(b*c - a*d)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)
]))/(a + b*x)^2 + (27*b*d^2*(b*c - a*d)*(A + B*Log[(e*(a + b*x))/(c + d*x)
]))/(a + b*x) - (9*d^3*(-(b*c) + a*d)*(A + B*Log[(e*(a + b*x))/(c + d*x)
]))/(c
+ d*x) + 36*b*d^3*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)
]) - 30*b
*B*d^3*Log[c + d*x] - 36*b*d^3*(A + B*Log[(e*(a + b*x))/(c + d*x)
])*Log[c +
d*x] - 18*b*B*d^3*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c -
a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + 18*b*B*d^3*((2*Log[
(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (
b*(c + d*x))/(b*c - a*d)])))/((b*c - a*d)^5*g^4*i^2)
```

fricas [B] time = 0.77, size = 1019, normalized size = 2.23

$$(3A + B)b^4c^4 - 9(2A + B)ab^3c^3d + 54(A + B)a^2b^2c^2d^2 - 5(6A + 11B)a^3bcd^3 - 9(A - B)a^4d^4 + 6((6A + 5B)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^4/(d*i*x+c*i)^2,x, algor
ithm="fricas")
```

```
[Out] -1/9*((3*A + B)*b^4*c^4 - 9*(2*A + B)*a*b^3*c^3*d + 54*(A + B)*a^2*b^2*c^2*
d^2 - 5*(6*A + 11*B)*a^3*b*c*d^3 - 9*(A - B)*a^4*d^4 + 6*((6*A + 5*B)*b^4*c
*d^3 - (6*A + 5*B)*a*b^3*d^4)*x^3 + 3*((6*A + 11*B)*b^4*c^2*d^2 + 8*(3*A +
B)*a*b^3*c*d^3 - (30*A + 19*B)*a^2*b^2*d^4)*x^2 + 18*(B*b^4*d^4*x^4 + B*a^3
*b*c*d^3 + (B*b^4*c*d^3 + 3*B*a*b^3*d^4)*x^3 + 3*(B*a*b^3*c*d^3 + B*a^2*b^2
*d^4)*x^2 + (3*B*a^2*b^2*c*d^3 + B*a^3*b*d^4)*x)*log((b*e*x + a*e)/(d*x + c
))^2 - ((6*A + 5*B)*b^4*c^3*d - 27*(2*A + 3*B)*a*b^3*c^2*d^2 - 3*(6*A - 19*
B)*a^2*b^2*c*d^3 + (66*A + 19*B)*a^3*b*d^4)*x + 3*(2*(6*A + 5*B)*b^4*d^4*x^
4 + B*b^4*c^4 - 6*B*a*b^3*c^3*d + 18*B*a^2*b^2*c^2*d^2 + 12*A*a^3*b*c*d^3 -
3*B*a^4*d^4 + 2*((6*A + 11*B)*b^4*c*d^3 + 9*(2*A + B)*a*b^3*d^4)*x^3 + 6*(
B*b^4*c^2*d^2 + 3*(2*A + 3*B)*a*b^3*c*d^3 + 6*A*a^2*b^2*d^4)*x^2 - 2*(B*b^4
*c^3*d - 9*B*a*b^3*c^2*d^2 - 18*(A + B)*a^2*b^2*c*d^3 - 6*(A - B)*a^3*b*d^4
)*x)*log((b*e*x + a*e)/(d*x + c)))/((b^8*c^5*d - 5*a*b^7*c^4*d^2 + 10*a^2*b
^6*c^3*d^3 - 10*a^3*b^5*c^2*d^4 + 5*a^4*b^4*c*d^5 - a^5*b^3*d^6)*g^4*i^2*x^
4 + (b^8*c^6 - 2*a*b^7*c^5*d - 5*a^2*b^6*c^4*d^2 + 20*a^3*b^5*c^3*d^3 - 25*
a^4*b^4*c^2*d^4 + 14*a^5*b^3*c*d^5 - 3*a^6*b^2*d^6)*g^4*i^2*x^3 + 3*(a*b^7*
c^6 - 4*a^2*b^6*c^5*d + 5*a^3*b^5*c^4*d^2 - 5*a^5*b^3*c^2*d^4 + 4*a^6*b^2*c
*d^5 - a^7*b*d^6)*g^4*i^2*x^2 + (3*a^2*b^6*c^6 - 14*a^3*b^5*c^5*d + 25*a^4*
b^4*c^4*d^2 - 20*a^5*b^3*c^3*d^3 + 5*a^6*b^2*c^2*d^4 + 2*a^7*b*c*d^5 - a^8*
d^6)*g^4*i^2*x + (a^3*b^5*c^6 - 5*a^4*b^4*c^5*d + 10*a^5*b^3*c^4*d^2 - 10*a
^6*b^2*c^3*d^3 + 5*a^7*b*c^2*d^4 - a^8*c*d^5)*g^4*i^2)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^4/(d*i*x+c*i)^2,x, algorithm="giac")

[Out] Timed out

maple [B] time = 0.05, size = 2068, normalized size = 4.53

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^4/(d*i*x+c*i)^2,x)

[Out]
$$\begin{aligned} & -6*d^2*e/i^2/(a*d-b*c)^6/g^4*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)* \\ & \ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-2*d^2*e^2/i^2/(a*d-b*c)^6/g^4*B*b^3/(1/(d \\ & *x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-d^3/ \\ & i^2/(a*d-b*c)^6/g^4*B*b^2*c+2*d^4/i^2/(a*d-b*c)^6/g^4*B*\ln(b/d*e+(a*d-b*c)/ \\ & (d*x+c)/d*e)/(d*x+c)*a*b*c+1/3*d*e^3/i^2/(a*d-b*c)^6/g^4*B*b^4/(1/(d*x+c)*a \\ & *e-1/(d*x+c)*b*c/d*e+b/d*e)^3*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+d^3/i^2/(a* \\ & d-b*c)^6/g^4*A*b^2*c+2*d*e^2/i^2/(a*d-b*c)^6/g^4*B*b^4/(1/(d*x+c)*a*e-1/(d* \\ & x+c)*b*c/d*e+b/d*e)^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-d^3/i^2/(a*d-b*c)^6 \\ & /g^4*A/(d*x+c)*b^2*c^2-1/3*e^3/i^2/(a*d-b*c)^6/g^4*A*b^5/(1/(d*x+c)*a*e-1/(\\ & d*x+c)*b*c/d*e+b/d*e)^3*c+d^3/i^2/(a*d-b*c)^6/g^4*B/(d*x+c)*b^2*c^2+d^3/i^2 \\ & / (a*d-b*c)^6/g^4*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2*c+2*d^4/i^2/(a*d-b*c \\ &)^6/g^4*B*b*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a-2*d^3/i^2/(a*d-b*c)^6/g^4*B \\ & *b^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c-4*d^3/i^2/(a*d-b*c)^6/g^4*A*b^2*\ln \\ & (b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-d^5/i^2/(a*d-b*c)^6/g^4*B*\ln(b/d*e+(a*d-b*c \\ &)/(d*x+c)/d*e)/(d*x+c)*a^2+4*d^4/i^2/(a*d-b*c)^6/g^4*A*b*\ln(b/d*e+(a*d-b*c) \\ & / (d*x+c)/d*e)*a-d^4/i^2/(a*d-b*c)^6/g^4*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b \\ & *a-1/9*e^3/i^2/(a*d-b*c)^6/g^4*B*b^5/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e \\ &)^3*c-d^5/i^2/(a*d-b*c)^6/g^4*A/(d*x+c)*a^2+d^5/i^2/(a*d-b*c)^6/g^4*B/(d*x+ \\ & c)*a^2+d^4/i^2/(a*d-b*c)^6/g^4*B*b*a-d^4/i^2/(a*d-b*c)^6/g^4*A*b*a+6*d^3*e/ \\ & i^2/(a*d-b*c)^6/g^4*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*\ln(b/d*e+ \\ & (a*d-b*c)/(d*x+c)/d*e)*a+2*d*e^2/i^2/(a*d-b*c)^6/g^4*A*b^4/(1/(d*x+c)*a*e-1 \\ & / (d*x+c)*b*c/d*e+b/d*e)^2*c+6*d^3*e/i^2/(a*d-b*c)^6/g^4*A*b^2/(1/(d*x+c)*a* \\ & e-1/(d*x+c)*b*c/d*e+b/d*e)*a-6*d^2*e/i^2/(a*d-b*c)^6/g^4*A*b^3/(1/(d*x+c)*a \\ & *e-1/(d*x+c)*b*c/d*e+b/d*e)*c+6*d^3*e/i^2/(a*d-b*c)^6/g^4*B*b^2/(1/(d*x+c)* \\ & a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a+2*d^4/i^2/(a*d-b*c)^6/g^4*A/(d*x+c)*a*b*c-2* \\ & d^4/i^2/(a*d-b*c)^6/g^4*B/(d*x+c)*a*b*c-d^2*e^2/i^2/(a*d-b*c)^6/g^4*B*b^3/(\\ & 1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a+d*e^2/i^2/(a*d-b*c)^6/g^4*B*b^4/ \end{aligned}$$

$$\frac{1}{(d*x+c)*a*e^{-1/(d*x+c)}*b*c/d*e+b/d*e}^{2*c+1/9*d*e^3/i^2/(a*d-b*c)^6/g^4*B*b^4/(1/(d*x+c)*a*e^{-1/(d*x+c)}*b*c/d*e+b/d*e)^3*a-6*d^2*e/i^2/(a*d-b*c)^6/g^4*B*b^3/(1/(d*x+c)*a*e^{-1/(d*x+c)}*b*c/d*e+b/d*e)*c-2*d^2*e^2/i^2/(a*d-b*c)^6/g^4*A*b^3/(1/(d*x+c)*a*e^{-1/(d*x+c)}*b*c/d*e+b/d*e)^2*a+1/3*d*e^3/i^2/(a*d-b*c)^6/g^4*A*b^4/(1/(d*x+c)*a*e^{-1/(d*x+c)}*b*c/d*e+b/d*e)^3*a-1/3*e^3/i^2/(a*d-b*c)^6/g^4*B*b^5/(1/(d*x+c)*a*e^{-1/(d*x+c)}*b*c/d*e+b/d*e)^3*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-d^3/i^2/(a*d-b*c)^6/g^4*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*b^2*c^2}$$

maxima [B] time = 3.45, size = 2560, normalized size = 5.60

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^4/(d*i*x+c*i)^2,x, algorith="maxima")

[Out]
$$-1/3*B*((12*b^3*d^3*x^3 + b^3*c^3 - 5*a*b^2*c^2*d + 13*a^2*b*c*d^2 + 3*a^3*d^3 + 6*(b^3*c*d^2 + 5*a*b^2*d^3)*x^2 - 2*(b^3*c^2*d - 8*a*b^2*c*d^2 - 11*a^2*b*d^3)*x)/((b^7*c^4*d - 4*a*b^6*c^3*d^2 + 6*a^2*b^5*c^2*d^3 - 4*a^3*b^4*c*d^4 + a^4*b^3*d^5)*g^4*i^2*x^4 + (b^7*c^5 - a*b^6*c^4*d - 6*a^2*b^5*c^3*d^2 + 14*a^3*b^4*c^2*d^3 - 11*a^4*b^3*c*d^4 + 3*a^5*b^2*d^5)*g^4*i^2*x^3 + 3*(a*b^6*c^5 - 3*a^2*b^5*c^4*d + 2*a^3*b^4*c^3*d^2 + 2*a^4*b^3*c^2*d^3 - 3*a^5*b^2*c*d^4 + a^6*b*d^5)*g^4*i^2*x^2 + (3*a^2*b^5*c^5 - 11*a^3*b^4*c^4*d + 14*a^4*b^3*c^3*d^2 - 6*a^5*b^2*c^2*d^3 - a^6*b*c*d^4 + a^7*d^5)*g^4*i^2*x + (a^3*b^4*c^5 - 4*a^4*b^3*c^4*d + 6*a^5*b^2*c^3*d^2 - 4*a^6*b*c^2*d^3 + a^7*c*d^4)*g^4*i^2) + 12*b*d^3*log(b*x + a)/((b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a^3*b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5)*g^4*i^2) - 12*b*d^3*log(d*x + c)/((b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a^3*b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5)*g^4*i^2))*log(b*e*x/(d*x + c) + a/(d*x + c)) - 1/3*A*((12*b^3*d^3*x^3 + b^3*c^3 - 5*a*b^2*c^2*d + 13*a^2*b*c*d^2 + 3*a^3*d^3 + 6*(b^3*c*d^2 + 5*a*b^2*d^3)*x^2 - 2*(b^3*c^2*d - 8*a*b^2*c*d^2 - 11*a^2*b*d^3)*x)/((b^7*c^4*d - 4*a*b^6*c^3*d^2 + 6*a^2*b^5*c^2*d^3 - 4*a^3*b^4*c*d^4 + a^4*b^3*d^5)*g^4*i^2*x^4 + (b^7*c^5 - a*b^6*c^4*d - 6*a^2*b^5*c^3*d^2 + 14*a^3*b^4*c^2*d^3 - 11*a^4*b^3*c*d^4 + 3*a^5*b^2*d^5)*g^4*i^2*x^3 + 3*(a*b^6*c^5 - 3*a^2*b^5*c^4*d + 2*a^3*b^4*c^3*d^2 + 2*a^4*b^3*c^2*d^3 - 3*a^5*b^2*c*d^4 + a^6*b*d^5)*g^4*i^2*x^2 + (3*a^2*b^5*c^5 - 11*a^3*b^4*c^4*d + 14*a^4*b^3*c^3*d^2 - 6*a^5*b^2*c^2*d^3 - a^6*b*c*d^4 + a^7*d^5)*g^4*i^2*x + (a^3*b^4*c^5 - 4*a^4*b^3*c^4*d + 6*a^5*b^2*c^3*d^2 - 4*a^6*b*c^2*d^3 + a^7*c*d^4)*g^4*i^2) + 12*b*d^3*log(b*x + a)/((b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a^3*b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5)*g^4*i^2) - 12*b*d^3*log(d*x + c)/((b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a^3*b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5)*g^4*i^2)) - 1/9*(b^4*c^4 - 9*a*b^3*c^3*d + 54*a^2*b^2*c^2*d^2 - 55*a^3*b*c*d^3 + 9*a^4*d^4 + 30*(b^4*c*d^3 - a*b^3*d^4)*x^3 + 3*(11*b^4*c^2*d^2 + 8*a*b^3*c*d^3 - 19*a^2*b^2$$

$$\begin{aligned}
& d^4) * x^2 - 18 * (b^4 * d^4 * x^4 + a^3 * b * c * d^3 + (b^4 * c * d^3 + 3 * a * b^3 * d^4) * x^3 + \\
& 3 * (a * b^3 * c * d^3 + a^2 * b^2 * d^4) * x^2 + (3 * a^2 * b^2 * c * d^3 + a^3 * b * d^4) * x) * \log(b \\
& * x + a)^2 - 18 * (b^4 * d^4 * x^4 + a^3 * b * c * d^3 + (b^4 * c * d^3 + 3 * a * b^3 * d^4) * x^3 + \\
& 3 * (a * b^3 * c * d^3 + a^2 * b^2 * d^4) * x^2 + (3 * a^2 * b^2 * c * d^3 + a^3 * b * d^4) * x) * \log(d \\
& * x + c)^2 - (5 * b^4 * c^3 * d - 81 * a * b^3 * c^2 * d^2 + 57 * a^2 * b^2 * c * d^3 + 19 * a^3 * b * d \\
& ^4) * x + 30 * (b^4 * d^4 * x^4 + a^3 * b * c * d^3 + (b^4 * c * d^3 + 3 * a * b^3 * d^4) * x^3 + 3 * (\\
& a * b^3 * c * d^3 + a^2 * b^2 * d^4) * x^2 + (3 * a^2 * b^2 * c * d^3 + a^3 * b * d^4) * x) * \log(b * x + \\
& a) - 6 * (5 * b^4 * d^4 * x^4 + 5 * a^3 * b * c * d^3 + 5 * (b^4 * c * d^3 + 3 * a * b^3 * d^4) * x^3 + \\
& 15 * (a * b^3 * c * d^3 + a^2 * b^2 * d^4) * x^2 + 5 * (3 * a^2 * b^2 * c * d^3 + a^3 * b * d^4) * x - 6 * \\
& (b^4 * d^4 * x^4 + a^3 * b * c * d^3 + (b^4 * c * d^3 + 3 * a * b^3 * d^4) * x^3 + 3 * (a * b^3 * c * d^3 \\
& + a^2 * b^2 * d^4) * x^2 + (3 * a^2 * b^2 * c * d^3 + a^3 * b * d^4) * x) * \log(b * x + a) * \log(d * \\
& x + c)) * B / (a^3 * b^5 * c^6 * g^4 * i^2 - 5 * a^4 * b^4 * c^5 * d * g^4 * i^2 + 10 * a^5 * b^3 * c^4 * d \\
& ^2 * g^4 * i^2 - 10 * a^6 * b^2 * c^3 * d^3 * g^4 * i^2 + 5 * a^7 * b * c^2 * d^4 * g^4 * i^2 - a^8 * c * d \\
& ^5 * g^4 * i^2 + (b^8 * c^5 * d * g^4 * i^2 - 5 * a * b^7 * c^4 * d^2 * g^4 * i^2 + 10 * a^2 * b^6 * c^3 * \\
& d^3 * g^4 * i^2 - 10 * a^3 * b^5 * c^2 * d^4 * g^4 * i^2 + 5 * a^4 * b^4 * c * d^5 * g^4 * i^2 - a^5 * b^3 * \\
& 3 * d^6 * g^4 * i^2) * x^4 + (b^8 * c^6 * g^4 * i^2 - 2 * a * b^7 * c^5 * d * g^4 * i^2 - 5 * a^2 * b^6 * c^ \\
& ^4 * d^2 * g^4 * i^2 + 20 * a^3 * b^5 * c^3 * d^3 * g^4 * i^2 - 25 * a^4 * b^4 * c^2 * d^4 * g^4 * i^2 + \\
& 14 * a^5 * b^3 * c * d^5 * g^4 * i^2 - 3 * a^6 * b^2 * d^6 * g^4 * i^2) * x^3 + 3 * (a * b^7 * c^6 * g^4 * i^ \\
& 2 - 4 * a^2 * b^6 * c^5 * d * g^4 * i^2 + 5 * a^3 * b^5 * c^4 * d^2 * g^4 * i^2 - 5 * a^5 * b^3 * c^2 * d^4 \\
& * g^4 * i^2 + 4 * a^6 * b^2 * c * d^5 * g^4 * i^2 - a^7 * b * d^6 * g^4 * i^2) * x^2 + (3 * a^2 * b^6 * c^ \\
& 6 * g^4 * i^2 - 14 * a^3 * b^5 * c^5 * d * g^4 * i^2 + 25 * a^4 * b^4 * c^4 * d^2 * g^4 * i^2 - 20 * a^5 * \\
& b^3 * c^3 * d^3 * g^4 * i^2 + 5 * a^6 * b^2 * c^2 * d^4 * g^4 * i^2 + 2 * a^7 * b * c * d^5 * g^4 * i^2 - a \\
& ^8 * d^6 * g^4 * i^2) * x)
\end{aligned}$$

mupad [B] time = 12.44, size = 1679, normalized size = 3.67

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{int}((A + B * \log((e * (a + b * x)) / (c + d * x))) / ((a * g + b * g * x)^4 * (c * i + d * i * x)^2), x)$

[Out] $(2 * B * b * d^3 * \log((e * (a + b * x)) / (c + d * x))^2) / (g^4 * i^2 * (a * d - b * c)^2 * (a^3 * d^3 - b^3 * c^3 + 3 * a * b^2 * c^2 * d - 3 * a^2 * b * c * d^2)) - (\log((e * (a + b * x)) / (c + d * x))) * (x * ((4 * B) / (3 * g^4 * i^2 * (a^2 * d^2 + b^2 * c^2 - 2 * a * b * c * d)) + (4 * B * b * d^3 * ((2 * a^2 * d^2 + b^2 * c^2 - 3 * a * b * c * d) / (2 * b * d^3) + (a * (a * d - b * c)) / (2 * b * d^2)) * (a * d + b * c) + (a * c * (a * d - b * c)) / d^2)) / (g^4 * i^2 * (a * d - b * c)^2 * (a^3 * d^3 - b^3 * c^3 + 3 * a * b^2 * c^2 * d - 3 * a^2 * b * c * d^2))) + (B * (3 * a * d + b * c)) / (3 * g^4 * i^2 * (a^2 * b * d^3 + b^3 * c^2 * d - 2 * a * b^2 * c * d^2)) + (4 * B * b^2 * d^2 * x^3) / (g^4 * i^2 * (a * d - b * c) * (a^3 * d^3 - b^3 * c^3 + 3 * a * b^2 * c^2 * d - 3 * a^2 * b * c * d^2)) + (4 * B * b * d^3 * x^2 * (b * d * ((2 * a^2 * d^2 + b^2 * c^2 - 3 * a * b * c * d) / (2 * b * d^3) + (a * (a * d - b * c)) / (2 * b * d^2)) + ((a * d + b * c) * (a * d - b * c)) / d^2)) / (g^4 * i^2 * (a * d - b * c)^2 * (a^3 * d^3 - b^3 * c^3 + 3 * a * b^2 * c^2 * d - 3 * a^2 * b * c * d^2)) + (4 * B * a * b * c * d^3 * ((2 * a^2 * d^2 + b^2 * c^2 - 3 * a * b * c * d) / (2 * b * d^3) + (a * (a * d - b * c)) / (2 * b * d^2))) / (g^4 * i^2 * (a * d - b * c)^2 * (a^3 * d^3 - b^3 * c^3 + 3 * a * b^2 * c^2 * d - 3 * a^2 * b * c * d^2))) / (b^2 * x^4 + (a^3 * c) / (b * d))$

$$\begin{aligned}
& + (x*(a^3*d + 3*a^2*b*c))/(b*d) + (x^3*(b^3*c + 3*a*b^2*d))/(b*d) + (x^2*(3 \\
& *a*b^2*c + 3*a^2*b*d))/(b*d) - (b*d^3*\operatorname{atan}((b*d^3*((a^5*d^5*g^4*i^2 + b^5* \\
& c^5*g^4*i^2 - 3*a*b^4*c^4*d*g^4*i^2 - 3*a^4*b*c*d^4*g^4*i^2 + 2*a^2*b^3*c^3 \\
& *d^2*g^4*i^2 + 2*a^3*b^2*c^2*d^3*g^4*i^2)/(a^4*d^4*g^4*i^2 + b^4*c^4*g^4*i^2 \\
& - 4*a*b^3*c^3*d*g^4*i^2 - 4*a^3*b*c*d^3*g^4*i^2 + 6*a^2*b^2*c^2*d^2*g^4*i^2 \\
& ^2) + 2*b*d*x)*(6*A + 5*B)*(a^4*d^4*g^4*i^2 + b^4*c^4*g^4*i^2 - 4*a*b^3*c^3 \\
& *d*g^4*i^2 - 4*a^3*b*c*d^3*g^4*i^2 + 6*a^2*b^2*c^2*d^2*g^4*i^2)*2i)/(g^4*i^ \\
& 2*(a*d - b*c)^5*(12*A*b*d^3 + 10*B*b*d^3))*(6*A + 5*B)*4i)/(3*g^4*i^2*(a*d \\
& - b*c)^5) - ((9*A*a^3*d^3 + 3*A*b^3*c^3 - 9*B*a^3*d^3 + B*b^3*c^3 - 15*A*a \\
& *b^2*c^2*d + 39*A*a^2*b*c*d^2 - 8*B*a*b^2*c^2*d + 46*B*a^2*b*c*d^2)/(3*(a*d \\
& - b*c)) + (x*(66*A*a^2*b*d^3 + 19*B*a^2*b*d^3 - 6*A*b^3*c^2*d - 5*B*b^3*c^ \\
& 2*d + 48*A*a*b^2*c*d^2 + 76*B*a*b^2*c*d^2))/(3*(a*d - b*c)) + (x^2*(30*A*a* \\
& b^2*d^3 + 19*B*a*b^2*d^3 + 6*A*b^3*c*d^2 + 11*B*b^3*c*d^2))/(a*d - b*c) + (\\
& 2*x^3*(6*A*b^3*d^3 + 5*B*b^3*d^3))/(a*d - b*c))/(x*(3*a^6*d^4*g^4*i^2 - 9*a \\
& ^2*b^4*c^4*g^4*i^2 + 24*a^3*b^3*c^3*d*g^4*i^2 - 18*a^4*b^2*c^2*d^2*g^4*i^2) \\
& - x^2*(9*a*b^5*c^4*g^4*i^2 - 9*a^5*b*d^4*g^4*i^2 - 18*a^2*b^4*c^3*d*g^4*i^ \\
& 2 + 18*a^4*b^2*c*d^3*g^4*i^2) - x^3*(3*b^6*c^4*g^4*i^2 - 9*a^4*b^2*d^4*g^4* \\
& i^2 + 24*a^3*b^3*c*d^3*g^4*i^2 - 18*a^2*b^4*c^2*d^2*g^4*i^2) + x^4*(3*a^3*b \\
& ^3*d^4*g^4*i^2 - 3*b^6*c^3*d*g^4*i^2 + 9*a*b^5*c^2*d^2*g^4*i^2 - 9*a^2*b^4* \\
& c*d^3*g^4*i^2) - 3*a^3*b^3*c^4*g^4*i^2 + 3*a^6*c*d^3*g^4*i^2 + 9*a^4*b^2*c^ \\
& 3*d*g^4*i^2 - 9*a^5*b*c^2*d^2*g^4*i^2)
\end{aligned}$$

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)**4/(d*i*x+c*i)**2,x)

[Out] Timed out

$$3.47 \quad \int \frac{(ag+bgx)^3 \left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{(ci+dix)^3} dx$$

Optimal. Leaf size=361

$$\frac{b^2 g^3 (bc - ad) \log\left(\frac{bc-ad}{b(c+dx)}\right) \left(3B \log\left(\frac{e(a+bx)}{c+dx}\right) + 3A + B\right)}{d^4 i^3} + \frac{b g^3 (3A + B)(a + bx)(bc - ad)}{d^3 i^3 (c + dx)} + \frac{g^3 (a + bx)^2 (bc - ad) (3A + B)}{2d^2 i^3 (c + dx)}$$

[Out] $-3/4*B*(-a*d+b*c)*g^3*(b*x+a)^2/d^2/i^3/(d*x+c)^2-3*b*B*(-a*d+b*c)*g^3*(b*x+a)/d^3/i^3/(d*x+c)+b*(3*A+B)*(-a*d+b*c)*g^3*(b*x+a)/d^3/i^3/(d*x+c)+3*b*B*(-a*d+b*c)*g^3*(b*x+a)*\ln(e*(b*x+a)/(d*x+c))/d^3/i^3/(d*x+c)+g^3*(b*x+a)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))/d/i^3/(d*x+c)^2+1/2*(-a*d+b*c)*g^3*(b*x+a)^2*(3*A+B+3*B*\ln(e*(b*x+a)/(d*x+c)))/d^2/i^3/(d*x+c)^2+b^2*(-a*d+b*c)*g^3*\ln((-a*d+b*c)/b/(d*x+c))*(3*A+B+3*B*\ln(e*(b*x+a)/(d*x+c)))/d^4/i^3+3*b^2*B*(-a*d+b*c)*g^3*\text{polylog}(2,d*(b*x+a)/b/(d*x+c))/d^4/i^3$

Rubi [A] time = 0.73, antiderivative size = 442, normalized size of antiderivative = 1.22, number of steps used = 22, number of rules used = 13, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.325$, Rules used = {2528, 2486, 31, 2525, 12, 44, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$\frac{3b^2 B g^3 (bc - ad) \text{PolyLog}\left(2, \frac{b(c+dx)}{bc-ad}\right)}{d^4 i^3} - \frac{3b^2 g^3 (bc - ad) \log(c + dx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{d^4 i^3} - \frac{3b g^3 (bc - ad)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{d^4 i^3 (c + dx)}$$

Antiderivative was successfully verified.

[In] Int[((a*g + b*g*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x])))/(c*i + d*i*x)^3, x]

[Out] $(A*b^3*g^3*x)/(d^3*i^3) - (B*(b*c - a*d)^3*g^3)/(4*d^4*i^3*(c + d*x)^2) + (5*b*B*(b*c - a*d)^2*g^3)/(2*d^4*i^3*(c + d*x)) + (5*b^2*B*(b*c - a*d)*g^3*\text{Log}[a + b*x])/(2*d^4*i^3) + (b^2*B*g^3*(a + b*x)*\text{Log}[(e*(a + b*x))/(c + d*x)])/(d^3*i^3) + ((b*c - a*d)^3*g^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]]))/(2*d^4*i^3*(c + d*x)^2) - (3*b*(b*c - a*d)^2*g^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]]))/(d^4*i^3*(c + d*x)) - (7*b^2*B*(b*c - a*d)*g^3*\text{Log}[c + d*x])/(2*d^4*i^3) + (3*b^2*B*(b*c - a*d)*g^3*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c + d*x])/(d^4*i^3) - (3*b^2*(b*c - a*d)*g^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]])*\text{Log}[c + d*x])/(d^4*i^3) - (3*b^2*B*(b*c - a*d)*g^3*\text{Log}[c + d*x]^2)/(2*d^4*i^3) + (3*b^2*B*(b*c - a*d)*g^3*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/(d^4*i^3)$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 31

Int[((a_) + (b_.)*(x_))⁽⁻¹⁾, x_Symbol] := Simp[Log[RemoveContent[a + b*x, x]]/b, x] /; FreeQ[{a, b}, x]

Rule 44

Int[((a_) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)ⁿ, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])

Rule 2301

Int[((a_.) + Log[(c_.)*(x_)^(n_.)])*(b_.)/(x_), x_Symbol] := Simp[(a + b*Log[c*xⁿ])²/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)])*(b_.)^(p_.)*((f_) + (g_.)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*xⁿ])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*xⁿ)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))])*(b_.)/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)])*(b_.)/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)ⁿ]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)

, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2418

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]

Rule 2486

Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]

Rule 2524

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]

Rule 2525

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]

Rule 2528

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]

Rubi steps

$$\begin{aligned}
\int \frac{(ag + bgx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{(47c + 47dx)^3} dx &= \int \left(\frac{b^3 g^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{103823d^3} + \frac{(-bc + ad)^3 g^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{103823d^3 (c + dx)^3} \right) dx \\
&= \frac{(b^3 g^3) \int \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) dx}{103823d^3} - \frac{(3b^2(bc - ad)g^3) \int \frac{A+B \log \left(\frac{e(a+bx)}{c+dx} \right)}{c+dx}}{103823d^3} \\
&= \frac{Ab^3 g^3 x}{103823d^3} + \frac{(bc - ad)^3 g^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{207646d^4 (c + dx)^2} - \frac{3b(bc - ad)^2 g^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{103823d^4 (c + dx)^2} \\
&= \frac{Ab^3 g^3 x}{103823d^3} + \frac{b^2 B g^3 (a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{103823d^3} + \frac{(bc - ad)^3 g^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{207646d^4 (c + dx)^2} \\
&= \frac{Ab^3 g^3 x}{103823d^3} + \frac{b^2 B g^3 (a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{103823d^3} + \frac{(bc - ad)^3 g^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{207646d^4 (c + dx)^2} \\
&= \frac{Ab^3 g^3 x}{103823d^3} - \frac{B(bc - ad)^3 g^3}{415292d^4 (c + dx)^2} + \frac{5bB(bc - ad)^2 g^3}{207646d^4 (c + dx)} + \frac{5b^2 B(bc - ad)g^3}{207646d^4 (c + dx)} \\
&= \frac{Ab^3 g^3 x}{103823d^3} - \frac{B(bc - ad)^3 g^3}{415292d^4 (c + dx)^2} + \frac{5bB(bc - ad)^2 g^3}{207646d^4 (c + dx)} + \frac{5b^2 B(bc - ad)g^3}{207646d^4 (c + dx)} \\
&= \frac{Ab^3 g^3 x}{103823d^3} - \frac{B(bc - ad)^3 g^3}{415292d^4 (c + dx)^2} + \frac{5bB(bc - ad)^2 g^3}{207646d^4 (c + dx)} + \frac{5b^2 B(bc - ad)g^3}{207646d^4 (c + dx)} \\
&= \frac{Ab^3 g^3 x}{103823d^3} - \frac{B(bc - ad)^3 g^3}{415292d^4 (c + dx)^2} + \frac{5bB(bc - ad)^2 g^3}{207646d^4 (c + dx)} + \frac{5b^2 B(bc - ad)g^3}{207646d^4 (c + dx)}
\end{aligned}$$

Mathematica [A] time = 0.44, size = 317, normalized size = 0.88

$$g^3 \left(-12b^2(bc - ad) \log(c + dx) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right) - \frac{12b(bc-ad)^2 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{c+dx} + \frac{2(bc-ad)^3 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{(c+dx)^2} + 4b^2 B \right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((a*g + b*g*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(c*i + d*i*x)^3,x]
```

```
[Out] (g^3*(4*A*b^3*d*x - (B*(b*c - a*d)^3)/(c + d*x)^2 + (10*b*B*(b*c - a*d)^2)/(c + d*x) + 10*b^2*B*(b*c - a*d)*Log[a + b*x] + 4*b^2*B*d*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)] + (2*(b*c - a*d)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])))/(c + d*x)^2 - (12*b*(b*c - a*d)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])))/(c + d*x) - 14*b^2*B*(b*c - a*d)*Log[c + d*x] - 12*b^2*(b*c - a*d)*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x] + 6*b^2*B*(b*c - a*d)*((2*Log[(d*(a + b*x))/(-b*c) + a*d] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(4*d^4*i^3)
```

fricas [F] time = 0.99, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{Ab^3g^3x^3 + 3Aab^2g^3x^2 + 3Aa^2bg^3x + Aa^3g^3 + (Bb^3g^3x^3 + 3Bab^2g^3x^2 + 3Ba^2bg^3x + Ba^3g^3) \log\left(\frac{be}{d}\right)}{d^3i^3x^3 + 3cd^2i^3x^2 + 3c^2di^3x + c^3i^3} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^3,x, algorithm="fricas")
```

```
[Out] integral((A*b^3*g^3*x^3 + 3*A*a*b^2*g^3*x^2 + 3*A*a^2*b*g^3*x + A*a^3*g^3 + (B*b^3*g^3*x^3 + 3*B*a*b^2*g^3*x^2 + 3*B*a^2*b*g^3*x + B*a^3*g^3)*log((b*e*x + a*e)/(d*x + c)))/(d^3*i^3*x^3 + 3*c*d^2*i^3*x^2 + 3*c^2*d*i^3*x + c^3*i^3), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^3,x, algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.14, size = 1815, normalized size = 5.03

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)/(d*i*x+c*i)^3,x)
```

```
[Out] -2/d^3*e*g^3/i^3*B*b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)/(d*x+c)*c*a+1/d^4*e*g^3/i^3*B*b^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)/(d*x+c)*c^2+1/d^2*e*g^3/i^3*B*b^2*ln
```

$$\begin{aligned} & (b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)/(d*x+c)*a^2 \\ & +1/4/d*g^3/i^3*B/(d*x+c)^2*a^3-1/2/d*g^3/i^3*A/(d*x+c)^2*a^3-1/d^4*e*g^3/i^ \\ & 3*B*b^4*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*c \\ & -3/2/d^3*g^3/i^3*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a*b^2*c^2-1/d^ \\ & 4*e*g^3/i^3*A*b^4/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*c-3/d^4*g^3/i^3*B*b^3*1 \\ & n(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*c^2+3/2/d^2*g^3/i^3*A/(d*x+c)^2*a^2* \\ & b*c+1/2/d^4*g^3/i^3*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*b^3*c^3-3/4 \\ & /d^2*g^3/i^3*B/(d*x+c)^2*a^2*b*c-3/2/d^3*g^3/i^3*A/(d*x+c)^2*a*b^2*c^2+6/d^ \\ & 3*g^3/i^3*A*b^2/(d*x+c)*a*c-5/d^3*g^3/i^3*B*b^2/(d*x+c)*a*c+3/4/d^3*g^3/i^3 \\ & *B/(d*x+c)^2*b^2*c^2*a-3/d^3*g^3/i^3*B*b^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)* \\ & \ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a+3/d^4*g^3/i^3*B*b^3*\ln(b/ \\ & d*e+(a*d-b*c)/(d*x+c)/d*e)*\ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)* \\ & c+1/d^3*e*g^3/i^3*A*b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a-3/d^2*g^3/i^3*B \\ & *b*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*a^2+3/2/d^2*g^3/i^3*B*\ln(b/d*e+(\\ & a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a^2*b*c+6/d^3*g^3/i^3*B*b^2*\ln(b/d*e+(a*d-b \\ & *c)/(d*x+c)/d*e)/(d*x+c)*a*c+1/d^3*e*g^3/i^3*B*b^3*\ln(b/d*e+(a*d-b*c)/(d*x+ \\ & c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a+3/d^4*g^3/i^3*A*b^3*\ln(-b*e+(b/ \\ & d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c-3/d^3*g^3/i^3*B*b^2*dilog(-(-b*e+(b/d*e+(a*d- \\ & b*c)/(d*x+c)/d*e)*d)/b/e)*a+3/d^4*g^3/i^3*B*b^3*dilog(-(-b*e+(b/d*e+(a*d- \\ & b*c)/(d*x+c)/d*e)*d)/b/e)*c-5/2/d^3*g^3/i^3*B*b^2*\ln(b/d*e+(a*d-b*c)/(d*x+c \\ &)/d*e)*a+1/d^4*g^3/i^3*B*b^3*\ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c+5/2 \\ & /d^4*g^3/i^3*B*b^3*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-1/2/d*g^3/i^3*B*\ln(b/d \\ & *e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a^3+5/2/d^4*g^3/i^3*A*b^3*c-5/2/d^3*g^3 \\ & /i^3*A*b^2*a+9/4/d^3*g^3/i^3*B*b^2*a-9/4/d^4*g^3/i^3*B*b^3*c+5/2/d^2*g^3/i^ \\ & 3*B*b/(d*x+c)*a^2+5/2/d^4*g^3/i^3*B*b^3/(d*x+c)*c^2-1/4/d^4*g^3/i^3*B/(d*x+ \\ & c)^2*b^3*c^3-3/d^4*g^3/i^3*A*b^3/(d*x+c)*c^2+1/2/d^4*g^3/i^3*A/(d*x+c)^2*b^ \\ & 3*c^3-3/d^2*g^3/i^3*A*b/(d*x+c)*a^2-3/d^3*g^3/i^3*A*b^2*\ln(-b*e+(b/d*e+(a*d \\ & -b*c)/(d*x+c)/d*e)*d)*a-1/d^3*g^3/i^3*B*b^2*\ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c \\ &)/d*e)*d)*a \end{aligned}$$

maxima [B] time = 2.31, size = 2037, normalized size = 5.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^3,x, algorithm="maxima")

[Out]
$$\begin{aligned} & -3/4*B*a^2*b*g^3*(2*(2*d*x + c)*\log(b*e*x/(d*x + c) + a*e/(d*x + c))/(d^4*i \\ & ^3*x^2 + 2*c*d^3*i^3*x + c^2*d^2*i^3) - (b*c^2 - 3*a*c*d + 2*(b*c*d - 2*a*d \\ & ^2)*x)/((b*c*d^4 - a*d^5)*i^3*x^2 + 2*(b*c^2*d^3 - a*c*d^4)*i^3*x + (b*c^3* \\ & d^2 - a*c^2*d^3)*i^3) - 2*(b^2*c - 2*a*b*d)*\log(b*x + a)/((b^2*c^2*d^2 - 2* \\ & a*b*c*d^3 + a^2*d^4)*i^3) + 2*(b^2*c - 2*a*b*d)*\log(d*x + c)/((b^2*c^2*d^2 \\ & - 2*a*b*c*d^3 + a^2*d^4)*i^3) - 1/2*A*b^3*g^3*((6*c^2*d*x + 5*c^3)/(d^6*i^ \\ & 3*x^2 + 2*c*d^5*i^3*x + c^2*d^4*i^3) - 2*x/(d^3*i^3) + 6*c*\log(d*x + c)/(d^ \end{aligned}$$

$$\begin{aligned}
& 4i^3)) + 1/4*B*a^3*g^3*((2*b*d*x + 3*b*c - a*d)/((b*c*d^3 - a*d^4)*i^3*x^2 \\
& + 2*(b*c^2*d^2 - a*c*d^3)*i^3*x + (b*c^3*d - a*c^2*d^2)*i^3) - 2*\log(b*e*x \\
& / (d*x + c) + a*e/(d*x + c))/(d^3*i^3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3) + 2*b \\
& ^2*\log(b*x + a)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3) - 2*b^2*\log(d*x + \\
& c)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3)) + 3/2*A*a*b^2*g^3*((4*c*d*x \\
& + 3*c^2)/(d^5*i^3*x^2 + 2*c*d^4*i^3*x + c^2*d^3*i^3) + 2*\log(d*x + c)/(d^3* \\
& i^3)) - 3/2*(2*d*x + c)*A*a^2*b*g^3/(d^4*i^3*x^2 + 2*c*d^3*i^3*x + c^2*d^2* \\
& i^3) - 1/2*A*a^3*g^3/(d^3*i^3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3) + 1/2*(6*a^3 \\
& *b^2*d^3*g^3*\log(e) - (6*g^3*\log(e) + 7*g^3)*b^5*c^3 + (18*g^3*\log(e) + 19* \\
& g^3)*a*b^4*c^2*d - 2*(9*g^3*\log(e) + 7*g^3)*a^2*b^3*c*d^2)*B*\log(d*x + c)/(\\
& b^2*c^2*d^4*i^3 - 2*a*b*c*d^5*i^3 + a^2*d^6*i^3) + 1/4*(4*(b^5*c^2*d^3*g^3* \\
& \log(e) - 2*a*b^4*c*d^4*g^3*\log(e) + a^2*b^3*d^5*g^3*\log(e))*B*x^3 + 8*(b^5* \\
& c^3*d^2*g^3*\log(e) - 2*a*b^4*c^2*d^3*g^3*\log(e) + a^2*b^3*c*d^4*g^3*\log(e)) \\
& *B*x^2 - 2*((4*g^3*\log(e) - 5*g^3)*b^5*c^4*d - 20*(g^3*\log(e) - g^3)*a*b^4* \\
& c^3*d^2 + (28*g^3*\log(e) - 27*g^3)*a^2*b^3*c^2*d^3 - 12*(g^3*\log(e) - g^3)* \\
& a^3*b^2*c*d^4)*B*x + 6*((b^5*c^3*d^2*g^3 - 3*a*b^4*c^2*d^3*g^3 + 3*a^2*b^3* \\
& c*d^4*g^3 - a^3*b^2*d^5*g^3)*B*x^2 + 2*(b^5*c^4*d*g^3 - 3*a*b^4*c^3*d^2*g^3 \\
& + 3*a^2*b^3*c^2*d^3*g^3 - a^3*b^2*c*d^4*g^3)*B*x + (b^5*c^5*g^3 - 3*a*b^4* \\
& c^4*d*g^3 + 3*a^2*b^3*c^3*d^2*g^3 - a^3*b^2*c^2*d^3*g^3)*B)*\log(d*x + c)^2 \\
& - ((10*g^3*\log(e) - 9*g^3)*b^5*c^5 - (38*g^3*\log(e) - 35*g^3)*a*b^4*c^4*d + \\
& (46*g^3*\log(e) - 47*g^3)*a^2*b^3*c^3*d^2 - 3*(6*g^3*\log(e) - 7*g^3)*a^3*b^ \\
& 2*c^2*d^3)*B + 2*(2*(b^5*c^2*d^3*g^3 - 2*a*b^4*c*d^4*g^3 + a^2*b^3*d^5*g^3) \\
& *B*x^3 + (9*b^5*c^3*d^2*g^3 - 21*a*b^4*c^2*d^3*g^3 + 12*a^2*b^3*c*d^4*g^3 + \\
& 2*a^3*b^2*d^5*g^3)*B*x^2 + 2*(3*b^5*c^4*d*g^3 - 3*a*b^4*c^3*d^2*g^3 - 6*a^ \\
& 2*b^3*c^2*d^3*g^3 + 8*a^3*b^2*c*d^4*g^3)*B*x + (6*a*b^4*c^4*d*g^3 - 15*a^2* \\
& b^3*c^3*d^2*g^3 + 11*a^3*b^2*c^2*d^3*g^3)*B)*\log(b*x + a) - 2*(2*(b^5*c^2*d \\
& ^3*g^3 - 2*a*b^4*c*d^4*g^3 + a^2*b^3*d^5*g^3)*B*x^3 + 4*(b^5*c^3*d^2*g^3 - \\
& 2*a*b^4*c^2*d^3*g^3 + a^2*b^3*c*d^4*g^3)*B*x^2 - 4*(b^5*c^4*d*g^3 - 5*a*b^4 \\
& *c^3*d^2*g^3 + 7*a^2*b^3*c^2*d^3*g^3 - 3*a^3*b^2*c*d^4*g^3)*B*x - (5*b^5*c^ \\
& 5*g^3 - 19*a*b^4*c^4*d*g^3 + 23*a^2*b^3*c^3*d^2*g^3 - 9*a^3*b^2*c^2*d^3*g^3 \\
&)*B)*\log(d*x + c))/(b^2*c^4*d^4*i^3 - 2*a*b*c^3*d^5*i^3 + a^2*c^2*d^6*i^3 + \\
& (b^2*c^2*d^6*i^3 - 2*a*b*c*d^7*i^3 + a^2*d^8*i^3)*x^2 + 2*(b^2*c^3*d^5*i^3 \\
& - 2*a*b*c^2*d^6*i^3 + a^2*c*d^7*i^3)*x) - 3*(b^3*c*g^3 - a*b^2*d*g^3)*(\log \\
& (b*x + a)*\log((b*d*x + a*d)/(b*c - a*d) + 1) + \operatorname{dilog}(-(b*d*x + a*d)/(b*c - \\
& a*d))) * B / (d^4*i^3)
\end{aligned}$$

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ag + bgx)^3 \left(A + B \ln \left(\frac{e(a+bx)}{c+dx} \right) \right)}{(ci + dix)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((a*g + b*g*x)^3*(A + B*log((e*(a + b*x))/(c + d*x))))/(c*i + d*i*x)^3, x)

```
[Out] int(((a*g + b*g*x)^3*(A + B*log((e*(a + b*x))/(c + d*x))))/(c*i + d*i*x)^3,  
x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**3*(A+B*ln(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)**3,x)
```

```
[Out] Timed out
```

$$3.48 \quad \int \frac{(ag+bgx)^2 \left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{(ci+dix)^3} dx$$

Optimal. Leaf size=251

$$\frac{b^2 g^2 \log\left(\frac{bc-ad}{b(c+dx)}\right) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{d^3 i^3} - \frac{g^2 (a+bx)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{2d i^3 (c+dx)^2} - \frac{A b g^2 (a+bx)}{d^2 i^3 (c+dx)} - \frac{b^2 B g^2 \text{Li}_2\left(\frac{d(a+bx)}{b(c+dx)}\right)}{d^3 i^3}$$

[Out] $1/4*B*g^2*(b*x+a)^2/d/i^3/(d*x+c)^2-A*b*g^2*(b*x+a)/d^2/i^3/(d*x+c)+b*B*g^2*(b*x+a)/d^2/i^3/(d*x+c)-b*B*g^2*(b*x+a)*\ln(e*(b*x+a)/(d*x+c))/d^2/i^3/(d*x+c)-1/2*g^2*(b*x+a)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/d/i^3/(d*x+c)^2-b^2*g^2*\ln((-a*d+b*c)/b/(d*x+c))*(A+B*\ln(e*(b*x+a)/(d*x+c)))/d^3/i^3-b^2*B*g^2*\text{polylog}(2,d*(b*x+a)/b/(d*x+c))/d^3/i^3$

Rubi [A] time = 0.61, antiderivative size = 340, normalized size of antiderivative = 1.35, number of steps used = 19, number of rules used = 11, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.275$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$-\frac{b^2 B g^2 \text{PolyLog}\left(2, \frac{b(c+dx)}{bc-ad}\right)}{d^3 i^3} + \frac{b^2 g^2 \log(c+dx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{d^3 i^3} + \frac{2b g^2 (bc-ad) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{d^3 i^3 (c+dx)} - \frac{g^2 (b^2 B \text{Li}_2\left(\frac{d(a+bx)}{b(c+dx)}\right))}{d^3 i^3}$$

Antiderivative was successfully verified.

[In] $\text{Int}[\frac{(a*g + b*g*x)^2*(A + B*\text{Log}[\frac{e*(a + b*x)}{(c + d*x)])}{(c*i + d*i*x)^3}, x]$

[Out] $(B*(b*c - a*d)^2*g^2)/(4*d^3*i^3*(c + d*x)^2) - (3*b*B*(b*c - a*d)*g^2)/(2*d^3*i^3*(c + d*x)) - (3*b^2*B*g^2*\text{Log}[a + b*x])/(2*d^3*i^3) - ((b*c - a*d)^2*g^2*(A + B*\text{Log}[\frac{e*(a + b*x)}{(c + d*x)]])/(2*d^3*i^3*(c + d*x)^2) + (2*b*(b*c - a*d)*g^2*(A + B*\text{Log}[\frac{e*(a + b*x)}{(c + d*x)]])/(d^3*i^3*(c + d*x)) + (3*b^2*B*g^2*\text{Log}[c + d*x])/(2*d^3*i^3) - (b^2*B*g^2*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c + d*x])/(d^3*i^3) + (b^2*g^2*(A + B*\text{Log}[\frac{e*(a + b*x)}{(c + d*x)]])*\text{Log}[c + d*x])/(d^3*i^3) + (b^2*B*g^2*\text{Log}[c + d*x]^2)/(2*d^3*i^3) - (b^2*B*g^2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/(d^3*i^3)$

Rule 12

$\text{Int}[(a_)*(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \&\& \text{!MatchQ}[u, (b_)*(v_)] /; \text{FreeQ}[b, x]$

Rule 44

```
Int[((a_) + (b_)*(x_))^(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_))/(x_), x_Symbol] := Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)])*(b_)^(p_)*((f_) + (g_
)*(x_))^(q_), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_)*((d_) + (e_)*(x_)^(n_))]/(x_), x_Symbol] := -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))])*(b_)/((f_) + (g_)*(x_)), x_
Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)])*(b_)/((f_) + (g_)*(x_
)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x
), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)])*(b_)^(p_)*(RFx_), x_Sy
mbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524


```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(ag + bgx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{(48c + 48dx)^3} dx &= \int \left(\frac{(-bc + ad)^2 g^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{110592d^2(c + dx)^3} - \frac{b(bc - ad)g^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{55296d^2(c + dx)^2} \right) dx \\
&= \frac{(b^2 g^2) \int \frac{A+B \log \left(\frac{e(a+bx)}{c+dx} \right)}{c+dx} dx}{110592d^2} - \frac{(b(bc - ad)g^2) \int \frac{A+B \log \left(\frac{e(a+bx)}{c+dx} \right)}{(c+dx)^2} dx}{55296d^2} + \frac{(bc - ad)^2 g^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{221184d^3(c + dx)^2} \\
&= -\frac{(bc - ad)^2 g^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{221184d^3(c + dx)^2} + \frac{b(bc - ad)g^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{55296d^3(c + dx)} \\
&= -\frac{(bc - ad)^2 g^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{221184d^3(c + dx)^2} + \frac{b(bc - ad)g^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{55296d^3(c + dx)} \\
&= -\frac{(bc - ad)^2 g^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{221184d^3(c + dx)^2} + \frac{b(bc - ad)g^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{55296d^3(c + dx)} \\
&= \frac{B(bc - ad)^2 g^2}{442368d^3(c + dx)^2} - \frac{bB(bc - ad)g^2}{73728d^3(c + dx)} - \frac{b^2 B g^2 \log(a + bx)}{73728d^3} - \frac{(bc - ad)^2 g^2}{221184d^3(c + dx)^2} \\
&= \frac{B(bc - ad)^2 g^2}{442368d^3(c + dx)^2} - \frac{bB(bc - ad)g^2}{73728d^3(c + dx)} - \frac{b^2 B g^2 \log(a + bx)}{73728d^3} - \frac{(bc - ad)^2 g^2}{221184d^3(c + dx)^2} \\
&= \frac{B(bc - ad)^2 g^2}{442368d^3(c + dx)^2} - \frac{bB(bc - ad)g^2}{73728d^3(c + dx)} - \frac{b^2 B g^2 \log(a + bx)}{73728d^3} - \frac{(bc - ad)^2 g^2}{221184d^3(c + dx)^2} \\
&= \frac{B(bc - ad)^2 g^2}{442368d^3(c + dx)^2} - \frac{bB(bc - ad)g^2}{73728d^3(c + dx)} - \frac{b^2 B g^2 \log(a + bx)}{73728d^3} - \frac{(bc - ad)^2 g^2}{221184d^3(c + dx)^2}
\end{aligned}$$

Mathematica [A] time = 0.34, size = 245, normalized size = 0.98

$$g^2 \left(4b^2 \log(c + dx) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right) + \frac{8b(bc-ad) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{c+dx} - \frac{2(bc-ad)^2 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{(c+dx)^2} - 2b^2 B \left(2\text{Li}_2 \left(\frac{b(c+dx)}{bc-ad} \right) \right) \right) / (4d^3)$$

Antiderivative was successfully verified.

[In] Integrate[((a*g + b*g*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x])))/(c*i + d*i*x)^3,x]

[Out] $(g^2((B*(b*c - a*d)^2)/(c + d*x)^2 - (6*b*B*(b*c - a*d))/(c + d*x) - 6*b^2*B*\text{Log}[a + b*x] - (2*(b*c - a*d)^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)])))/(c + d*x)^2 + (8*b*(b*c - a*d)*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(c + d*x) + 6*b^2*B*\text{Log}[c + d*x] + 4*b^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)])*\text{Log}[c + d*x] - 2*b^2*B*((2*\text{Log}[(d*(a + b*x))/(-(b*c) + a*d)] - \text{Log}[c + d*x])*\text{Log}[c + d*x] + 2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])))/(4*d^3*i^3)$

fricas [F] time = 0.87, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{Ab^2g^2x^2 + 2Aabg^2x + Aa^2g^2 + (Bb^2g^2x^2 + 2Babg^2x + Ba^2g^2) \log\left(\frac{bex+ae}{dx+c}\right)}{d^3i^3x^3 + 3cd^2i^3x^2 + 3c^2di^3x + c^3i^3}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((b*g*x+a*g)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^3,x, algorithm="fricas")`

[Out] `integral((A*b^2*g^2*x^2 + 2*A*a*b*g^2*x + A*a^2*g^2 + (B*b^2*g^2*x^2 + 2*B*a*b*g^2*x + B*a^2*g^2)*log((b*e*x + a*e)/(d*x + c)))/(d^3*i^3*x^3 + 3*c*d^2*i^3*x^2 + 3*c^2*d*i^3*x + c^3*i^3), x)`

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((b*g*x+a*g)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^3,x, algorithm="giac")`

[Out] Timed out

maple [B] time = 0.06, size = 1569, normalized size = 6.25

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((b*g*x+a*g)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)/(d*i*x+c*i)^3,x)`

[Out] `-1/2*g^2/(a*d-b*c)/i^3*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a^3-1/2*g^2/(a*d-b*c)/i^3*A/(d*x+c)^2*a^3+1/4*g^2/(a*d-b*c)/i^3*B/(d*x+c)^2*a^3-3/2/d^2*g^2/(a*d-b*c)/i^3*A*b^2*a+3/2/d*g^2/(a*d-b*c)/i^3*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a^2*b*c+4/d^2*g^2/(a*d-b*c)/i^3*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2/(d*x+c)*a*c+3/2/d^3*g^2/(a*d-b*c)/i^3*A*b^3*c+5/4/d^2*g^2/(a*d-b*c)/i^3*B*b^2*a-5/4/d^3*g^2/(a*d-b*c)/i^3*B*b^3*c-3/2/d^2*g^2/(a*d-`

$$\begin{aligned}
& b*c)/i^3*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2*a+1/d^3*g^2/(a*d-b*c)/i^3*A* \\
& b^3*\ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c+1/d^3*g^2/(a*d-b*c)/i^3*B*b^ \\
& 3*dilog(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*c+3/2/d^3*g^2/(a*d-b*c \\
&)/i^3*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^3*c-1/d^2*g^2/(a*d-b*c)/i^3*B*b^2 \\
& *dilog(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a+1/2/d^3*g^2/(a*d-b*c) \\
& /i^3*A/(d*x+c)^2*b^3*c^3+3/2/d*g^2/(a*d-b*c)/i^3*B*b/(d*x+c)*a^2+3/2/d^3*g^ \\
& 2/(a*d-b*c)/i^3*B*b^3/(d*x+c)*c^2-1/d^2*g^2/(a*d-b*c)/i^3*A*b^2*\ln(-b*e+(b/ \\
& d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a-2/d*g^2/(a*d-b*c)/i^3*A*b/(d*x+c)*a^2-2/d^3 \\
& *g^2/(a*d-b*c)/i^3*A*b^3/(d*x+c)*c^2-1/4/d^3*g^2/(a*d-b*c)/i^3*B/(d*x+c)^2* \\
& b^3*c^3-3/2/d^2*g^2/(a*d-b*c)/i^3*A/(d*x+c)^2*a*b^2*c^2+4/d^2*g^2/(a*d-b*c) \\
& /i^3*A*b^2/(d*x+c)*a*c+3/2/d*g^2/(a*d-b*c)/i^3*A/(d*x+c)^2*a^2*b*c-3/4/d*g^ \\
& 2/(a*d-b*c)/i^3*B/(d*x+c)^2*a^2*b*c-3/d^2*g^2/(a*d-b*c)/i^3*B*b^2/(d*x+c)* \\
& *c+3/4/d^2*g^2/(a*d-b*c)/i^3*B/(d*x+c)^2*a*b^2*c^2-1/d^2*g^2/(a*d-b*c)/i^3* \\
& B*b^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*\ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d* \\
& e)*d)/b/e)*a-2/d*g^2/(a*d-b*c)/i^3*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b/(d*x \\
& +c)*a^2+1/d^3*g^2/(a*d-b*c)/i^3*B*b^3*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*\ln(- \\
& (-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*c-2/d^3*g^2/(a*d-b*c)/i^3*B*\ln(b \\
& /d*e+(a*d-b*c)/(d*x+c)/d*e)*b^3/(d*x+c)*c^2+1/2/d^3*g^2/(a*d-b*c)/i^3*B*\ln(\\
& b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*b^3*c^3-3/2/d^2*g^2/(a*d-b*c)/i^3*B* \\
& \ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a*b^2*c^2
\end{aligned}$$

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2} Babg^2 \left(\frac{2(2dx+c) \log\left(\frac{bex}{dx+c} + \frac{ae}{dx+c}\right)}{d^4 i^3 x^2 + 2cd^3 i^3 x + c^2 d^2 i^3} - \frac{bc^2 - 3acd + 2(bcd - 2ad^2)x}{(bcd^4 - ad^5)i^3 x^2 + 2(bc^2 d^3 - acd^4)i^3 x + (bc^3 d^2 - ac^2 d^3)i^3} - \frac{2(b^2c - b^2c^2 d^2)}{(b^2c^2 d^2)} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^3,x, algorith="maxima")

[Out]
$$\begin{aligned}
& -1/2*B*a*b*g^2*(2*(2*d*x + c)*\log(b*e*x/(d*x + c) + a*e/(d*x + c))/(d^4*i^3 \\
& *x^2 + 2*c*d^3*i^3*x + c^2*d^2*i^3) - (b*c^2 - 3*a*c*d + 2*(b*c*d - 2*a*d^2 \\
&)*x)/((b*c*d^4 - a*d^5)*i^3*x^2 + 2*(b*c^2*d^3 - a*c*d^4)*i^3*x + (b*c^3*d^2 \\
& - a*c^2*d^3)*i^3) - 2*(b^2*c - 2*a*b*d)*\log(b*x + a)/((b^2*c^2*d^2 - 2*a* \\
& b*c*d^3 + a^2*d^4)*i^3) + 2*(b^2*c - 2*a*b*d)*\log(d*x + c)/((b^2*c^2*d^2 - \\
& 2*a*b*c*d^3 + a^2*d^4)*i^3) + 1/4*B*a^2*g^2*((2*b*d*x + 3*b*c - a*d)/((b*c \\
& *d^3 - a*d^4)*i^3*x^2 + 2*(b*c^2*d^2 - a*c*d^3)*i^3*x + (b*c^3*d - a*c^2*d^2 \\
&)*i^3) - 2*\log(b*e*x/(d*x + c) + a*e/(d*x + c))/(d^3*i^3*x^2 + 2*c*d^2*i^3 \\
& *x + c^2*d*i^3) + 2*b^2*\log(b*x + a)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i \\
& ^3) - 2*b^2*\log(d*x + c)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3) + 1/2*A \\
& *b^2*g^2*((4*c*d*x + 3*c^2)/(d^5*i^3*x^2 + 2*c*d^4*i^3*x + c^2*d^3*i^3) + 2 \\
& *\log(d*x + c)/(d^3*i^3)) - 1/2*B*b^2*g^2*((d^2*x^2 + 2*c*d*x + c^2)*\log(d*x \\
& + c)^2 + (4*c*d*x + 3*c^2)*\log(d*x + c))/(d^5*i^3*x^2 + 2*c*d^4*i^3*x + c
\end{aligned}$$

$$\begin{aligned} & \int \frac{(ag + bgx)^2 \left(A + B \ln \left(\frac{e^{(a+bx)}}{c+dx} \right) \right)}{(ci + dix)^3} dx \\ & - 2 \int \frac{1/2 \cdot (2d^2x^2 \log(bx + a) + 2d^2x^2 \log(e) + 4cdx + 3c^2)}{(d^5i^3x^3 + 3c^2d^4i^3x^2 + 3c^2d^3i^3x + c^3d^2i^3)} dx \\ & - (2dx + c) \frac{Aabg^2}{(d^4i^3x^2 + 2c^2d^3i^3x + c^2d^2i^3)} \\ & - \frac{1}{2} \frac{Aa^2g^2}{(d^3i^3x^2 + 2c^2d^2i^3x + c^2d^2i^3)} \end{aligned}$$

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ag + bgx)^2 \left(A + B \ln \left(\frac{e^{(a+bx)}}{c+dx} \right) \right)}{(ci + dix)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((a*g + b*g*x)^2*(A + B*log((e*(a + b*x))/(c + d*x))))/(c*i + d*i*x)^3, x)

[Out] int(((a*g + b*g*x)^2*(A + B*log((e*(a + b*x))/(c + d*x))))/(c*i + d*i*x)^3, x)

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$g^2 \left(\int \frac{Aa^2}{c^3+3c^2dx+3cd^2x^2+d^3x^3} dx + \int \frac{Ab^2x^2}{c^3+3c^2dx+3cd^2x^2+d^3x^3} dx + \int \frac{Ba^2 \log\left(\frac{ae}{c+dx} + \frac{bex}{c+dx}\right)}{c^3+3c^2dx+3cd^2x^2+d^3x^3} dx + \int \frac{2Aabx}{c^3+3c^2dx+3cd^2x^2+d^3x^3} dx + \int \frac{2Babx \log\left(\frac{ae}{c+dx} + \frac{bex}{c+dx}\right)}{c^3+3c^2dx+3cd^2x^2+d^3x^3} dx \right) / i^3$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)**2*(A+B*ln(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)**3,x)

[Out] g**2*(Integral(A*a**2/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x) + Integral(A*b**2*x**2/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x) + Integral(B*a**2*log(a*e/(c + d*x) + b*e*x/(c + d*x))/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x) + Integral(2*A*a*b*x/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x) + Integral(B*b**2*x**2*log(a*e/(c + d*x) + b*e*x/(c + d*x))/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x) + Integral(2*B*a*b*x*log(a*e/(c + d*x) + b*e*x/(c + d*x))/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x))/i**3

$$3.49 \quad \int \frac{(ag+bgx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(ci+dx)^3} dx$$

Optimal. Leaf size=85

$$\frac{g(a+bx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2i^3(c+dx)^2(bc-ad)} - \frac{Bg(a+bx)^2}{4i^3(c+dx)^2(bc-ad)}$$

[Out] $-1/4*B*g*(b*x+a)^2/(-a*d+b*c)/i^3/(d*x+c)^2+1/2*g*(b*x+a)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)/i^3/(d*x+c)^2$

Rubi [B] time = 0.29, antiderivative size = 191, normalized size of antiderivative = 2.25, number of steps used = 10, number of rules used = 4, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$, Rules used = {2528, 2525, 12, 44}

$$-\frac{bg\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{d^2i^3(c+dx)} + \frac{g(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2d^2i^3(c+dx)^2} + \frac{b^2Bg\log(a+bx)}{2d^2i^3(bc-ad)} - \frac{b^2Bg\log(c+dx)}{2d^2i^3(bc-ad)} - \frac{Bg(bc-ad)}{4d^2i^3(c+dx)^2}$$

Antiderivative was successfully verified.

[In] `Int[((a*g + b*g*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(c*i + d*i*x)^3,x]`

[Out] $-(B*(b*c - a*d)*g)/(4*d^2*i^3*(c + d*x)^2) + (b*B*g)/(2*d^2*i^3*(c + d*x)) + (b^2*B*g*Log[a + b*x])/(2*d^2*(b*c - a*d)*i^3) + ((b*c - a*d)*g*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(2*d^2*i^3*(c + d*x)^2) - (b*g*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(d^2*i^3*(c + d*x)) - (b^2*B*g*Log[c + d*x])/(2*d^2*(b*c - a*d)*i^3)$

Rule 12

`Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]`

Rule 44

`Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])`

Rule 2525

`Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))`

```
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunci
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned} \int \frac{(ag + bgx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{(49c + 49dx)^3} dx &= \int \left(\frac{(-bc + ad)g \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{117649d(c + dx)^3} + \frac{bg \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{117649d(c + dx)^2} \right) dx \\ &= \frac{(bg) \int \frac{A+B \log \left(\frac{e(a+bx)}{c+dx} \right)}{(c+dx)^2} dx}{117649d} - \frac{((bc - ad)g) \int \frac{A+B \log \left(\frac{e(a+bx)}{c+dx} \right)}{(c+dx)^3} dx}{117649d} \\ &= \frac{(bc - ad)g \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{235298d^2(c + dx)^2} - \frac{bg \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{117649d^2(c + dx)} + \frac{(bBg) \int \frac{1}{c+dx} dx}{117649d} \\ &= \frac{(bc - ad)g \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{235298d^2(c + dx)^2} - \frac{bg \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{117649d^2(c + dx)} + \frac{(bB(bc - ad)) \log(c + dx)}{117649d} \\ &= \frac{(bc - ad)g \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{235298d^2(c + dx)^2} - \frac{bg \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{117649d^2(c + dx)} + \frac{(bB(bc - ad)) \log(c + dx)}{117649d} \\ &= -\frac{B(bc - ad)g}{470596d^2(c + dx)^2} + \frac{bBg}{235298d^2(c + dx)} + \frac{b^2Bg \log(a + bx)}{235298d^2(bc - ad)} + \frac{(bc - ad)g}{117649d} \end{aligned}$$

Mathematica [B] time = 0.15, size = 207, normalized size = 2.44

$$\frac{\int \left(-\frac{b \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{d^2(c+dx)} + \frac{(bc-ad) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{2d^2(c+dx)^2} - \frac{B \left(\frac{2b^2 \log(a+bx)}{bc-ad} - \frac{2b^2 \log(c+dx)}{bc-ad} + \frac{bc-ad}{(c+dx)^2} + \frac{2b}{c+dx} \right)}{4d^2} + \frac{bB \left(\frac{b \log(a+bx)}{bc-ad} - \frac{b \log(c+dx)}{bc-ad} + \frac{1}{c+dx} \right)}{d^2} \right) dx}{i^3}$$

Antiderivative was successfully verified.

[In] Integrate[((a*g + b*g*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(c*i + d*i*x)^3, x]

[Out] (g*(((b*c - a*d)*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(2*d^2*(c + d*x)^2) - (b*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(d^2*(c + d*x)) + (b*B*((c + d*x)^(-1) + (b*Log[a + b*x])/(b*c - a*d) - (b*Log[c + d*x])/(b*c - a*d)))/d^2 - (B*((b*c - a*d)/(c + d*x)^2 + (2*b)/(c + d*x) + (2*b^2*Log[a + b*x])/(b*c - a*d) - (2*b^2*Log[c + d*x])/(b*c - a*d)))/(4*d^2))/i^3

fricas [B] time = 0.71, size = 185, normalized size = 2.18

$$\frac{2 \left((2A - B)b^2cd - (2A - B)abd^2 \right) gx + \left((2A - B)b^2c^2 - (2A - B)a^2d^2 \right) g - 2 \left(Bb^2d^2gx^2 + 2Babd^2gx + Ba^2d^2g \right)}{4 \left((bcd^4 - ad^5)i^3x^2 + 2(bc^2d^3 - acd^4)i^3x + (bc^3d^2 - ac^2d^3)i^3 \right)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^3, x, algorithm="fricas")

[Out] -1/4*(2*((2*A - B)*b^2*c*d - (2*A - B)*a*b*d^2)*g*x + ((2*A - B)*b^2*c^2 - (2*A - B)*a^2*d^2)*g - 2*(B*b^2*d^2*g*x^2 + 2*B*a*b*d^2*g*x + B*a^2*d^2*g)*log((b*e*x + a*e)/(d*x + c)))/((b*c*d^4 - a*d^5)*i^3*x^2 + 2*(b*c^2*d^3 - a*c*d^4)*i^3*x + (b*c^3*d^2 - a*c^2*d^3)*i^3)

giac [A] time = 1.07, size = 152, normalized size = 1.79

$$\frac{1}{4} \left(\frac{2(bxe + ae)^2 Bgi \log\left(\frac{bxe + ae}{dx + c}\right)}{(dx + c)^2} + \frac{2(bxe + ae)^2 Agi}{(dx + c)^2} - \frac{(bxe + ae)^2 Bgi}{(dx + c)^2} \right) \left(\frac{bc}{(bce - ade)(bc - ad)} - \frac{ad}{(bce - ade)(bc - ad)} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^3, x, algorithm="giac")

[Out] 1/4*(2*(b*x*e + a*e)^2*B*g*i*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 + 2*(b*x*e + a*e)^2*A*g*i/(d*x + c)^2 - (b*x*e + a*e)^2*B*g*i/(d*x + c)^2)*(b*c/((b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))*e^(-1)

maple [B] time = 0.05, size = 1049, normalized size = 12.34

$$-\frac{B a^3 d g \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{2(ad-bc)^2(dx+c)^2 i^3} + \frac{3B a^2 b c g \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{2(ad-bc)^2(dx+c)^2 i^3} - \frac{3Ba b^2 c^2 g \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{2(ad-bc)^2(dx+c)^2 d i^3} + \frac{B b^3 c^3 g \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{2(ad-bc)^2(dx+c)^2 d^2 i^3} - \frac{2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)*(B*ln((b*x+a)/(d*x+c)*e)+A)/(d*i*x+c*i)^3,x)

[Out] $\frac{1}{4} \frac{d}{g} \frac{1}{(ad-bc)^2} \frac{1}{i^3} \frac{B b^2 a - 1/4 d^2 g}{(ad-bc)^2} \frac{1}{i^3} \frac{B}{(d*x+c)^2} \frac{b^3 c}{(d*x+c)^3} + \frac{1}{2} \frac{d^2 g}{(ad-bc)^2} \frac{1}{i^3} \frac{B b^3}{(d*x+c)} \frac{c^2 - 1/2 d g}{(ad-bc)^2} \frac{1}{i^3} \frac{B \ln(b/d * e + (ad-bc)/(d*x+c)/d * e)}{(d*x+c)^2} \frac{a^3 - 1/2 d g}{(ad-bc)^2} \frac{1}{i^3} \frac{B \ln(b/d * e + (ad-bc)/(d*x+c)/d * e) * b^2 a - 3/4 g}{(ad-bc)^2} \frac{1}{i^3} \frac{B}{(d*x+c)^2} \frac{a^2 b c + 1/2 d^2 g}{(ad-bc)^2} \frac{1}{i^3} \frac{A b^3 c - 1/2 d g}{(ad-bc)^2} \frac{1}{i^3} \frac{A b^2 a + 1/2 d^2 g}{(ad-bc)^2} \frac{1}{i^3} \frac{B \ln(b/d * e + (ad-bc)/(d*x+c)/d * e) * b^3 c - g}{(ad-bc)^2} \frac{1}{i^3} \frac{B \ln(b/d * e + (ad-bc)/(d*x+c)/d * e) * b}{(d*x+c) * a^2 + 3/2 g} \frac{1}{(ad-bc)^2} \frac{1}{i^3} \frac{A}{(d*x+c)^2} \frac{a^2 b c - 1/4 d^2 g}{(ad-bc)^2} \frac{1}{i^3} \frac{B b^3 c - 1/d g}{(ad-bc)^2} \frac{1}{i^3} \frac{B b^2}{2} \frac{1}{(d*x+c) * a c + 1/2 d^2 g} \frac{1}{(ad-bc)^2} \frac{1}{i^3} \frac{A}{(d*x+c)^2} \frac{b^3 c^3 - 1/d^2 g}{(ad-bc)^2} \frac{1}{i^3} \frac{A b^3}{(d*x+c) * c^2 + 3/2 g} \frac{1}{(ad-bc)^2} \frac{1}{i^3} \frac{B \ln(b/d * e + (ad-bc)/(d*x+c)/d * e)}{(d*x+c)/d * e} \frac{1}{(d*x+c)^2} \frac{a^2 b c + 1/2 d^2 g}{(ad-bc)^2} \frac{1}{i^3} \frac{B \ln(b/d * e + (ad-bc)/(d*x+c)/d * e)}{(d*x+c)/d * e} \frac{1}{(d*x+c)^2} \frac{b^3 c^3 + 2/d g}{(ad-bc)^2} \frac{1}{i^3} \frac{A b^2}{(d*x+c) * a c + 3/4 d g} \frac{1}{(ad-bc)^2} \frac{1}{i^3} \frac{B}{(d*x+c)^2} \frac{a^2 b^2 c^2 + 2/d g}{(ad-bc)^2} \frac{1}{i^3} \frac{B \ln(b/d * e + (ad-bc)/(d*x+c)/d * e) * b^2}{(d*x+c) * a c - g} \frac{1}{(ad-bc)^2} \frac{1}{i^3} \frac{A b}{(d*x+c) * a^2 + 1/2 g} \frac{1}{(ad-bc)^2} \frac{1}{i^3} \frac{B b}{(d*x+c) * a^2 - 1/2 d g} \frac{1}{(ad-bc)^2} \frac{1}{i^3} \frac{A}{(d*x+c)^2} \frac{a^3 + 1/4 d g}{(ad-bc)^2} \frac{1}{i^3} \frac{B}{(d*x+c)^2} \frac{a^3 - 1/d^2 g}{(ad-bc)^2} \frac{1}{i^3} \frac{B \ln(b/d * e + (ad-bc)/(d*x+c)/d * e) * b^3}{(d*x+c) * c^2 - 3/2 d g} \frac{1}{(ad-bc)^2} \frac{1}{i^3} \frac{B \ln(b/d * e + (ad-bc)/(d*x+c)/d * e)}{(d*x+c)/d * e} \frac{1}{(d*x+c)^2} \frac{2 a b^2 c^2}{(ad-bc)^2}$

maxima [B] time = 1.20, size = 567, normalized size = 6.67

$$-\frac{1}{4} B b g \left(\frac{2(2 dx + c) \log\left(\frac{bex}{dx+c} + \frac{ae}{dx+c}\right)}{d^4 i^3 x^2 + 2 cd^3 i^3 x + c^2 d^2 i^3} - \frac{bc^2 - 3acd + 2(bcd - 2ad^2)x}{(bcd^4 - ad^5)i^3 x^2 + 2(bc^2 d^3 - acd^4)i^3 x + (bc^3 d^2 - ac^2 d^3)i^3} - \frac{2(b^2 c - 1/2 d^2 g)}{(b^2 c^2 d^2 - 1/2 d^2 g)i^3} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^3,x, algorithm="maxima")

[Out] $-1/4 B b g (2 * (2 d x + c) * \log(b * e * x / (d * x + c) + a * e / (d * x + c)) / (d^4 i^3 x^2 + 2 * c * d^3 i^3 x + c^2 d^2 i^3) - (b * c^2 - 3 * a * c * d + 2 * (b * c * d - 2 * a * d^2) * x) / ((b * c * d^4 - a * d^5) i^3 x^2 + 2 * (b * c^2 * d^3 - a * c * d^4) i^3 x + (b * c^3 * d^2 - a * c^2 * d^3) i^3) - 2 * (b^2 * c - 2 * a * b * d) * \log(b * x + a) / ((b^2 * c^2 * d^2 - 2 * a * b * c * d^3 + a^2 * d^4) i^3) + 2 * (b^2 * c - 2 * a * b * d) * \log(d * x + c) / ((b^2 * c^2 * d^2 - 2 * a * b * c * d^3 + a^2 * d^4) i^3)) + 1/4 B * a * g * ((2 * b * d * x + 3 * b * c - a * d) / ((b * c * d^3 - a * d^4) i^3 x^2 + 2 * (b * c^2 * d^2 - a * c * d^3) i^3 x + (b * c^3 * d - a * c^2 * d^2) i^3) - 2 * \log(b * e * x / (d * x + c) + a * e / (d * x + c)) / (d^3 i^3 x^2 + 2 * c * d^2 i^3 x + c^2 * d * i^3) + 2 * b^2 * \log(b * x + a) / ((b^2 * c^2 * d - 2 * a * b * c * d^2 + a^2 * d^3) i^3) - 2 * b^2 * \log(d * x + c) / ((b^2 * c^2 * d - 2 * a * b * c * d^2 + a^2 * d^3) i^3)) - 1/2 * (2 * d * x + c) * A * b * g / (d^4 i^3 x^2 + 2 * c * d^3 i^3 x + c^2 d^2 i^3) - 1/2 * A * a * g / (d^3 i^3 x^2 + 2 * c * d^2 i^3 x + c^2 * d * i^3)$

mupad [B] time = 5.63, size = 198, normalized size = 2.33

$$\frac{x(2Abdg - Bbdg) + Aadg + Abcg - \frac{Badg}{2} - \frac{Bbcg}{2} \ln\left(\frac{e^{(a+bx)}}{c+dx}\right) \left(\frac{Bag}{2d^2i^3} + \frac{Bbcg}{2d^3i^3} + \frac{Bbgx}{d^2i^3}\right) + Bb^2g \operatorname{atan}\left(\frac{bc}{a}\right)}{2c^2d^2i^3 + 4cd^3i^3x + 2d^4i^3x^2} + \frac{c^2}{2cx + dx^2 + \frac{c^2}{d}} + \frac{Bb^2g \operatorname{atan}\left(\frac{bc}{a}\right)}{d^2i^3(a)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((a*g + b*g*x)*(A + B*log((e*(a + b*x))/(c + d*x))))/(c*i + d*i*x)^3,x)

[Out] (B*b^2*g*atan((b*c*2i + b*d*x*2i)/(a*d - b*c) + 1i)*1i)/(d^2*i^3*(a*d - b*c)) - (log((e*(a + b*x))/(c + d*x))*((B*a*g)/(2*d^2*i^3) + (B*b*c*g)/(2*d^3*i^3) + (B*b*g*x)/(d^2*i^3)))/(2*c*x + d*x^2 + c^2/d) - (x*(2*A*b*d*g - B*b*d*g) + A*a*d*g + A*b*c*g - (B*a*d*g)/2 - (B*b*c*g)/2)/(2*c^2*d^2*i^3 + 2*d^4*i^3*x^2 + 4*c*d^3*i^3*x)

sympy [B] time = 5.76, size = 382, normalized size = 4.49

$$\frac{Bb^2g \log\left(x + \frac{\frac{Ba^2b^2d^2g}{ad-bc} + \frac{2Bab^3cdg}{ad-bc} + Bab^2dg - \frac{Bb^4c^2g}{ad-bc} + Bb^3cg}{2Bb^3dg}\right)}{2d^2i^3(ad-bc)} - \frac{Bb^2g \log\left(x + \frac{\frac{Ba^2b^2d^2g}{ad-bc} - \frac{2Bab^3cdg}{ad-bc} + Bab^2dg + \frac{Bb^4c^2g}{ad-bc} + Bb^3cg}{2Bb^3dg}\right)}{2d^2i^3(ad-bc)} + \frac{-2Aadg - \dots}{\dots}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(A+B*ln(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)**3,x)

[Out] B*b**2*g*log(x + (-B*a**2*b**2*d**2*g/(a*d - b*c) + 2*B*a*b**3*c*d*g/(a*d - b*c) + B*a*b**2*d*g - B*b**4*c**2*g/(a*d - b*c) + B*b**3*c*g)/(2*B*b**3*d*g))/(2*d**2*i**3*(a*d - b*c)) - B*b**2*g*log(x + (B*a**2*b**2*d**2*g/(a*d - b*c) - 2*B*a*b**3*c*d*g/(a*d - b*c) + B*a*b**2*d*g + B*b**4*c**2*g/(a*d - b*c) + B*b**3*c*g)/(2*B*b**3*d*g))/(2*d**2*i**3*(a*d - b*c)) + (-2*A*a*d*g - 2*A*b*c*g + B*a*d*g + B*b*c*g + x*(-4*A*b*d*g + 2*B*b*d*g))/(4*c**2*d**2*i**3 + 8*c*d**3*i**3*x + 4*d**4*i**3*x**2) + (-B*a*d*g - B*b*c*g - 2*B*b*d*g*x)*log(e*(a + b*x)/(c + d*x))/(2*c**2*d**2*i**3 + 4*c*d**3*i**3*x + 2*d**4*i**3*x**2)

$$3.50 \quad \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{(ci+dix)^3} dx$$

Optimal. Leaf size=144

$$-\frac{B \log\left(\frac{e(a+bx)}{c+dx}\right) + A}{2di^3(c+dx)^2} + \frac{b^2B \log(a+bx)}{2di^3(bc-ad)^2} - \frac{b^2B \log(c+dx)}{2di^3(bc-ad)^2} + \frac{bB}{2di^3(c+dx)(bc-ad)} + \frac{B}{4di^3(c+dx)^2}$$

[Out] $1/4*B/d/i^3/(d*x+c)^2+1/2*b*B/d/(-a*d+b*c)/i^3/(d*x+c)+1/2*b^2*B*\ln(b*x+a)/d/(-a*d+b*c)^2/i^3+1/2*(-A-B*\ln(e*(b*x+a)/(d*x+c)))/d/i^3/(d*x+c)^2-1/2*b^2*B*\ln(d*x+c)/d/(-a*d+b*c)^2/i^3$

Rubi [A] time = 0.10, antiderivative size = 144, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.100$, Rules used = {2525, 12, 44}

$$-\frac{B \log\left(\frac{e(a+bx)}{c+dx}\right) + A}{2di^3(c+dx)^2} + \frac{b^2B \log(a+bx)}{2di^3(bc-ad)^2} - \frac{b^2B \log(c+dx)}{2di^3(bc-ad)^2} + \frac{bB}{2di^3(c+dx)(bc-ad)} + \frac{B}{4di^3(c+dx)^2}$$

Antiderivative was successfully verified.

[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x]))/(c*i + d*i*x)^3,x]

[Out] $B/(4*d*i^3*(c + d*x)^2) + (b*B)/(2*d*(b*c - a*d)*i^3*(c + d*x)) + (b^2*B*Log[a + b*x])/(2*d*(b*c - a*d)^2*i^3) - (A + B*Log[(e*(a + b*x))/(c + d*x)])/(2*d*i^3*(c + d*x)^2) - (b^2*B*Log[c + d*x])/(2*d*(b*c - a*d)^2*i^3)$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 44

Int[((a_) + (b_)*(x_))^(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])

Rule 2525

Int[((a_) + Log[(c_)*(RFx_)^(p_)])*(b_)^(n_)*((d_) + (e_)*(x_))^(m_), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[(d + e*x)^(m + 1)*(

$a + b \cdot \text{Log}[c \cdot \text{RFx}^p]^{(n-1)} \cdot D[\text{RFx}, x] / \text{RFx}, x, x] /;$ FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]

Rubi steps

$$\begin{aligned} \int \frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{(50c + 50dx)^3} dx &= -\frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{250000d(c+dx)^2} + \frac{B \int \frac{bc-ad}{2500(a+bx)(c+dx)^3} dx}{100d} \\ &= -\frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{250000d(c+dx)^2} + \frac{(B(bc-ad)) \int \frac{1}{(a+bx)(c+dx)^3} dx}{250000d} \\ &= -\frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{250000d(c+dx)^2} + \frac{(B(bc-ad)) \int \left(\frac{b^3}{(bc-ad)^3(a+bx)} - \frac{d}{(bc-ad)(c+dx)^3} - \frac{bd}{(bc-ad)^2(c+dx)^2} - \frac{c}{(bc-ad)(c+dx)^3}\right) dx}{250000d} \\ &= \frac{B}{500000d(c+dx)^2} + \frac{bB}{250000d(bc-ad)(c+dx)} + \frac{b^2B \log(a+bx)}{250000d(bc-ad)^2} - \frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{250000d(c+dx)^2} \end{aligned}$$

Mathematica [A] time = 0.12, size = 111, normalized size = 0.77

$$\frac{\frac{B(2b^2(c+dx)^2 \log(a+bx) + (bc-ad)(-ad+3bc+2bdx) - 2b^2(c+dx)^2 \log(c+dx))}{(bc-ad)^2} - 2\left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{4di^3(c+dx)^2}$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x]))/(c*i + d*i*x)^3,x]

[Out] (-2*(A + B*Log[(e*(a + b*x))/(c + d*x])) + (B*((b*c - a*d)*(3*b*c - a*d + 2*b*d*x) + 2*b^2*(c + d*x)^2*Log[a + b*x] - 2*b^2*(c + d*x)^2*Log[c + d*x]))/(b*c - a*d)^2)/(4*d*i^3*(c + d*x)^2)

fricas [A] time = 0.92, size = 221, normalized size = 1.53

$$\frac{(2A - 3B)b^2c^2 - 4(A - B)abcd + (2A - B)a^2d^2 - 2(Bb^2cd - Babd^2)x - 2(Bb^2d^2x^2 + 2Bb^2cdx + 2Babcd - Ba^2d^2)}{4\left((b^2c^2d^3 - 2abcd^4 + a^2d^5)i^3x^2 + 2(b^2c^3d^2 - 2abc^2d^3 + a^2cd^4)i^3x + (b^2c^4d - 2abc^3d^2 + a^2c^2d^3)\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^3,x, algorithm="fricas")

[Out] $-1/4*((2*A - 3*B)*b^2*c^2 - 4*(A - B)*a*b*c*d + (2*A - B)*a^2*d^2 - 2*(B*b^2*c*d - B*a*b*d^2)*x - 2*(B*b^2*d^2*x^2 + 2*B*b^2*c*d*x + 2*B*a*b*c*d - B*a^2*d^2)*\log((b*e*x + a*e)/(d*x + c)))/((b^2*c^2*d^3 - 2*a*b*c*d^4 + a^2*d^5)*i^3*x^2 + 2*(b^2*c^3*d^2 - 2*a*b*c^2*d^3 + a^2*c*d^4)*i^3*x + (b^2*c^4*d - 2*a*b*c^3*d^2 + a^2*c^2*d^3)*i^3)$

giac [A] time = 0.94, size = 254, normalized size = 1.76

$$\frac{\left(\frac{4(bxe+ae)Bbie \log\left(\frac{bx+ae}{dx+c}\right)}{dx+c} + \frac{4(bxe+ae)Abie}{dx+c} - \frac{4(bxe+ae)Bbie}{dx+c} - \frac{2(bxe+ae)^2Bdi \log\left(\frac{bx+ae}{dx+c}\right)}{(dx+c)^2} - \frac{2(bxe+ae)^2Adi}{(dx+c)^2} + \frac{(bxe+ae)^2Bdi}{(dx+c)^2}\right)\left(\frac{bc}{(bce-ade)}\right)}{4(bce-ade)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^3,x, algorithm="giac")`

[Out] $1/4*(4*(b*x*e + a*e)*B*b*i*e*\log((b*x*e + a*e)/(d*x + c))/(d*x + c) + 4*(b*x*e + a*e)*A*b*i*e/(d*x + c) - 4*(b*x*e + a*e)*B*b*i*e/(d*x + c) - 2*(b*x*e + a*e)^2*B*d*i*\log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 - 2*(b*x*e + a*e)^2*A*d*i/(d*x + c)^2 + (b*x*e + a*e)^2*B*d*i/(d*x + c)^2*(b*c/((b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))/(b*c*e - a*d*e)$

maple [B] time = 0.05, size = 746, normalized size = 5.18

$$\frac{B a^3 d^2 \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{2(ad-bc)^3(dx+c)^2 i^3} + \frac{3B a^2 bcd \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{2(ad-bc)^3(dx+c)^2 i^3} - \frac{3Ba b^2 c^2 \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{2(ad-bc)^3(dx+c)^2 i^3} + \frac{B b^3 c^3 \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{2(ad-bc)^3(dx+c)^2 d i^3} - \frac{2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((B*ln((b*x+a)/(d*x+c)*e)+A)/(d*i*x+c*i)^3,x)`

[Out] $3/4/(a*d-b*c)^3/i^3*B/(d*x+c)^2*b^2*c^2*a-1/2/d/(a*d-b*c)^3/i^3*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^3*c+1/2/(a*d-b*c)^3/i^3*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2*a+1/2/d/(a*d-b*c)^3/i^3*A/(d*x+c)^2*b^3*c^3-1/2/d/(a*d-b*c)^3/i^3*B*b^3/(d*x+c)*c^2-1/2*d/(a*d-b*c)^3/i^3*B*b/(d*x+c)*a^2-1/4/d/(a*d-b*c)^3/i^3*B/(d*x+c)^2*b^3*c^3-1/2*d^2/(a*d-b*c)^3/i^3*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a^3-3/2/(a*d-b*c)^3/i^3*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a*b^2*c^2+3/2*d/(a*d-b*c)^3/i^3*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a^2*b*c+1/4*d^2/(a*d-b*c)^3/i^3*B/(d*x+c)^2*a^3-1/2*d^2/(a*d-b*c)^3/i^3*A/(d*x+c)^2*a^3+1/2/(a*d-b*c)^3/i^3*A*b^2*a+1/(a*d-b*c)^3/i^3*B*b^2/(d*x+c)*c*a-1/2/d/(a*d-b*c)^3/i^3*A*b^3*c-3/4/(a*d-b*c)^3/i^3*B*b^2*a+3/4/d/(a*d-b*c)^3/i^3*B*b^3*c+3/2*d/(a*d-b*c)^3/i^3*A/(d*x+c)^2*a^2*b*c-3/2/(a*d-b*c)^3/i^3*A/(d*x+c)^2*a*b^2*c^2-3/4*d/(a*d-b*c)^3/i^3*B/(d*x+c)^2*a^2*b*c+1/2/d/(a*d-b*c)^3/i^3*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*b^3*c^3$

maxima [A] time = 1.13, size = 255, normalized size = 1.77

$$\frac{1}{4} B \left(\frac{2bdx + 3bc - ad}{(bcd^3 - ad^4)i^3x^2 + 2(bc^2d^2 - acd^3)i^3x + (bc^3d - ac^2d^2)i^3} - \frac{2 \log\left(\frac{bex}{dx+c} + \frac{ae}{dx+c}\right)}{d^3i^3x^2 + 2cd^2i^3x + c^2di^3} + \frac{2b^2 \log(bx + a)}{(b^2c^2d - 2abcd^2 + ad^3)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^3,x, algorithm="maxima")

[Out] 1/4*B*((2*b*d*x + 3*b*c - a*d)/((b*c*d^3 - a*d^4)*i^3*x^2 + 2*(b*c^2*d^2 - a*c*d^3)*i^3*x + (b*c^3*d - a*c^2*d^2)*i^3) - 2*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(d^3*i^3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3) + 2*b^2*log(b*x + a)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3) - 2*b^2*log(d*x + c)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3) - 1/2*A/(d^3*i^3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3)

mpad [B] time = 5.43, size = 208, normalized size = 1.44

$$\frac{B b^2 \operatorname{atanh}\left(\frac{2a^2 d^3 i^3 - 2b^2 c^2 d i^3}{2 d i^3 (a d - b c)^2} + \frac{2 b d x}{a d - b c}\right)}{d i^3 (a d - b c)^2} - \frac{B \ln\left(\frac{e(a+b x)}{c+d x}\right)}{2 d^2 i^3 \left(2 c x + d x^2 + \frac{c^2}{d}\right)} - \frac{\frac{2 A a d - 2 A b c - B a d + 3 B b c}{2(a d - b c)} + \frac{B b d x}{a d - b c}}{2 c^2 d i^3 + 4 c d^2 i^3 x + 2 d^3 i^3 x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((A + B*log((e*(a + b*x))/(c + d*x)))/(c*i + d*i*x)^3,x)

[Out] (B*b^2*atanh((2*a^2*d^3*i^3 - 2*b^2*c^2*d*i^3)/(2*d*i^3*(a*d - b*c)^2) + (2*b*d*x)/(a*d - b*c)))/(d*i^3*(a*d - b*c)^2) - (B*log((e*(a + b*x))/(c + d*x)))/(2*d^2*i^3*(2*c*x + d*x^2 + c^2/d)) - ((2*A*a*d - 2*A*b*c - B*a*d + 3*B*b*c)/(2*(a*d - b*c)) + (B*b*d*x)/(a*d - b*c))/(2*c^2*d*i^3 + 2*d^3*i^3*x^2 + 4*c*d^2*i^3*x)

sympy [B] time = 2.58, size = 422, normalized size = 2.93

$$\frac{B b^2 \log\left(x + \frac{-\frac{B a^3 b^2 d^3}{(a d - b c)^2} + \frac{3 B a^2 b^3 c d^2}{(a d - b c)^2} - \frac{3 B a b^4 c^2 d}{(a d - b c)^2} + B a b^2 d + \frac{B b^5 c^3}{(a d - b c)^2} + B b^3 c}{2 B b^3 d}\right)}{2 d i^3 (a d - b c)^2} + \frac{B b^2 \log\left(x + \frac{\frac{B a^3 b^2 d^3}{(a d - b c)^2} - \frac{3 B a^2 b^3 c d^2}{(a d - b c)^2} + \frac{3 B a b^4 c^2 d}{(a d - b c)^2} + B a b^2 d - \frac{B b^5 c^3}{(a d - b c)^2} + B b^3 c}{2 B b^3 d}\right)}{2 d i^3 (a d - b c)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)**3,x)

[Out] -B*b**2*log(x + (-B*a**3*b**2*d**3/(a*d - b*c)**2 + 3*B*a**2*b**3*c*d**2/(a*d - b*c)**2 - 3*B*a*b**4*c**2*d/(a*d - b*c)**2 + B*a*b**2*d + B*b**5*c**3/

$$\begin{aligned}
& \frac{(a*d - b*c)**2 + B*b**3*c}{(2*B*b**3*d)} / \frac{(2*d*i**3*(a*d - b*c)**2)}{(2*d*i**3*(a*d - b*c)**2)} + B*b**2 \\
& * \log(x + (B*a**3*b**2*d**3/(a*d - b*c)**2 - 3*B*a**2*b**3*c*d**2/(a*d - b*c) \\
&)**2 + 3*B*a*b**4*c**2*d/(a*d - b*c)**2 + B*a*b**2*d - B*b**5*c**3/(a*d - b \\
& *c)**2 + B*b**3*c)/(2*B*b**3*d)) / \frac{(2*d*i**3*(a*d - b*c)**2)}{(2*d*i**3*(a*d - b*c)**2)} - B * \log(e*(a + b \\
& *x)/(c + d*x)) / \frac{(2*c**2*d*i**3 + 4*c*d**2*i**3*x + 2*d**3*i**3*x**2)}{(2*c**2*d*i**3 + 4*c*d**2*i**3*x + 2*d**3*i**3*x**2)} + (-2*A \\
& *a*d + 2*A*b*c + B*a*d - 3*B*b*c - 2*B*b*d*x) / (4*a*c**2*d**2*i**3 - 4*b*c** \\
& 3*d*i**3 + x**2*(4*a*d**4*i**3 - 4*b*c*d**3*i**3) + x*(8*a*c*d**3*i**3 - 8* \\
& b*c**2*d**2*i**3))
\end{aligned}$$

$$3.51 \quad \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{(ag+bgx)(ci+dix)^3} dx$$

Optimal. Leaf size=243

$$\frac{b^2 \log\left(\frac{a+bx}{c+dx}\right) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{gi^3(bc-ad)^3} + \frac{d^2(a+bx)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{2gi^3(c+dx)^2(bc-ad)^3} - \frac{2bd(a+bx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{gi^3(c+dx)(bc-ad)^3} - \frac{b^2 B \log\left(\frac{a+bx}{c+dx}\right)}{2gi^3(bc-ad)^3}$$

[Out] $-1/4*B*(4*b-d*(b*x+a)/(d*x+c))^2/(-a*d+b*c)^3/g/i^3-1/2*b^2*B*\ln((b*x+a)/(d*x+c))^2/(-a*d+b*c)^3/g/i^3+1/2*d^2*(b*x+a)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^3/g/i^3/(d*x+c)^2-2*b*d*(b*x+a)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^3/g/i^3/(d*x+c)+b^2*\ln((b*x+a)/(d*x+c))*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^3/g/i^3$

Rubi [C] time = 0.90, antiderivative size = 535, normalized size of antiderivative = 2.20, number of steps used = 28, number of rules used = 11, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.275$, Rules used = {2528, 2524, 12, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 44}

$$\frac{b^2 B \text{PolyLog}\left(2, -\frac{d(a+bx)}{bc-ad}\right)}{gi^3(bc-ad)^3} + \frac{b^2 B \text{PolyLog}\left(2, \frac{b(c+dx)}{bc-ad}\right)}{gi^3(bc-ad)^3} + \frac{b^2 \log(a+bx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{gi^3(bc-ad)^3} - \frac{b^2 \log(c+dx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{gi^3(bc-ad)^3}$$

Antiderivative was successfully verified.

[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x]))/((a*g + b*g*x)*(c*i + d*i*x)^3),x]

[Out] $-B/(4*(b*c - a*d)*g*i^3*(c + d*x)^2) - (3*b*B)/(2*(b*c - a*d)^2*g*i^3*(c + d*x)) - (3*b^2*B*\text{Log}[a + b*x])/(2*(b*c - a*d)^3*g*i^3) - (b^2*B*\text{Log}[a + b*x]^2)/(2*(b*c - a*d)^3*g*i^3) + (A + B*\text{Log}[(e*(a + b*x))/(c + d*x)])/(2*(b*c - a*d)*g*i^3*(c + d*x)^2) + (b*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/((b*c - a*d)^2*g*i^3*(c + d*x)) + (b^2*\text{Log}[a + b*x]*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/((b*c - a*d)^3*g*i^3) + (3*b^2*B*\text{Log}[c + d*x])/(2*(b*c - a*d)^3*g*i^3) + (b^2*B*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c + d*x])/((b*c - a*d)^3*g*i^3) - (b^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)])*\text{Log}[c + d*x])/((b*c - a*d)^3*g*i^3) - (b^2*B*\text{Log}[c + d*x]^2)/(2*(b*c - a*d)^3*g*i^3) + (b^2*B*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)]))/((b*c - a*d)^3*g*i^3) + (b^2*B*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^3*g*i^3) + (b^2*B*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]))/((b*c - a*d)^3*g*i^3)$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 44

```
Int[((a_) + (b_)*(x_)^(m_))*((c_) + (d_)*(x_)^(n_)), x_Symbol] := Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)/(x_), x_Symbol] := Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_)^(n_))])*(b_)^(p_)*((f_) + (g_
)*(x_)^(q_)), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_)*((d_) + (e_)*(x_)^(n_))]/(x_), x_Symbol] := -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))])*(b_)/((f_) + (g_)*(x_)), x_
Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_)^(n_))])*(b_)/((f_) + (g_)*(x_
)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n])/g, x] - Dist[(b*e^n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_)^(n_))])*(b_)^(p_)*(RFx_), x_Sy
mbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol]
:> Simp[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol]
:> With[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{(51c + 51dx)^3(ag + bgx)} dx &= \int \left(\frac{b^3 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{132651(bc - ad)^3g(a + bx)} - \frac{d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{132651(bc - ad)g(c + dx)^3} - \frac{bd \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{132651(bc - ad)^2g} \right) dx \\
&= \frac{b^3 \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{a+bx} dx}{132651(bc - ad)^3g} - \frac{(b^2d) \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{c+dx} dx}{132651(bc - ad)^3g} - \frac{(bd) \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{(c+dx)^2} dx}{132651(bc - ad)^2g} \\
&= \frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{265302(bc - ad)g(c + dx)^2} + \frac{b \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{132651(bc - ad)^2g(c + dx)} + \frac{b^2 \log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{132651(bc - ad)^2g} \\
&= \frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{265302(bc - ad)g(c + dx)^2} + \frac{b \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{132651(bc - ad)^2g(c + dx)} + \frac{b^2 \log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{132651(bc - ad)^2g} \\
&= \frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{265302(bc - ad)g(c + dx)^2} + \frac{b \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{132651(bc - ad)^2g(c + dx)} + \frac{b^2 \log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{132651(bc - ad)^2g} \\
&= -\frac{B}{530604(bc - ad)g(c + dx)^2} - \frac{bB}{88434(bc - ad)^2g(c + dx)} - \frac{b^2B \log(a + bx)}{88434(bc - ad)^3g} \\
&= -\frac{B}{530604(bc - ad)g(c + dx)^2} - \frac{bB}{88434(bc - ad)^2g(c + dx)} - \frac{b^2B \log(a + bx)}{88434(bc - ad)^3g} \\
&= -\frac{B}{530604(bc - ad)g(c + dx)^2} - \frac{bB}{88434(bc - ad)^2g(c + dx)} - \frac{b^2B \log(a + bx)}{88434(bc - ad)^3g} \\
&= -\frac{B}{530604(bc - ad)g(c + dx)^2} - \frac{bB}{88434(bc - ad)^2g(c + dx)} - \frac{b^2B \log(a + bx)}{88434(bc - ad)^3g}
\end{aligned}$$

Mathematica [C] time = 0.47, size = 418, normalized size = 1.72

$$\frac{4b^2(c + dx)^2 \log(a + bx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right) - 4b^2(c + dx)^2 \log(c + dx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right) + 2(bc - ad)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{(51c + 51dx)^3}$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x]))/((a*g + b*g*x)*(c*i + d*i*x)^3), x]

[Out] $(2*(b*c - a*d)^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]) + 4*b*(b*c - a*d)*(c + d*x)*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]) + 4*b^2*(c + d*x)^2*\text{Log}[a + b*x]*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]) - 4*b^2*(c + d*x)^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)])*\text{Log}[c + d*x] - 4*b*B*(c + d*x)*(b*c - a*d + b*(c + d*x))*\text{Log}[a + b*x] - b*(c + d*x)*\text{Log}[c + d*x]) - B*((b*c - a*d)^2 + 2*b*(b*c - a*d)*(c + d*x) + 2*b^2*(c + d*x)^2*\text{Log}[a + b*x] - 2*b^2*(c + d*x)^2*\text{Log}[c + d*x]) - 2*b^2*B*(c + d*x)^2*(\text{Log}[a + b*x]*(\text{Log}[a + b*x] - 2*\text{Log}[(b*(c + d*x))/(b*c - a*d)]) - 2*\text{PolyLog}[2, (d*(a + b*x))/(-(b*c) + a*d)]) + 2*b^2*B*(c + d*x)^2*((2*\text{Log}[(d*(a + b*x))/(-(b*c) + a*d)] - \text{Log}[c + d*x])*\text{Log}[c + d*x] + 2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/(4*(b*c - a*d)^3*g*i^3*(c + d*x)^2)$

fricas [A] time = 0.79, size = 355, normalized size = 1.46

$$\frac{(6A - 7B)b^2c^2 - 8(A - B)abcd + (2A - B)a^2d^2 + 2(Bb^2d^2x^2 + 2Bb^2cdx + Bb^2c^2) \log\left(\frac{bex+ae}{dx+c}\right)^2 + 2((2A - 3B) - 4((b^3c^3d^2 - 3ab^2c^2d^3 + 3a^2bcd^4 - a^3d^5)gi^3x^2 + 2(b^3c^4d - 3ab^2c^3d^2 - a^3c^3d^4)gi^3x + (b^3c^5 - 3a*b^2*c^4*d + 3a^2*b*c^3*d^2 - a^3*c^2*d^3)gi^3))}{4((b^3c^3d^2 - 3ab^2c^2d^3 + 3a^2bcd^4 - a^3d^5)gi^3x^2 + 2(b^3c^4d - 3ab^2c^3d^2 - a^3c^3d^4)gi^3x + (b^3c^5 - 3a*b^2*c^4*d + 3a^2*b*c^3*d^2 - a^3*c^2*d^3)gi^3)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)/(d*i*x+c*i)^3,x, algorithm="fricas")

[Out] $1/4*((6*A - 7*B)*b^2*c^2 - 8*(A - B)*a*b*c*d + (2*A - B)*a^2*d^2 + 2*(B*b^2*d^2*x^2 + 2*B*b^2*c*d*x + B*b^2*c^2)*\text{log}((b*e*x + a*e)/(d*x + c))^2 + 2*((2*A - 3*B)*b^2*c*d - (2*A - 3*B)*a*b*d^2)*x + 2*((2*A - 3*B)*b^2*d^2*x^2 + 2*A*b^2*c^2 - 4*B*a*b*c*d + B*a^2*d^2 + 2*((2*A - B)*b^2*c*d - B*a*b*d^2)*x)*\text{log}((b*e*x + a*e)/(d*x + c)))/((b^3*c^3*d^2 - 3*a*b^2*c^2*d^3 + 3*a^2*b*c*d^4 - a^3*d^5)*g*i^3*x^2 + 2*(b^3*c^4*d - 3*a*b^2*c^3*d^2 + 3*a^2*b*c^2*d^3 - a^3*c*d^4)*g*i^3*x + (b^3*c^5 - 3*a*b^2*c^4*d + 3*a^2*b*c^3*d^2 - a^3*c^2*d^3)*g*i^3)$

giac [A] time = 0.74, size = 340, normalized size = 1.40

$$\frac{\left(2Bb^2ie^2 \log\left(\frac{bxe+ae}{dx+c}\right)^2 + 4Ab^2ie^2 \log\left(\frac{bxe+ae}{dx+c}\right) - \frac{8(bxe+ae)Bbdie \log\left(\frac{bxe+ae}{dx+c}\right)}{dx+c} - \frac{8(bxe+ae)Abdie}{dx+c} + \frac{8(bxe+ae)Bbdie}{dx+c} + \frac{2(bxe+ae)^2B}{(dx+c)^2}\right)}{4(b^2c^2ge - 2abcdge + a^2d^2ge)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)/(d*i*x+c*i)^3,x, algorithm="giac")

[Out] $1/4*(2*B*b^2*i*e^2*\text{log}((b*x*e + a*e)/(d*x + c))^2 + 4*A*b^2*i*e^2*\text{log}((b*x*e + a*e)/(d*x + c)) - 8*(b*x*e + a*e)*B*b*d*i*e*\text{log}((b*x*e + a*e)/(d*x + c))$

$$\frac{1}{(dx+c)} - \frac{8(bxe+ae)A*b*d*i}{(dx+c)} + \frac{8(bxe+ae)B*b*d*i}{(dx+c)} + \frac{2(bxe+ae)^2*B*d^2*i \log((bxe+ae)/(dx+c))}{(dx+c)^2} - \frac{(bxe+ae)^2*B*d^2*i}{(dx+c)^2} * \frac{(b*c/((b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))}{(b^2*c^2*g*e - 2*a*b*c*d*g*e + a^2*d^2*g*e)}$$

maple [B] time = 0.05, size = 1287, normalized size = 5.30

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)/(d*i*x+c*i)^3,x)

[Out] $\frac{3}{2}d^2/i^3/(a*d-b*c)^4/g*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a^2*b*c-3/2*d/i^3/(a*d-b*c)^4/g*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a*b^2*c^2-2*d/i^3/(a*d-b*c)^4/g*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2/(d*x+c)*a*c-3/2/i^3/(a*d-b*c)^4/g*B*b^3/(d*x+c)*c^2+1/i^3/(a*d-b*c)^4/g*A*b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+1/2/i^3/(a*d-b*c)^4/g*A/(d*x+c)^2*b^3*c^3-1/2*d^3/i^3/(a*d-b*c)^4/g*A/(d*x+c)^2*a^3-3/2/i^3/(a*d-b*c)^4/g*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^3*c-1/4/i^3/(a*d-b*c)^4/g*B/(d*x+c)^2*b^3*c^3+1/i^3/(a*d-b*c)^4/g*A*b^3/(d*x+c)*c^2-7/4*d/i^3/(a*d-b*c)^4/g*B*b^2*a+7/4/i^3/(a*d-b*c)^4/g*B*b^3*c+3/2*d/i^3/(a*d-b*c)^4/g*A*b^2*a-3/2/i^3/(a*d-b*c)^4/g*A*b^3*c+1/i^3/(a*d-b*c)^4/g*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^3/(d*x+c)*c^2+1/2/i^3/(a*d-b*c)^4/g*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*b^3*c^3-d/i^3/(a*d-b*c)^4/g*A*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+3/2*d/i^3/(a*d-b*c)^4/g*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2*a+1/2/i^3/(a*d-b*c)^4/g*B*b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c+1/4*d^3/i^3/(a*d-b*c)^4/g*B/(d*x+c)^2*a^3-2*d/i^3/(a*d-b*c)^4/g*A*b^2/(d*x+c)*a*c-3/4*d^2/i^3/(a*d-b*c)^4/g*B/(d*x+c)^2*a^2*b*c+3/4*d/i^3/(a*d-b*c)^4/g*B/(d*x+c)^2*a*b^2*c^2+3/2*d^2/i^3/(a*d-b*c)^4/g*A/(d*x+c)^2*a*b^2*c^2+3*d/i^3/(a*d-b*c)^4/g*B*b^2/(d*x+c)*a*c+d^2/i^3/(a*d-b*c)^4/g*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b/(d*x+c)*a^2-1/2*d/i^3/(a*d-b*c)^4/g*B*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a-1/2*d^3/i^3/(a*d-b*c)^4/g*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a^3+d^2/i^3/(a*d-b*c)^4/g*A*b/(d*x+c)*a^2-3/2*d^2/i^3/(a*d-b*c)^4/g*B*b/(d*x+c)*a^2$

maxima [B] time = 1.69, size = 885, normalized size = 3.64

$$\frac{1}{2} B \left(\frac{2 b d x + 3 b c - a d}{(b^2 c^2 d^2 - 2 a b c d^3 + a^2 d^4) g i^3 x^2 + 2 (b^2 c^3 d - 2 a b c^2 d^2 + a^2 c d^3) g i^3 x + (b^2 c^4 - 2 a b c^3 d + a^2 c^2 d^2) g i^3} + \frac{1}{b^3 c^3} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)/(d*i*x+c*i)^3,x, algorithm="maxima")

```
[Out] 1/2*B*((2*b*d*x + 3*b*c - a*d)/((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)*g*i^3
*x^2 + 2*(b^2*c^3*d - 2*a*b*c^2*d^2 + a^2*c*d^3)*g*i^3*x + (b^2*c^4 - 2*a*b
*c^3*d + a^2*c^2*d^2)*g*i^3) + 2*b^2*log(b*x + a)/((b^3*c^3 - 3*a*b^2*c^2*d
+ 3*a^2*b*c*d^2 - a^3*d^3)*g*i^3) - 2*b^2*log(d*x + c)/((b^3*c^3 - 3*a*b^2
*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g*i^3))*log(b*e*x/(d*x + c) + a*e/(d*x +
c)) + 1/2*A*((2*b*d*x + 3*b*c - a*d)/((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)
*g*i^3*x^2 + 2*(b^2*c^3*d - 2*a*b*c^2*d^2 + a^2*c*d^3)*g*i^3*x + (b^2*c^4 -
2*a*b*c^3*d + a^2*c^2*d^2)*g*i^3) + 2*b^2*log(b*x + a)/((b^3*c^3 - 3*a*b^2
*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g*i^3) - 2*b^2*log(d*x + c)/((b^3*c^3 - 3
*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g*i^3)) - 1/4*(7*b^2*c^2 - 8*a*b*c*
d + a^2*d^2 + 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a)^2 + 2*(b
^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(d*x + c)^2 + 6*(b^2*c*d - a*b*d^2)*
x + 6*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a) - 2*(3*b^2*d^2*x^2
+ 6*b^2*c*d*x + 3*b^2*c^2 + 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*
x + a))*log(d*x + c))*B/(b^3*c^5*g*i^3 - 3*a*b^2*c^4*d*g*i^3 + 3*a^2*b*c^3*
d^2*g*i^3 - a^3*c^2*d^3*g*i^3 + (b^3*c^3*d^2*g*i^3 - 3*a*b^2*c^2*d^3*g*i^3
+ 3*a^2*b*c*d^4*g*i^3 - a^3*d^5*g*i^3)*x^2 + 2*(b^3*c^4*d*g*i^3 - 3*a*b^2*c
^3*d^2*g*i^3 + 3*a^2*b*c^2*d^3*g*i^3 - a^3*c*d^4*g*i^3)*x)
```

mupad [B] time = 7.08, size = 545, normalized size = 2.24

$$\frac{3Abc}{2gi^3(ad-bc)^2(c+dx)^2} - \frac{Aad}{2gi^3(ad-bc)^2(c+dx)^2} - \frac{Bb^2 \ln\left(\frac{e(a+bx)}{c+dx}\right)^2}{2gi^3(ad-bc)^3} + \frac{Bad}{4gi^3(ad-bc)^2(c+dx)^2} - \frac{1}{4gi^3(ad-bc)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x))/(c + d*x)))/((a*g + b*g*x)*(c*i + d*i*x)^3),x)
```

```
[Out] (A*b^2*atan((a*d*1i + b*c*1i + b*d*x*2i)/(a*d - b*c))*2i)/(g*i^3*(a*d - b*c
)^3) - (B*b^2*atan((a*d*1i + b*c*1i + b*d*x*2i)/(a*d - b*c))*3i)/(g*i^3*(a*
d - b*c)^3) - (B*b^2*log((e*(a + b*x))/(c + d*x))^2)/(2*g*i^3*(a*d - b*c)^3
) - (A*a*d)/(2*g*i^3*(a*d - b*c)^2*(c + d*x)^2) + (3*A*b*c)/(2*g*i^3*(a*d -
b*c)^2*(c + d*x)^2) + (B*a*d)/(4*g*i^3*(a*d - b*c)^2*(c + d*x)^2) - (7*B*b
*c)/(4*g*i^3*(a*d - b*c)^2*(c + d*x)^2) - (B*a^2*d^2*log((e*(a + b*x))/(c +
d*x)))/(2*g*i^3*(a*d - b*c)^3*(c + d*x)^2) - (3*B*b^2*c^2*log((e*(a + b*x)
))/(c + d*x)))/(2*g*i^3*(a*d - b*c)^3*(c + d*x)^2) + (A*b*d*x)/(g*i^3*(a*d -
b*c)^2*(c + d*x)^2) - (3*B*b*d*x)/(2*g*i^3*(a*d - b*c)^2*(c + d*x)^2) + (B
*a*b*d^2*x*log((e*(a + b*x))/(c + d*x)))/(g*i^3*(a*d - b*c)^3*(c + d*x)^2)
- (B*b^2*c*d*x*log((e*(a + b*x))/(c + d*x)))/(g*i^3*(a*d - b*c)^3*(c + d*x)
^2) + (2*B*a*b*c*d*log((e*(a + b*x))/(c + d*x)))/(g*i^3*(a*d - b*c)^3*(c +
d*x)^2)
```

sympy [B] time = 6.99, size = 889, normalized size = 3.66

$$\frac{Bb^2 \log\left(\frac{e(a+bx)}{c+dx}\right)^2}{2a^3d^3gi^3 - 6a^2bcd^2gi^3 + 6ab^2c^2dgi^3 - 2b^3c^3gi^3} + \frac{b^2(2A-3B) \log\left(x + \frac{2Aab^2d+2Ab^3c-3Bab^2d-3Bb^3c-\frac{a^4b^2d^4(2A-3B)+4a^4b^2d^4(2A-3B)}{(ad-bc)^3} + \frac{4a^4b^2d^4(2A-3B)}{(ad-bc)^3}}{4}\right)}{2gi^3(ad-bc)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)/(d*i*x+c*i)**3,x)

[Out]
$$-B*b^{**2}*\log(e*(a + b*x)/(c + d*x))^{**2}/(2*a^{**3}*d^{**3}*g*i^{**3} - 6*a^{**2}*b*c*d^{**2}*g*i^{**3} + 6*a*b^{**2}*c^{**2}*d*g*i^{**3} - 2*b^{**3}*c^{**3}*g*i^{**3}) + b^{**2}*(2*A - 3*B)*\log(x + (2*A*a*b^{**2}*d + 2*A*b^{**3}*c - 3*B*a*b^{**2}*d - 3*B*b^{**3}*c - a^{**4}*b^{**2}*d^{**4}*(2*A - 3*B)/(a*d - b*c))^{**3} + 4*a^{**3}*b^{**3}*c*d^{**3}*(2*A - 3*B)/(a*d - b*c)^{**3} - 6*a^{**2}*b^{**4}*c^{**2}*d^{**2}*(2*A - 3*B)/(a*d - b*c)^{**3} + 4*a*b^{**5}*c^{**3}*d*(2*A - 3*B)/(a*d - b*c)^{**3} - b^{**6}*c^{**4}*(2*A - 3*B)/(a*d - b*c)^{**3})/(4*A*b^{**3}*d - 6*B*b^{**3}*d)/(2*g*i^{**3}*(a*d - b*c)^{**3}) - b^{**2}*(2*A - 3*B)*\log(x + (2*A*a*b^{**2}*d + 2*A*b^{**3}*c - 3*B*a*b^{**2}*d - 3*B*b^{**3}*c + a^{**4}*b^{**2}*d^{**4}*(2*A - 3*B)/(a*d - b*c))^{**3} - 4*a^{**3}*b^{**3}*c*d^{**3}*(2*A - 3*B)/(a*d - b*c)^{**3} + 6*a^{**2}*b^{**4}*c^{**2}*d^{**2}*(2*A - 3*B)/(a*d - b*c)^{**3} - 4*a*b^{**5}*c^{**3}*d*(2*A - 3*B)/(a*d - b*c)^{**3} + b^{**6}*c^{**4}*(2*A - 3*B)/(a*d - b*c)^{**3})/(4*A*b^{**3}*d - 6*B*b^{**3}*d)/(2*g*i^{**3}*(a*d - b*c)^{**3}) + (-B*a*d + 3*B*b*c + 2*B*b*d*x)*\log(e*(a + b*x)/(c + d*x))/(2*a^{**2}*c^{**2}*d^{**2}*g*i^{**3} + 4*a^{**2}*c*d^{**3}*g*i^{**3}*x + 2*a^{**2}*d^{**4}*g*i^{**3}*x^{**2} - 4*a*b*c^{**3}*d*g*i^{**3} - 8*a*b*c^{**2}*d^{**2}*g*i^{**3}*x - 4*a*b*c*d^{**3}*g*i^{**3}*x^{**2} + 2*b^{**2}*c^{**4}*g*i^{**3} + 4*b^{**2}*c^{**3}*d*g*i^{**3}*x + 2*b^{**2}*c^{**2}*d^{**2}*g*i^{**3}*x^{**2}) + (-2*A*a*d + 6*A*b*c + B*a*d - 7*B*b*c + x*(4*A*b*d - 6*B*b*d))/(4*a^{**2}*c^{**2}*d^{**2}*g*i^{**3} - 8*a*b*c^{**3}*d*g*i^{**3} + 4*b^{**2}*c^{**4}*g*i^{**3} + x^{**2}*(4*a^{**2}*d^{**4}*g*i^{**3} - 8*a*b*c*d^{**3}*g*i^{**3} + 4*b^{**2}*c^{**2}*d^{**2}*g*i^{**3}) + x*(8*a^{**2}*c*d^{**3}*g*i^{**3} - 16*a*b*c^{**2}*d^{**2}*g*i^{**3} + 8*b^{**2}*c^{**3}*d*g*i^{**3}))$$

$$3.52 \quad \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{(ag+bgx)^2(ci+dix)^3} dx$$

Optimal. Leaf size=365

$$\frac{b^3(c+dx)\left(B \log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{g^2i^3(a+bx)(bc-ad)^4} - \frac{3b^2d \log\left(\frac{a+bx}{c+dx}\right)\left(B \log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{g^2i^3(bc-ad)^4} - \frac{d^3(a+bx)^2\left(B \log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2g^2i^3(c+dx)^2(bc-ad)^4} + \dots$$

[Out] $\frac{1}{4}Bd^3\frac{(bx+a)^2}{(-ad+bc)^4g^2i^3(d^2x+c)^2} - 3b^2Bd^2\frac{(bx+a)}{(-ad+bc)^4g^2i^3(d^2x+c)} - b^3B\frac{(d^2x+c)}{(-ad+bc)^4g^2i^3(bx+a)} + \frac{3}{2}b^2Bd^2\frac{d \ln\left(\frac{bx+a}{d^2x+c}\right)}{(-ad+bc)^4g^2i^3} - \frac{1}{2}d^3\frac{(bx+a)^2(A+B \ln(e\frac{bx+a}{d^2x+c}))}{(-ad+bc)^4g^2i^3} + \frac{3b^2d^2(bx+a)(A+B \ln(e\frac{bx+a}{d^2x+c}))}{(-ad+bc)^4g^2i^3} - \frac{b^3(d^2x+c)(A+B \ln(e\frac{bx+a}{d^2x+c}))}{(-ad+bc)^4g^2i^3} - \frac{3b^2d^2 \ln\left(\frac{bx+a}{d^2x+c}\right)(A+B \ln(e\frac{bx+a}{d^2x+c}))}{(-ad+bc)^4g^2i^3}$

Rubi [C] time = 1.11, antiderivative size = 631, normalized size of antiderivative = 1.73, number of steps used = 32, number of rules used = 11, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.275$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{3b^2Bd \text{PolyLog}\left(2, -\frac{d(a+bx)}{bc-ad}\right)}{g^2i^3(bc-ad)^4} - \frac{3b^2Bd \text{PolyLog}\left(2, \frac{b(c+dx)}{bc-ad}\right)}{g^2i^3(bc-ad)^4} - \frac{3b^2d \log(a+bx)\left(B \log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{g^2i^3(bc-ad)^4} - \frac{b^2\left(B \log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{g^2i^3(a+bx)}$$

Antiderivative was successfully verified.

[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x)])]/((a*g + b*g*x)^2*(c*i + d*i*x)^3), x]

[Out] $-\frac{(b^2B)}{(b^3c - a^3d)^3g^2i^3(a + b^2x)} + \frac{(Bd)}{4(b^3c - a^3d)^2g^2i^3(c + d^2x)^2} + \frac{(5b^2Bd)}{2(b^3c - a^3d)^3g^2i^3(c + d^2x)} + \frac{(3b^2Bd \text{Log}[a + b^2x])}{2(b^3c - a^3d)^4g^2i^3} - \frac{(b^2(A + B \text{Log}[\frac{e(a + b^2x)}{c + d^2x}]])}{(b^3c - a^3d)^3g^2i^3(a + b^2x)} - \frac{(d(A + B \text{Log}[\frac{e(a + b^2x)}{c + d^2x}]])}{2(b^3c - a^3d)^2g^2i^3(c + d^2x)^2} - \frac{(2b^2d(A + B \text{Log}[\frac{e(a + b^2x)}{c + d^2x}]])}{(b^3c - a^3d)^3g^2i^3(c + d^2x)} - \frac{(3b^2d \text{Log}[a + b^2x](A + B \text{Log}[\frac{e(a + b^2x)}{c + d^2x}]])}{(b^3c - a^3d)^4g^2i^3} - \frac{(3b^2Bd \text{Log}[c + d^2x])}{2(b^3c - a^3d)^4g^2i^3} - \frac{(3b^2Bd \text{Log}[-\frac{d(a + b^2x)}{b^3c - a^3d}]) \text{Log}[c + d^2x]}{(b^3c - a^3d)^4g^2i^3} + \frac{(3b^2d(A + B \text{Log}[\frac{e(a + b^2x)}{c + d^2x}]) \text{Log}[c + d^2x])}{(b^3c - a^3d)^4g^2i^3} + \frac{(3b^2Bd \text{Log}[c + d^2x]^2)}{2(b^3c - a^3d)^4g^2i^3} - \frac{(3b^2Bd \text{Log}[a + b^2x] \text{Log}[\frac{b(c + d^2x)}{b^3c - a^3d}])}{(b^3c - a^3d)^4g^2i^3} - \frac{(3b^2Bd \text{PolyLog}[2, -\frac{d(a + b^2x)}{b^3c - a^3d}])}{(b^3c - a^3d)^4g^2i^3} - \frac{(3b^2Bd \text{PolyLog}[2, \frac{b(c + d^2x)}{b^3c - a^3d}])}{(b^3c - a^3d)^4g^2i^3}$

Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_)*(x_))^(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)/(x_), x_Symbol] := Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)])*(b_)^(p_)*((f_) + (g_
)*(x_))^(q_), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_)*((d_) + (e_)*(x_))^(n_) ]/(x_), x_Symbol] := -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))])*(b_)/((f_) + (g_)*(x_)), x_
Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)])*(b_)/((f_) + (g_)*(x_
)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n])/g, x] - Dist[(b*e^n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n]^p, RFx, x]},
Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunci
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{(52c + 52dx)^3(ag + bgx)^2} dx &= \int \left(\frac{b^3 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{140608(bc - ad)^3 g^2 (a + bx)^2} - \frac{3b^3 d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{140608(bc - ad)^4 g^2 (a + bx)} + \frac{d^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{140608(bc - ad)^5 g^2 (a + bx)^2} \right) dx \\
&= -\frac{(3b^3 d) \int \frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{a+bx} dx}{140608(bc - ad)^4 g^2} + \frac{(3b^2 d^2) \int \frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{c+dx} dx}{140608(bc - ad)^4 g^2} + \frac{b^3 \int \frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{(a+bx)^2} dx}{140608(bc - ad)^5 g^2} \\
&= -\frac{b^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{140608(bc - ad)^3 g^2 (a + bx)} - \frac{d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{281216(bc - ad)^2 g^2 (c + dx)^2} - \frac{bd \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{70304(bc - ad)(c + dx)^2} \\
&= -\frac{b^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{140608(bc - ad)^3 g^2 (a + bx)} - \frac{d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{281216(bc - ad)^2 g^2 (c + dx)^2} - \frac{bd \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{70304(bc - ad)(c + dx)^2} \\
&= -\frac{b^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{140608(bc - ad)^3 g^2 (a + bx)} - \frac{d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{281216(bc - ad)^2 g^2 (c + dx)^2} - \frac{bd \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{70304(bc - ad)(c + dx)^2} \\
&= -\frac{b^2 B}{140608(bc - ad)^3 g^2 (a + bx)} + \frac{Bd}{562432(bc - ad)^2 g^2 (c + dx)^2} + \frac{5bd}{281216(bc - ad)(c + dx)^2} \\
&= -\frac{b^2 B}{140608(bc - ad)^3 g^2 (a + bx)} + \frac{Bd}{562432(bc - ad)^2 g^2 (c + dx)^2} + \frac{5bd}{281216(bc - ad)(c + dx)^2} \\
&= -\frac{b^2 B}{140608(bc - ad)^3 g^2 (a + bx)} + \frac{Bd}{562432(bc - ad)^2 g^2 (c + dx)^2} + \frac{5bd}{281216(bc - ad)(c + dx)^2} \\
&= -\frac{b^2 B}{140608(bc - ad)^3 g^2 (a + bx)} + \frac{Bd}{562432(bc - ad)^2 g^2 (c + dx)^2} + \frac{5bd}{281216(bc - ad)(c + dx)^2}
\end{aligned}$$

Mathematica [C] time = 0.75, size = 452, normalized size = 1.24

$$-\frac{12b^2 d \log(a + bx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right) - \frac{4b^2(bc-ad) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{a+bx} + 12b^2 d \log(c + dx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{(52c + 52dx)^3 (ag + bgx)^2}$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x]))/((a*g + b*g*x)^2*(c*i + d*i*x)^3), x]

```
[Out] ((-4*b^3*B*c)/(a + b*x) + (4*a*b^2*B*d)/(a + b*x) + (B*d*(b*c - a*d)^2)/(c + d*x)^2 + (8*b^2*B*c*d)/(c + d*x) - (8*a*b*B*d^2)/(c + d*x) + (2*b*B*d*(b*c - a*d))/(c + d*x) + 6*b^2*B*d*Log[a + b*x] - (4*b^2*(b*c - a*d)*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a + b*x) - (2*d*(b*c - a*d)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(c + d*x)^2 - (8*b*d*(b*c - a*d)*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(c + d*x) - 12*b^2*d*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 6*b^2*B*d*Log[c + d*x] + 12*b^2*d*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x] + 6*b^2*B*d*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)])) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)] - 6*b^2*B*d*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))/(4*(b*c - a*d)^4*g^2*i^3)
```

fricas [A] time = 0.84, size = 672, normalized size = 1.84

$$\frac{4(A+B)b^3c^3 + 3(2A-5B)ab^2c^2d - 12(A-B)a^2bcd^2 + (2A-B)a^3d^3 + 6((2A-B)b^3cd^2 - (2A-B)ab^2d^3)}{4((b^5c^4d^2 - 4ab^4c^3d^3 + 6a^2b^3c^2d^4 - 4a^3b^2c^3d^5 + a^4b^1c^5d^6)g^2i^3x^3 + (2b^5c^5d - 7a^4b^4c^4d^2 + 8a^2b^3c^3d^3 - 2a^3b^2c^2d^4 - 2a^4b^1c^5d^6)g^2i^3x^2 + (b^5c^6 - 2a^4b^4c^5d - 2a^2b^3c^4d^2 + 8a^3b^2c^3d^3 - 7a^4b^1c^5d^6 + 2a^5c^6d^5)g^2i^3x + (a^5b^4c^6 - 4a^2b^3c^5d + 6a^3b^2c^4d^2 - 4a^4b^1c^5d^6 + a^5c^2d^4)g^2i^3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^2/(d*i*x+c*i)^3,x, algorithm="fricas")
```

```
[Out] -1/4*(4*(A + B)*b^3*c^3 + 3*(2*A - 5*B)*a*b^2*c^2*d - 12*(A - B)*a^2*b*c*d^2 + (2*A - B)*a^3*d^3 + 6*((2*A - B)*b^3*c*d^2 - (2*A - B)*a*b^2*d^3)*x^2 + 6*(B*b^3*d^3*x^3 + B*a*b^2*c^2*d + (2*B*b^3*c*d^2 + B*a*b^2*d^3)*x^2 + (B*b^3*c^2*d + 2*B*a*b^2*c*d^2)*x)*log((b*e*x + a*e)/(d*x + c))^2 + 3*((6*A - B)*b^3*c^2*d - 2*(2*A + B)*a*b^2*c*d^2 - (2*A - 3*B)*a^2*b*d^3)*x + 2*(3*(2*A - B)*b^3*d^3*x^3 + 2*B*b^3*c^3 + 6*A*a*b^2*c^2*d - 6*B*a^2*b*c*d^2 + B*a^3*d^3 + 3*(4*A*b^3*c*d^2 + (2*A - 3*B)*a*b^2*d^3)*x^2 + 3*(2*(A + B)*b^3*c^2*d + 4*(A - B)*a*b^2*c*d^2 - B*a^2*b*d^3)*x)*log((b*e*x + a*e)/(d*x + c)))/((b^5*c^4*d^2 - 4*a*b^4*c^3*d^3 + 6*a^2*b^3*c^2*d^4 - 4*a^3*b^2*c^3*d^5 + a^4*b^1*c^5*d^6)*g^2*i^3*x^3 + (2*b^5*c^5*d - 7*a^4*b^4*c^4*d^2 + 8*a^2*b^3*c^3*d^3 - 2*a^3*b^2*c^2*d^4 - 2*a^4*b^1*c^5*d^6)*g^2*i^3*x^2 + (b^5*c^6 - 2*a^4*b^4*c^5*d - 2*a^2*b^3*c^4*d^2 + 8*a^3*b^2*c^3*d^3 - 7*a^4*b^1*c^5*d^6 + 2*a^5*c^6*d^5)*g^2*i^3*x + (a^5*b^4*c^6 - 4*a^2*b^3*c^5*d + 6*a^3*b^2*c^4*d^2 - 4*a^4*b^1*c^5*d^6 + a^5*c^2*d^4)*g^2*i^3)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^2/(d*i*x+c*i)^3,x, algorithm="giac")
```

[Out] Timed out

maple [B] time = 0.06, size = 1729, normalized size = 4.74

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{int}((B \ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^2/(d*i*x+c*i)^3, x)$

[Out]
$$\begin{aligned} & -1/2*d^4/i^3/(a*d-b*c)^5/g^2*A/(d*x+c)^2*a^3+1/4*d^4/i^3/(a*d-b*c)^5/g^2*B/ \\ & (d*x+c)^2*a^3+e/i^3/(a*d-b*c)^5/g^2*B*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+ \\ & b/d*e)*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-d*e/i^3/(a*d-b*c)^5/g^2*B*b^3/(1/(\\ & d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a+3/2*d^3/i^3/(a*d-b*c)^5/g^2*A/(d*x+c) \\ & ^2*a^2*b*c-3/2*d^2/i^3/(a*d-b*c)^5/g^2*A/(d*x+c)^2*a*b^2*c^2-3/4*d^3/i^3/(a \\ & *d-b*c)^5/g^2*B/(d*x+c)^2*a^2*b*c+3/4*d^2/i^3/(a*d-b*c)^5/g^2*B/(d*x+c)^2*a \\ & *b^2*c^2-4*d^2/i^3/(a*d-b*c)^5/g^2*A*b^2/(d*x+c)*c*a+3/2*d^3/i^3/(a*d-b*c)^ \\ & 5/g^2*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a^2*b*c-3/2*d^2/i^3/(a*d- \\ & b*c)^5/g^2*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a*b^2*c^2-4*d^2/i^3/ \\ & (a*d-b*c)^5/g^2*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2/(d*x+c)*a*c-d*e/i^3/(\\ & a*d-b*c)^5/g^2*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*\ln(b/d*e+(a*d- \\ & b*c)/(d*x+c)/d*e)*a-5/2*d^3/i^3/(a*d-b*c)^5/g^2*B*b/(d*x+c)*a^2-1/2*d^4/i^3 \\ & /(a*d-b*c)^5/g^2*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a^3+e/i^3/(a*d \\ & -b*c)^5/g^2*A*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c-1/4*d/i^3/(a*d- \\ & b*c)^5/g^2*B/(d*x+c)^2*b^3*c^3+2*d/i^3/(a*d-b*c)^5/g^2*B*\ln(b/d*e+(a*d-b*c) \\ & / \\ & (d*x+c)/d*e)*b^3/(d*x+c)*c^2-d*e/i^3/(a*d-b*c)^5/g^2*A*b^3/(1/(d*x+c)*a*e- \\ & 1/(d*x+c)*b*c/d*e+b/d*e)*a+2*d^3/i^3/(a*d-b*c)^5/g^2*B*\ln(b/d*e+(a*d-b*c)/(\\ & d*x+c)/d*e)*b/(d*x+c)*a^2+2*d/i^3/(a*d-b*c)^5/g^2*A*b^3/(d*x+c)*c^2+2*d^3/i \\ & ^3/(a*d-b*c)^5/g^2*A*b/(d*x+c)*a^2+e/i^3/(a*d-b*c)^5/g^2*B*b^4/(1/(d*x+c)*a \\ & *e-1/(d*x+c)*b*c/d*e+b/d*e)*c+5/2*d^2/i^3/(a*d-b*c)^5/g^2*A*b^2*a-5/2*d/i^3 \\ & /(a*d-b*c)^5/g^2*A*b^3*c-11/4*d^2/i^3/(a*d-b*c)^5/g^2*B*b^2*a+11/4*d/i^3/(a \\ & *d-b*c)^5/g^2*B*b^3*c+5*d^2/i^3/(a*d-b*c)^5/g^2*B*b^2/(d*x+c)*a*c+1/2*d/i^3 \\ & /(a*d-b*c)^5/g^2*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*b^3*c^3+1/2*d/ \\ & i^3/(a*d-b*c)^5/g^2*A/(d*x+c)^2*b^3*c^3-5/2*d/i^3/(a*d-b*c)^5/g^2*B*b^3/(d* \\ & x+c)*c^2+3*d/i^3/(a*d-b*c)^5/g^2*A*b^3*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-3* \\ & d^2/i^3/(a*d-b*c)^5/g^2*A*b^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-3/2*d^2/i^3 \\ & /(a*d-b*c)^5/g^2*B*b^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a+5/2*d^2/i^3/(a*d \\ & -b*c)^5/g^2*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2*a-5/2*d/i^3/(a*d-b*c)^5/g \\ & ^2*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^3*c+3/2*d/i^3/(a*d-b*c)^5/g^2*B*b^3* \\ & \ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c \end{aligned}$$

maxima [B] time = 2.59, size = 1721, normalized size = 4.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^2/(d*i*x+c*i)^3,x, algorith="maxima")

[Out]
$$-1/2*B*((6*b^2*d^2*x^2 + 2*b^2*c^2 + 5*a*b*c*d - a^2*d^2 + 3*(3*b^2*c*d + a*b*d^2)*x)/((b^4*c^3*d^2 - 3*a*b^3*c^2*d^3 + 3*a^2*b^2*c*d^4 - a^3*b*d^5)*g^2*i^3*x^3 + (2*b^4*c^4*d - 5*a*b^3*c^3*d^2 + 3*a^2*b^2*c^2*d^3 + a^3*b*c*d^4 - a^4*d^5)*g^2*i^3*x^2 + (b^4*c^5 - a*b^3*c^4*d - 3*a^2*b^2*c^3*d^2 + 5*a^3*b*c^2*d^3 - 2*a^4*c*d^4)*g^2*i^3*x + (a*b^3*c^5 - 3*a^2*b^2*c^4*d + 3*a^3*b*c^3*d^2 - a^4*c^2*d^3)*g^2*i^3) + 6*b^2*d*log(b*x + a)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^2*i^3) - 6*b^2*d*log(d*x + c)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^2*i^3))*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 1/2*A*((6*b^2*d^2*x^2 + 2*b^2*c^2 + 5*a*b*c*d - a^2*d^2 + 3*(3*b^2*c*d + a*b*d^2)*x)/((b^4*c^3*d^2 - 3*a*b^3*c^2*d^3 + 3*a^2*b^2*c*d^4 - a^3*b*d^5)*g^2*i^3*x^3 + (2*b^4*c^4*d - 5*a*b^3*c^3*d^2 + 3*a^2*b^2*c^2*d^3 + a^3*b*c*d^4 - a^4*d^5)*g^2*i^3*x^2 + (b^4*c^5 - a*b^3*c^4*d - 3*a^2*b^2*c^3*d^2 + 5*a^3*b*c^2*d^3 - 2*a^4*c*d^4)*g^2*i^3*x + (a*b^3*c^5 - 3*a^2*b^2*c^4*d + 3*a^3*b*c^3*d^2 - a^4*c^2*d^3)*g^2*i^3) + 6*b^2*d*log(b*x + a)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^2*i^3) - 6*b^2*d*log(d*x + c)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^2*i^3)) - 1/4*(4*b^3*c^3 - 15*a*b^2*c^2*d + 12*a^2*b*c*d^2 - a^3*d^3 - 6*(b^3*c*d^2 - a*b^2*d^3)*x^2 - 6*(b^3*d^3*x^3 + a*b^2*c^2*d + (2*b^3*c*d^2 + a*b^2*d^3)*x^2 + (b^3*c^2*d + 2*a*b^2*c*d^2)*x)*log(b*x + a)^2 - 6*(b^3*d^3*x^3 + a*b^2*c^2*d + (2*b^3*c*d^2 + a*b^2*d^3)*x^2 + (b^3*c^2*d + 2*a*b^2*c*d^2)*x)*log(d*x + c)^2 - 3*(b^3*c^2*d + 2*a*b^2*c*d^2 - 3*a^2*b*d^3)*x - 6*(b^3*d^3*x^3 + a*b^2*c^2*d + (2*b^3*c*d^2 + a*b^2*d^3)*x^2 + (b^3*c^2*d + 2*a*b^2*c*d^2)*x)*log(b*x + a) + 6*(b^3*d^3*x^3 + a*b^2*c^2*d + (2*b^3*c*d^2 + a*b^2*d^3)*x^2 + (b^3*c^2*d + 2*a*b^2*c*d^2)*x)*log(b*x + a))*log(d*x + c))*B/(a*b^4*c^6*g^2*i^3 - 4*a^2*b^3*c^5*d*g^2*i^3 + 6*a^3*b^2*c^4*d^2*g^2*i^3 - 4*a^4*b*c^3*d^3*g^2*i^3 + a^5*c^2*d^4*g^2*i^3 + (b^5*c^4*d^2*g^2*i^3 - 4*a*b^4*c^3*d^3*g^2*i^3 + 6*a^2*b^3*c^2*d^4*g^2*i^3 - 4*a^3*b^2*c*d^5*g^2*i^3 + a^4*b*d^6*g^2*i^3)*x^3 + (2*b^5*c^5*d*g^2*i^3 - 7*a*b^4*c^4*d^2*g^2*i^3 + 8*a^2*b^3*c^3*d^3*g^2*i^3 - 2*a^3*b^2*c^2*d^4*g^2*i^3 - 2*a^4*b*c*d^5*g^2*i^3 + a^5*d^6*g^2*i^3)*x^2 + (b^5*c^6*g^2*i^3 - 2*a*b^4*c^5*d*g^2*i^3 - 2*a^2*b^3*c^4*d^2*g^2*i^3 + 8*a^3*b^2*c^3*d^3*g^2*i^3 - 7*a^4*b*c^2*d^4*g^2*i^3 + 2*a^5*c*d^5*g^2*i^3)*x)$$

mupad [B] time = 9.29, size = 983, normalized size = 2.69

$$\frac{A b^2 c^2}{g^2 i^3 (a d - b c)^3 (a + b x) (c + d x)^2} - \frac{A a^2 d^2}{2 g^2 i^3 (a d - b c)^3 (a + b x) (c + d x)^2} - \frac{3 B b^2 d \ln\left(\frac{e(a+b x)}{c+d x}\right)^2}{2 g^2 i^3 (a d - b c)^4} + \frac{4 g^2 i^3 (a d - b c)^3 (a + b x) (c + d x)^2}{4 g^2 i^3 (a d - b c)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{int}((A + B \cdot \log((e \cdot (a + b \cdot x)) / (c + d \cdot x))) / ((a \cdot g + b \cdot g \cdot x)^2 \cdot (c \cdot i + d \cdot i \cdot x)^3), x)$

[Out] $(A \cdot b^2 \cdot d \cdot \text{atan}((a \cdot d \cdot i + b \cdot c \cdot i + b \cdot d \cdot x \cdot 2i) / (a \cdot d - b \cdot c)) \cdot 6i) / (g^2 \cdot i^3 \cdot (a \cdot d - b \cdot c)^4) - (3 \cdot B \cdot b^2 \cdot d \cdot \log((e \cdot (a + b \cdot x)) / (c + d \cdot x))^2) / (2 \cdot g^2 \cdot i^3 \cdot (a \cdot d - b \cdot c)^4) - (B \cdot b^2 \cdot d \cdot \text{atan}((a \cdot d \cdot i + b \cdot c \cdot i + b \cdot d \cdot x \cdot 2i) / (a \cdot d - b \cdot c)) \cdot 3i) / (g^2 \cdot i^3 \cdot (a \cdot d - b \cdot c)^4) - (A \cdot a^2 \cdot d^2) / (2 \cdot g^2 \cdot i^3 \cdot (a \cdot d - b \cdot c)^3 \cdot (a + b \cdot x) \cdot (c + d \cdot x)^2) + (A \cdot b^2 \cdot c^2) / (g^2 \cdot i^3 \cdot (a \cdot d - b \cdot c)^3 \cdot (a + b \cdot x) \cdot (c + d \cdot x)^2) + (B \cdot a^2 \cdot d^2) / (4 \cdot g^2 \cdot i^3 \cdot (a \cdot d - b \cdot c)^3 \cdot (a + b \cdot x) \cdot (c + d \cdot x)^2) + (B \cdot b^2 \cdot c^2) / (g^2 \cdot i^3 \cdot (a \cdot d - b \cdot c)^3 \cdot (a + b \cdot x) \cdot (c + d \cdot x)^2) - (B \cdot a \cdot d \cdot \log((e \cdot (a + b \cdot x)) / (c + d \cdot x))) / (2 \cdot g^2 \cdot i^3 \cdot (a \cdot d - b \cdot c)^2 \cdot (a + b \cdot x) \cdot (c + d \cdot x)^2) - (B \cdot b \cdot c \cdot \log((e \cdot (a + b \cdot x)) / (c + d \cdot x))) / (g^2 \cdot i^3 \cdot (a \cdot d - b \cdot c)^2 \cdot (a + b \cdot x) \cdot (c + d \cdot x)^2) + (3 \cdot A \cdot b^2 \cdot d^2 \cdot x^2) / (g^2 \cdot i^3 \cdot (a \cdot d - b \cdot c)^3 \cdot (a + b \cdot x) \cdot (c + d \cdot x)^2) - (3 \cdot B \cdot b^2 \cdot d^2 \cdot x^2) / (2 \cdot g^2 \cdot i^3 \cdot (a \cdot d - b \cdot c)^3 \cdot (a + b \cdot x) \cdot (c + d \cdot x)^2) + (5 \cdot A \cdot a \cdot b \cdot c \cdot d) / (2 \cdot g^2 \cdot i^3 \cdot (a \cdot d - b \cdot c)^3 \cdot (a + b \cdot x) \cdot (c + d \cdot x)^2) - (11 \cdot B \cdot a \cdot b \cdot c \cdot d) / (4 \cdot g^2 \cdot i^3 \cdot (a \cdot d - b \cdot c)^3 \cdot (a + b \cdot x) \cdot (c + d \cdot x)^2) - (3 \cdot B \cdot b \cdot d \cdot x \cdot \log((e \cdot (a + b \cdot x)) / (c + d \cdot x))) / (2 \cdot g^2 \cdot i^3 \cdot (a \cdot d - b \cdot c)^2 \cdot (a + b \cdot x) \cdot (c + d \cdot x)^2) + (3 \cdot B \cdot b^2 \cdot d^2 \cdot x^2 \cdot \log((e \cdot (a + b \cdot x)) / (c + d \cdot x))) / (g^2 \cdot i^3 \cdot (a \cdot d - b \cdot c)^3 \cdot (a + b \cdot x) \cdot (c + d \cdot x)^2) + (3 \cdot A \cdot a \cdot b \cdot d^2 \cdot x) / (2 \cdot g^2 \cdot i^3 \cdot (a \cdot d - b \cdot c)^3 \cdot (a + b \cdot x) \cdot (c + d \cdot x)^2) - (9 \cdot B \cdot a \cdot b \cdot d^2 \cdot x) / (4 \cdot g^2 \cdot i^3 \cdot (a \cdot d - b \cdot c)^3 \cdot (a + b \cdot x) \cdot (c + d \cdot x)^2) + (9 \cdot A \cdot b^2 \cdot c \cdot d \cdot x) / (2 \cdot g^2 \cdot i^3 \cdot (a \cdot d - b \cdot c)^3 \cdot (a + b \cdot x) \cdot (c + d \cdot x)^2) - (3 \cdot B \cdot b^2 \cdot c \cdot d \cdot x) / (4 \cdot g^2 \cdot i^3 \cdot (a \cdot d - b \cdot c)^3 \cdot (a + b \cdot x) \cdot (c + d \cdot x)^2) + (3 \cdot B \cdot a \cdot b \cdot c \cdot d \cdot \log((e \cdot (a + b \cdot x)) / (c + d \cdot x))) / (g^2 \cdot i^3 \cdot (a \cdot d - b \cdot c)^3 \cdot (a + b \cdot x) \cdot (c + d \cdot x)^2) + (3 \cdot B \cdot a \cdot b \cdot d^2 \cdot x \cdot \log((e \cdot (a + b \cdot x)) / (c + d \cdot x))) / (g^2 \cdot i^3 \cdot (a \cdot d - b \cdot c)^3 \cdot (a + b \cdot x) \cdot (c + d \cdot x)^2) + (3 \cdot B \cdot b^2 \cdot c \cdot d \cdot x \cdot \log((e \cdot (a + b \cdot x)) / (c + d \cdot x))) / (g^2 \cdot i^3 \cdot (a \cdot d - b \cdot c)^3 \cdot (a + b \cdot x) \cdot (c + d \cdot x)^2)$

sympy [B] time = 50.56, size = 1562, normalized size = 4.28

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{integrate}((A + B \cdot \ln(e \cdot (b \cdot x + a) / (d \cdot x + c))) / (b \cdot g \cdot x + a \cdot g)^2 / (d \cdot i \cdot x + c \cdot i)^3, x)$

[Out] $-3 \cdot B \cdot b^2 \cdot d \cdot \log(e \cdot (a + b \cdot x) / (c + d \cdot x))^2 / (2 \cdot a^4 \cdot d^4 \cdot g^2 \cdot i^3 - 8 \cdot a^3 \cdot b \cdot c \cdot d^3 \cdot g^2 \cdot i^3 + 12 \cdot a^2 \cdot b^2 \cdot c^2 \cdot d^2 \cdot g^2 \cdot i^3 - 8 \cdot a \cdot b^3 \cdot c^3 \cdot d \cdot g^2 \cdot i^3 + 2 \cdot b^4 \cdot c^4 \cdot g^2 \cdot i^3) + 3 \cdot b^2 \cdot d \cdot (2 \cdot A - B) \cdot \log(x + (6 \cdot A \cdot a \cdot b^2 \cdot d^2 + 6 \cdot A \cdot b^3 \cdot c \cdot d - 3 \cdot B \cdot a \cdot b^2 \cdot d^2 - 3 \cdot B \cdot b^3 \cdot c \cdot d - 3 \cdot a^5 \cdot b^2 \cdot d^6 \cdot (2 \cdot A - B) / (a \cdot d - b \cdot c))^4 + 15 \cdot a^4 \cdot b^3 \cdot c \cdot d^5 \cdot (2 \cdot A - B) / (a \cdot d - b \cdot c))^4 - 30 \cdot a^3 \cdot b^4 \cdot c^2 \cdot d^4 \cdot (2 \cdot A - B) / (a \cdot d - b \cdot c))^4 + 30 \cdot a^2 \cdot b^5 \cdot c^3 \cdot d^3 \cdot (2 \cdot A - B) / (a \cdot d - b \cdot c))^4 - 15 \cdot a \cdot b^6 \cdot c^4 \cdot d^2 \cdot (2 \cdot A - B) / (a \cdot d - b \cdot c))^4 + 3 \cdot b^7 \cdot c^5 \cdot d \cdot (2 \cdot A - B) / (a \cdot d - b \cdot c))^4 / (12 \cdot A \cdot b^3 \cdot d^2 - 6 \cdot B \cdot b^3 \cdot d^2) / (2 \cdot g^2 \cdot i^3 \cdot (a \cdot d - b \cdot c))^4) - 3 \cdot b^2 \cdot d \cdot (2 \cdot A - B) \cdot \log(x + (6 \cdot A \cdot a \cdot b^2 \cdot d^2 + 6 \cdot A \cdot b^3 \cdot c \cdot d - 3 \cdot B \cdot a \cdot b^2 \cdot d^2 - 3 \cdot B \cdot b^3 \cdot c \cdot d + 3 \cdot a^5 \cdot b^2 \cdot d^6 \cdot (2 \cdot A - B) / (a \cdot d - b \cdot c))^4 - 15 \cdot a^4 \cdot b^3 \cdot c \cdot d^5 \cdot (2 \cdot A - B) / (a \cdot d - b \cdot c))^4 + 30 \cdot a^3 \cdot b^4 \cdot c^2 \cdot d^4 \cdot (2 \cdot A - B) / (a \cdot d - b \cdot c))^4 - 30 \cdot a^2 \cdot b^5 \cdot c^3 \cdot d^3 \cdot (2 \cdot A - B) / (a \cdot d - b \cdot c))^4$

$$\begin{aligned}
& *4 + 15*a*b**6*c**4*d**2*(2*A - B)/(a*d - b*c)**4 - 3*b**7*c**5*d*(2*A - B) \\
& / (a*d - b*c)**4 / (12*A*b**3*d**2 - 6*B*b**3*d**2) / (2*g**2*i**3*(a*d - b*c) \\
& **4) + (-B*a**2*d**2 + 5*B*a*b*c*d + 3*B*a*b*d**2*x + 2*B*b**2*c**2 + 9*B*b \\
& **2*c*d*x + 6*B*b**2*d**2*x**2)*\log(e*(a + b*x)/(c + d*x)) / (2*a**4*c**2*d** \\
& 3*g**2*i**3 + 4*a**4*c*d**4*g**2*i**3*x + 2*a**4*d**5*g**2*i**3*x**2 - 6*a* \\
& **3*b*c**3*d**2*g**2*i**3 - 10*a**3*b*c**2*d**3*g**2*i**3*x - 2*a**3*b*c*d** \\
& 4*g**2*i**3*x**2 + 2*a**3*b*d**5*g**2*i**3*x**3 + 6*a**2*b**2*c**4*d*g**2*i \\
& **3 + 6*a**2*b**2*c**3*d**2*g**2*i**3*x - 6*a**2*b**2*c**2*d**3*g**2*i**3*x \\
& **2 - 6*a**2*b**2*c*d**4*g**2*i**3*x**3 - 2*a*b**3*c**5*g**2*i**3 + 2*a*b** \\
& 3*c**4*d*g**2*i**3*x + 10*a*b**3*c**3*d**2*g**2*i**3*x**2 + 6*a*b**3*c**2*d \\
& **3*g**2*i**3*x**3 - 2*b**4*c**5*g**2*i**3*x - 4*b**4*c**4*d*g**2*i**3*x**2 \\
& - 2*b**4*c**3*d**2*g**2*i**3*x**3) + (-2*A*a**2*d**2 + 10*A*a*b*c*d + 4*A* \\
& b**2*c**2 + B*a**2*d**2 - 11*B*a*b*c*d + 4*B*b**2*c**2 + x**2*(12*A*b**2*d \\
& **2 - 6*B*b**2*d**2) + x*(6*A*a*b*d**2 + 18*A*b**2*c*d - 9*B*a*b*d**2 - 3*B* \\
& b**2*c*d)) / (4*a**4*c**2*d**3*g**2*i**3 - 12*a**3*b*c**3*d**2*g**2*i**3 + 12 \\
& *a**2*b**2*c**4*d*g**2*i**3 - 4*a*b**3*c**5*g**2*i**3 + x**3*(4*a**3*b*d**5 \\
& *g**2*i**3 - 12*a**2*b**2*c*d**4*g**2*i**3 + 12*a*b**3*c**2*d**3*g**2*i**3 \\
& - 4*b**4*c**3*d**2*g**2*i**3) + x**2*(4*a**4*d**5*g**2*i**3 - 4*a**3*b*c*d \\
& **4*g**2*i**3 - 12*a**2*b**2*c**2*d**3*g**2*i**3 + 20*a*b**3*c**3*d**2*g**2* \\
& i**3 - 8*b**4*c**4*d*g**2*i**3) + x*(8*a**4*c*d**4*g**2*i**3 - 20*a**3*b*c* \\
& **2*d**3*g**2*i**3 + 12*a**2*b**2*c**3*d**2*g**2*i**3 + 4*a*b**3*c**4*d*g**2 \\
& *i**3 - 4*b**4*c**5*g**2*i**3)
\end{aligned}$$

$$3.53 \quad \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{(ag+bgx)^3(ci+dix)^3} dx$$

Optimal. Leaf size=463

$$\frac{b^4(c+dx)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{2g^3i^3(a+bx)^2(bc-ad)^5} + \frac{4b^3d(c+dx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{g^3i^3(a+bx)(bc-ad)^5} + \frac{6b^2d^2 \log\left(\frac{a+bx}{c+dx}\right) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{g^3i^3(bc-ad)^5}$$

[Out] $-1/4*B*d^4*(b*x+a)^2/(-a*d+b*c)^5/g^3/i^3/(d*x+c)^2+4*b*B*d^3*(b*x+a)/(-a*d+b*c)^5/g^3/i^3/(d*x+c)+4*b^3*B*d*(d*x+c)/(-a*d+b*c)^5/g^3/i^3/(b*x+a)-1/4*b^4*B*(d*x+c)^2/(-a*d+b*c)^5/g^3/i^3/(b*x+a)^2-3*b^2*B*d^2*\ln((b*x+a)/(d*x+c))^2/(-a*d+b*c)^5/g^3/i^3+1/2*d^4*(b*x+a)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^5/g^3/i^3/(d*x+c)^2-4*b*d^3*(b*x+a)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^5/g^3/i^3/(d*x+c)+4*b^3*d*(d*x+c)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^5/g^3/i^3/(b*x+a)-1/2*b^4*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^5/g^3/i^3/(b*x+a)^2+6*b^2*d^2*\ln((b*x+a)/(d*x+c))*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^5/g^3/i^3$

Rubi [C] time = 1.41, antiderivative size = 673, normalized size of antiderivative = 1.45, number of steps used = 36, number of rules used = 11, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.275$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{6b^2Bd^2 \text{PolyLog}\left(2, -\frac{d(a+bx)}{bc-ad}\right)}{g^3i^3(bc-ad)^5} + \frac{6b^2Bd^2 \text{PolyLog}\left(2, \frac{b(c+dx)}{bc-ad}\right)}{g^3i^3(bc-ad)^5} + \frac{6b^2d^2 \log(a+bx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{g^3i^3(bc-ad)^5} - \frac{6b^2d^2 \log\left(\frac{a+bx}{c+dx}\right) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{g^3i^3(bc-ad)^5}$$

Antiderivative was successfully verified.

[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x]))/((a*g + b*g*x)^3*(c*i + d*i*x)^3), x]

[Out] $-(b^2*B)/(4*(b*c - a*d)^3*g^3*i^3*(a + b*x)^2) + (7*b^2*B*d)/(2*(b*c - a*d)^4*g^3*i^3*(a + b*x)) - (B*d^2)/(4*(b*c - a*d)^3*g^3*i^3*(c + d*x)^2) - (7*b*B*d^2)/(2*(b*c - a*d)^4*g^3*i^3*(c + d*x)) - (3*b^2*B*d^2*\text{Log}[a + b*x]^2)/((b*c - a*d)^5*g^3*i^3) - (b^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]]))/(2*(b*c - a*d)^3*g^3*i^3*(a + b*x)^2) + (3*b^2*d*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]]))/((b*c - a*d)^4*g^3*i^3*(a + b*x)) + (d^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]]))/((b*c - a*d)^4*g^3*i^3*(c + d*x)^2) + (3*b*d^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]]))/((b*c - a*d)^3*g^3*i^3*(c + d*x)^2) + (3*b*d^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]]))/((b*c - a*d)^4*g^3*i^3*(c + d*x)) + (6*b^2*d^2*\text{Log}[a + b*x]*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]]))/((b*c - a*d)^5*g^3*i^3) + (6*b^2*B*d^2*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c + d*x])/((b*c - a*d)^5*g^3*i^3) - (6*b^2*d^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]])*\text{Log}[c + d*x])/((b*c - a*d)^5*g^3*i^3) - (3*b^2*B*d^2*\text{Log}[c + d*x]^2)/((b*c - a*d)^5*g^3*i^3) + (6*b^2*B*d^2*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^5$

$$g^3 i^3 + (6b^2 B d^2 \text{PolyLog}[2, -((d(a + bx))/(b*c - a*d))]/((b*c - a*d)^5 g^3 i^3) + (6b^2 B d^2 \text{PolyLog}[2, (b(c + dx))/(b*c - a*d)]/((b*c - a*d)^5 g^3 i^3)$$
Rule 12

$$\text{Int}[(a_*)(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] \text{ ; FreeQ}[a, x] \ \&\& \ !\text{MatchQ}[u, (b_*)(v_) \text{ ; FreeQ}[b, x]]$$
Rule 44

$$\text{Int}[(a_*) + (b_*)(x_)]^{(m_*)} ((c_*) + (d_*)(x_))^{(n_*)}, x_Symbol] \rightarrow \text{Int}[\text{ExpandIntegrand}[(a + b*x)^m (c + d*x)^n, x], x] \text{ ; FreeQ}[\{a, b, c, d\}, x] \ \&\& \ \text{NeQ}[b*c - a*d, 0] \ \&\& \ \text{ILtQ}[m, 0] \ \&\& \ \text{IntegerQ}[n] \ \&\& \ !(\text{IGtQ}[n, 0] \ \&\& \ \text{LtQ}[m + n + 2, 0])$$
Rule 2301

$$\text{Int}[(a_*) + \text{Log}[(c_*)(x_)]^{(n_*)} (b_*)]/(x_), x_Symbol] \rightarrow \text{Simp}[(a + b*\text{Log}[c*x^n])^2/(2*b*n), x] \text{ ; FreeQ}[\{a, b, c, n\}, x]$$
Rule 2390

$$\text{Int}[(a_*) + \text{Log}[(c_*)(d_*) + (e_*)(x_)]^{(n_*)} (b_*)]^{(p_*)} ((f_*) + (g_*)(x_)]^{(q_*)}, x_Symbol] \rightarrow \text{Dist}[1/e, \text{Subst}[\text{Int}[(f*x)/d]^q (a + b*\text{Log}[c*x^n])^p, x], x, d + e*x], x] \text{ ; FreeQ}[\{a, b, c, d, e, f, g, n, p, q\}, x] \ \&\& \ \text{EqQ}[e*f - d*g, 0]$$
Rule 2391

$$\text{Int}[\text{Log}[(c_*)(d_*) + (e_*)(x_)]^{(n_*)}]/(x_), x_Symbol] \rightarrow -\text{Simp}[\text{PolyLog}[2, -(c*e*x^n)]/n, x] \text{ ; FreeQ}[\{c, d, e, n\}, x] \ \&\& \ \text{EqQ}[c*d, 1]$$
Rule 2393

$$\text{Int}[(a_*) + \text{Log}[(c_*)(d_*) + (e_*)(x_)] (b_*)]/((f_*) + (g_*)(x_)), x_Symbol] \rightarrow \text{Dist}[1/g, \text{Subst}[\text{Int}[(a + b*\text{Log}[1 + (c*e*x)/g])/x, x], x, f + g*x], x] \text{ ; FreeQ}[\{a, b, c, d, e, f, g\}, x] \ \&\& \ \text{NeQ}[e*f - d*g, 0] \ \&\& \ \text{EqQ}[g + c*(e*f - d*g), 0]$$
Rule 2394

$$\text{Int}[(a_*) + \text{Log}[(c_*)(d_*) + (e_*)(x_)]^{(n_*)} (b_*)]/((f_*) + (g_*)(x_)), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[(e*(f + g*x))/(e*f - d*g)]*(a + b*\text{Log}[c*(d + e*x)^n]))/g, x] - \text{Dist}[(b*e^n)/g, \text{Int}[\text{Log}[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)]$$

, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2418

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]

Rule 2524

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]

Rule 2525

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]

Rule 2528

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]

Rubi steps

$$\begin{aligned}
\int \frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{(53c + 53dx)^3(ag + bgx)^3} dx &= \int \left(\frac{b^3 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{148877(bc - ad)^3 g^3 (a + bx)^3} - \frac{3b^3 d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{148877(bc - ad)^4 g^3 (a + bx)^2} + \frac{6b^3 d^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{148877(bc - ad)^5 g^3 (a + bx)} \right) dx \\
&= \frac{(6b^3 d^2) \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{a+bx} dx}{148877(bc - ad)^5 g^3} - \frac{(6b^2 d^3) \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{c+dx} dx}{148877(bc - ad)^5 g^3} - \frac{(3b^3 d) \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{(a+bx)^2} dx}{148877(bc - ad)^5 g^3} \\
&= -\frac{b^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{297754(bc - ad)^3 g^3 (a + bx)^2} + \frac{3b^2 d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{148877(bc - ad)^4 g^3 (a + bx)} + \frac{d^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{297754(bc - ad)^5 g^3} \\
&= -\frac{b^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{297754(bc - ad)^3 g^3 (a + bx)^2} + \frac{3b^2 d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{148877(bc - ad)^4 g^3 (a + bx)} + \frac{d^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{297754(bc - ad)^5 g^3} \\
&= -\frac{b^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{297754(bc - ad)^3 g^3 (a + bx)^2} + \frac{3b^2 d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{148877(bc - ad)^4 g^3 (a + bx)} + \frac{d^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{297754(bc - ad)^5 g^3} \\
&= -\frac{b^2 B}{595508(bc - ad)^3 g^3 (a + bx)^2} + \frac{7b^2 B d}{297754(bc - ad)^4 g^3 (a + bx)} - \frac{7b^2 B d^2}{595508(bc - ad)^5 g^3} \\
&= -\frac{b^2 B}{595508(bc - ad)^3 g^3 (a + bx)^2} + \frac{7b^2 B d}{297754(bc - ad)^4 g^3 (a + bx)} - \frac{7b^2 B d^2}{595508(bc - ad)^5 g^3} \\
&= -\frac{b^2 B}{595508(bc - ad)^3 g^3 (a + bx)^2} + \frac{7b^2 B d}{297754(bc - ad)^4 g^3 (a + bx)} - \frac{7b^2 B d^2}{595508(bc - ad)^5 g^3} \\
&= -\frac{b^2 B}{595508(bc - ad)^3 g^3 (a + bx)^2} + \frac{7b^2 B d}{297754(bc - ad)^4 g^3 (a + bx)} - \frac{7b^2 B d^2}{595508(bc - ad)^5 g^3}
\end{aligned}$$

Mathematica [C] time = 1.18, size = 533, normalized size = 1.15

$$-\frac{-24b^2 d^2 \log(a + bx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right) + 24b^2 d^2 \log(c + dx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right) - \frac{12b^2 d(bc-ad) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{a+bx}}{(53c + 53dx)^3 (ag + bgx)^3}$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x]))/((a*g + b*g*x)^3*(c*i + d*i*x)^3), x]

```
[Out] -1/4*((b^2*B*(b*c - a*d)^2)/(a + b*x)^2 - (12*b^3*B*c*d)/(a + b*x) + (12*a*
b^2*B*d^2)/(a + b*x) - (2*b^2*B*d*(b*c - a*d))/(a + b*x) + (B*d^2*(b*c - a*
d)^2)/(c + d*x)^2 + (12*b^2*B*c*d^2)/(c + d*x) - (12*a*b*B*d^3)/(c + d*x) +
(2*b*B*d^2*(b*c - a*d))/(c + d*x) + (2*b^2*(b*c - a*d)^2*(A + B*Log[(e*(a
+ b*x))/(c + d*x)]))/(a + b*x)^2 - (12*b^2*d*(b*c - a*d)*(A + B*Log[(e*(a +
b*x))/(c + d*x)]))/(a + b*x) - (2*d^2*(b*c - a*d)^2*(A + B*Log[(e*(a + b*x
))/(c + d*x)]))/(c + d*x)^2 - (12*b*d^2*(b*c - a*d)*(A + B*Log[(e*(a + b*x
))/(c + d*x)]))/(c + d*x) - 24*b^2*d^2*Log[a + b*x]*(A + B*Log[(e*(a + b*x))
/(c + d*x)]) + 24*b^2*d^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x]
+ 12*b^2*B*d^2*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*
d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) - 12*b^2*B*d^2*((2*Log[(
d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b
*(c + d*x))/(b*c - a*d)])))/((b*c - a*d)^5*g^3*i^3)
```

fricas [B] time = 1.06, size = 1011, normalized size = 2.18

$$(2A + B)b^4c^4 - 16(A + B)ab^3c^3d + 30Ba^2b^2c^2d^2 + 16(A - B)a^3bcd^3 - (2A - B)a^4d^4 - 24(Ab^4cd^3 - Aab^3d^4)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^3/(d*i*x+c*i)^3,x, algor
ithm="fricas")
```

```
[Out] -1/4*((2*A + B)*b^4*c^4 - 16*(A + B)*a*b^3*c^3*d + 30*B*a^2*b^2*c^2*d^2 + 1
6*(A - B)*a^3*b*c*d^3 - (2*A - B)*a^4*d^4 - 24*(A*b^4*c*d^3 - A*a*b^3*d^4)*
x^3 - 12*((3*A + B)*b^4*c^2*d^2 - 2*B*a*b^3*c*d^3 - (3*A - B)*a^2*b^2*d^4)*
x^2 - 12*(B*b^4*d^4*x^4 + B*a^2*b^2*c^2*d^2 + 2*(B*b^4*c*d^3 + B*a*b^3*d^4)
*x^3 + (B*b^4*c^2*d^2 + 4*B*a*b^3*c*d^3 + B*a^2*b^2*d^4)*x^2 + 2*(B*a*b^3*c
^2*d^2 + B*a^2*b^2*c*d^3)*x)*log((b*e*x + a*e)/(d*x + c))^2 - 4*((2*A + 3*B
)*b^4*c^3*d + 3*(4*A - B)*a*b^3*c^2*d^2 - 3*(4*A + B)*a^2*b^2*c*d^3 - (2*A
- 3*B)*a^3*b*d^4)*x - 2*(12*A*b^4*d^4*x^4 - B*b^4*c^4 + 8*B*a*b^3*c^3*d + 1
2*A*a^2*b^2*c^2*d^2 - 8*B*a^3*b*c*d^3 + B*a^4*d^4 + 12*((2*A + B)*b^4*c*d^3
+ (2*A - B)*a*b^3*d^4)*x^3 + 6*((2*A + 3*B)*b^4*c^2*d^2 + 8*A*a*b^3*c*d^3
+ (2*A - 3*B)*a^2*b^2*d^4)*x^2 + 4*(B*b^4*c^3*d + 6*(A + B)*a*b^3*c^2*d^2 +
6*(A - B)*a^2*b^2*c*d^3 - B*a^3*b*d^4)*x)*log((b*e*x + a*e)/(d*x + c))/((
b^7*c^5*d^2 - 5*a*b^6*c^4*d^3 + 10*a^2*b^5*c^3*d^4 - 10*a^3*b^4*c^2*d^5 + 5
*a^4*b^3*c*d^6 - a^5*b^2*d^7)*g^3*i^3*x^4 + 2*(b^7*c^6*d - 4*a*b^6*c^5*d^2
+ 5*a^2*b^5*c^4*d^3 - 5*a^4*b^3*c^2*d^5 + 4*a^5*b^2*c*d^6 - a^6*b*d^7)*g^3*
i^3*x^3 + (b^7*c^7 - a*b^6*c^6*d - 9*a^2*b^5*c^5*d^2 + 25*a^3*b^4*c^4*d^3 -
25*a^4*b^3*c^3*d^4 + 9*a^5*b^2*c^2*d^5 + a^6*b*c*d^6 - a^7*d^7)*g^3*i^3*x^
2 + 2*(a*b^6*c^7 - 4*a^2*b^5*c^6*d + 5*a^3*b^4*c^5*d^2 - 5*a^5*b^2*c^3*d^4
+ 4*a^6*b*c^2*d^5 - a^7*c*d^6)*g^3*i^3*x + (a^2*b^5*c^7 - 5*a^3*b^4*c^6*d +
10*a^4*b^3*c^5*d^2 - 10*a^5*b^2*c^4*d^3 + 5*a^6*b*c^3*d^4 - a^7*c^2*d^5)*g
^3*i^3)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^3/(d*i*x+c*i)^3,x, algorith="giac")

[Out] Timed out

maple [B] time = 0.05, size = 2182, normalized size = 4.71

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^3/(d*i*x+c*i)^3,x)

[Out]
$$\begin{aligned} & -1/2*d^5/i^3/(a*d-b*c)^6/g^3*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a^3-6*d^3/i^3/(a*d-b*c)^6/g^3*A*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+6*d^2/i^3/(a*d-b*c)^6/g^3*A*b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-7/2*d^4/i^3/(a*d-b*c)^6/g^3*B*b/(d*x+c)*a^2+7*d^3/i^3/(a*d-b*c)^6/g^3*B*b^2/(d*x+c)*a*c-7/2*d^2/i^3/(a*d-b*c)^6/g^3*B*b^3/(d*x+c)*c^2-1/4*e^2/i^3/(a*d-b*c)^6/g^3*B*b^5/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*c-3/2*d^3/i^3/(a*d-b*c)^6/g^3*A/(d*x+c)^2*a*b^2*c^2+3/4*d^3/i^3/(a*d-b*c)^6/g^3*B/(d*x+c)^2*a*b^2*c^2-3*d^3/i^3/(a*d-b*c)^6/g^3*B*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a+1/2*d*e^2/i^3/(a*d-b*c)^6/g^3*A*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a-4*d^2*e/i^3/(a*d-b*c)^6/g^3*A*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a-1/2*d^5/i^3/(a*d-b*c)^6/g^3*A/(d*x+c)^2*a^3+1/4*d^5/i^3/(a*d-b*c)^6/g^3*B/(d*x+c)^2*a^3-4*d^2*e/i^3/(a*d-b*c)^6/g^3*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a-6*d^3/i^3/(a*d-b*c)^6/g^3*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2/(d*x+c)*a*c+3/2*d^4/i^3/(a*d-b*c)^6/g^3*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a^2*b*c-3/2*d^3/i^3/(a*d-b*c)^6/g^3*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a*b^2*c^2+1/2*d*e^2/i^3/(a*d-b*c)^6/g^3*B*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-4*d^2*e/i^3/(a*d-b*c)^6/g^3*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+4*d*e/i^3/(a*d-b*c)^6/g^3*B*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-6*d^3/i^3/(a*d-b*c)^6/g^3*A*b^2/(d*x+c)*c*a+1/4*d*e^2/i^3/(a*d-b*c)^6/g^3*B*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a+4*d*e/i^3/(a*d-b*c)^6/g^3*B*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c+3*d^4/i^3/(a*d-b*c)^6/g^3*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b/(d*x+c)*a^2+7/2*d^3/i^3/(a*d-b*c)^6/g^3*A*b^2*a-7/2*d^2/i^3/(a*d-b*c)^6/g^3*A*b^3*c-15/4*d^3/i^3/(a*d-b*c)^6/g^3*B*b^2*a+15/4*d^2/i^3/(a*d-b*c)^6/g^3*B*b^3*c-1/2*e^2/i^3/(a*d-b*c)^6/g^3*A*b^5/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*c-1/4*d^2/i^3/(a*d-b*c)^6/g^3*B/(d*x+c)^2*b^3*c^3+3*d^2/i^3 \end{aligned}$$

$$\frac{3}{(a*d-b*c)^6/g^3*A*b^3/(d*x+c)*c^2+1/2*d^2/i^3/(a*d-b*c)^6/g^3*A/(d*x+c)^2*b^3*c^3+3*d^4/i^3/(a*d-b*c)^6/g^3*A*b/(d*x+c)*a^2+3*d^2/i^3/(a*d-b*c)^6/g^3*B*b^3*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c+7/2*d^3/i^3/(a*d-b*c)^6/g^3*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2*a+3/2*d^4/i^3/(a*d-b*c)^6/g^3*A/(d*x+c)^2*a^2*b*c-3/4*d^4/i^3/(a*d-b*c)^6/g^3*B/(d*x+c)^2*a^2*b*c+1/2*d^2/i^3/(a*d-b*c)^6/g^3*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*b^3*c^3+4*d*e/i^3/(a*d-b*c)^6/g^3*A*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c-7/2*d^2/i^3/(a*d-b*c)^6/g^3*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^3*c+3*d^2/i^3/(a*d-b*c)^6/g^3*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^3/(d*x+c)*c^2-1/2*e^2/i^3/(a*d-b*c)^6/g^3*B*b^5/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c$$

maxima [B] time = 2.79, size = 2380, normalized size = 5.14

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^3/(d*i*x+c*i)^3,x, algorithm="maxima")

[Out] $\frac{1}{2} * B * ((12 * b^3 * d^3 * x^3 - b^3 * c^3 + 7 * a * b^2 * c^2 * d + 7 * a^2 * b * c * d^2 - a^3 * d^3 + 18 * (b^3 * c * d^2 + a * b^2 * d^3) * x^2 + 4 * (b^3 * c^2 * d + 7 * a * b^2 * c * d^2 + a^2 * b * d^3) * x) / ((b^6 * c^4 * d^2 - 4 * a * b^5 * c^3 * d^3 + 6 * a^2 * b^4 * c^2 * d^4 - 4 * a^3 * b^3 * c * d^5 + a^4 * b^2 * d^6) * g^3 * i^3 * x^4 + 2 * (b^6 * c^5 * d - 3 * a * b^5 * c^4 * d^2 + 2 * a^2 * b^4 * c^3 * d^3 + 2 * a^3 * b^3 * c^2 * d^4 - 3 * a^4 * b^2 * c * d^5 + a^5 * b * d^6) * g^3 * i^3 * x^3 + (b^6 * c^6 - 9 * a^2 * b^4 * c^4 * d^2 + 16 * a^3 * b^3 * c^3 * d^3 - 9 * a^4 * b^2 * c^2 * d^4 + a^6 * d^6) * g^3 * i^3 * x^2 + 2 * (a * b^5 * c^6 - 3 * a^2 * b^4 * c^5 * d + 2 * a^3 * b^3 * c^4 * d^2 + 2 * a^4 * b^2 * c^3 * d^3 - 3 * a^5 * b * c^2 * d^4 + a^6 * c * d^5) * g^3 * i^3 * x + (a^2 * b^4 * c^6 - 4 * a^3 * b^3 * c^5 * d + 6 * a^4 * b^2 * c^4 * d^2 - 4 * a^5 * b * c^3 * d^3 + a^6 * c^2 * d^4) * g^3 * i^3) + 12 * b^2 * d^2 * \log(b * x + a) / ((b^5 * c^5 - 5 * a * b^4 * c^4 * d + 10 * a^2 * b^3 * c^3 * d^2 - 10 * a^3 * b^2 * c^2 * d^3 + 5 * a^4 * b * c * d^4 - a^5 * d^5) * g^3 * i^3) - 12 * b^2 * d^2 * \log(d * x + c) / ((b^5 * c^5 - 5 * a * b^4 * c^4 * d + 10 * a^2 * b^3 * c^3 * d^2 - 10 * a^3 * b^2 * c^2 * d^3 + 5 * a^4 * b * c * d^4 - a^5 * d^5) * g^3 * i^3)) * \log(b * e * x / (d * x + c) + a * e / (d * x + c)) + 1/2 * A * ((12 * b^3 * d^3 * x^3 - b^3 * c^3 + 7 * a * b^2 * c^2 * d + 7 * a^2 * b * c * d^2 - a^3 * d^3 + 18 * (b^3 * c * d^2 + a * b^2 * d^3) * x^2 + 4 * (b^3 * c^2 * d + 7 * a * b^2 * c * d^2 + a^2 * b * d^3) * x) / ((b^6 * c^4 * d^2 - 4 * a * b^5 * c^3 * d^3 + 6 * a^2 * b^4 * c^2 * d^4 - 4 * a^3 * b^3 * c * d^5 + a^4 * b^2 * d^6) * g^3 * i^3 * x^4 + 2 * (b^6 * c^5 * d - 3 * a * b^5 * c^4 * d^2 + 2 * a^2 * b^4 * c^3 * d^3 + 2 * a^3 * b^3 * c^2 * d^4 - 3 * a^4 * b^2 * c * d^5 + a^5 * b * d^6) * g^3 * i^3 * x^3 + (b^6 * c^6 - 9 * a^2 * b^4 * c^4 * d^2 + 16 * a^3 * b^3 * c^3 * d^3 - 9 * a^4 * b^2 * c^2 * d^4 + a^6 * d^6) * g^3 * i^3 * x^2 + 2 * (a * b^5 * c^6 - 3 * a^2 * b^4 * c^5 * d + 2 * a^3 * b^3 * c^4 * d^2 + 2 * a^4 * b^2 * c^3 * d^3 - 3 * a^5 * b * c^2 * d^4 + a^6 * c * d^5) * g^3 * i^3 * x + (a^2 * b^4 * c^6 - 4 * a^3 * b^3 * c^5 * d + 6 * a^4 * b^2 * c^4 * d^2 - 4 * a^5 * b * c^3 * d^3 + a^6 * c^2 * d^4) * g^3 * i^3) + 12 * b^2 * d^2 * \log(b * x + a) / ((b^5 * c^5 - 5 * a * b^4 * c^4 * d + 10 * a^2 * b^3 * c^3 * d^2 - 10 * a^3 * b^2 * c^2 * d^3 + 5 * a^4 * b * c * d^4 - a^5 * d^5) * g^3 * i^3) - 12 * b^2 * d^2 * \log(d * x + c) / ((b^5 * c^5 - 5 * a * b^4 * c^4 * d + 10 * a^2 * b^3 * c^3 * d^2 - 10 * a^3 * b^2 * c^2 * d^3 + 5 * a^4$

$$\begin{aligned}
& *b*c*d^4 - a^5*d^5)*g^3*i^3)) - 1/4*(b^4*c^4 - 16*a*b^3*c^3*d + 30*a^2*b^2*c^2*d^2 - 16*a^3*b*c*d^3 + a^4*d^4 - 12*(b^4*c^2*d^2 - 2*a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 12*(b^4*d^4*x^4 + a^2*b^2*c^2*d^2 + 2*(b^4*c*d^3 + a*b^3*d^4)*x^3 + (b^4*c^2*d^2 + 4*a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 2*(a*b^3*c^2*d^2 + a^2*b^2*c*d^3)*x)*\log(b*x + a)^2 - 24*(b^4*d^4*x^4 + a^2*b^2*c^2*d^2 + 2*(b^4*c*d^3 + a*b^3*d^4)*x^3 + (b^4*c^2*d^2 + 4*a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 2*(a*b^3*c^2*d^2 + a^2*b^2*c*d^3)*x)*\log(b*x + a)*\log(d*x + c) + 12*(b^4*d^4*x^4 + a^2*b^2*c^2*d^2 + 2*(b^4*c*d^3 + a*b^3*d^4)*x^3 + (b^4*c^2*d^2 + 4*a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 2*(a*b^3*c^2*d^2 + a^2*b^2*c*d^3)*x)*\log(d*x + c)^2 - 12*(b^4*c^3*d - a*b^3*c^2*d^2 - a^2*b^2*c*d^3 + a^3*b*d^4)*x)*B/(a^2*b^5*c^7*g^3*i^3 - 5*a^3*b^4*c^6*d*g^3*i^3 + 10*a^4*b^3*c^5*d^2*g^3*i^3 - 10*a^5*b^2*c^4*d^3*g^3*i^3 + 5*a^6*b*c^3*d^4*g^3*i^3 - a^7*c^2*d^5*g^3*i^3 + (b^7*c^5*d^2*g^3*i^3 - 5*a*b^6*c^4*d^3*g^3*i^3 + 10*a^2*b^5*c^3*d^4*g^3*i^3 - 10*a^3*b^4*c^2*d^5*g^3*i^3 + 5*a^4*b^3*c*d^6*g^3*i^3 - a^5*b^2*d^7*g^3*i^3)*x^4 + 2*(b^7*c^6*d*g^3*i^3 - 4*a*b^6*c^5*d^2*g^3*i^3 + 5*a^2*b^5*c^4*d^3*g^3*i^3 - 5*a^4*b^3*c^2*d^5*g^3*i^3 + 4*a^5*b^2*c*d^6*g^3*i^3 - a^6*b*d^7*g^3*i^3)*x^3 + (b^7*c^7*g^3*i^3 - a*b^6*c^6*d*g^3*i^3 - 9*a^2*b^5*c^5*d^2*g^3*i^3 + 25*a^3*b^4*c^4*d^3*g^3*i^3 - 25*a^4*b^3*c^3*d^4*g^3*i^3 + 9*a^5*b^2*c^2*d^5*g^3*i^3 + a^6*b*c*d^6*g^3*i^3 - a^7*d^7*g^3*i^3)*x^2 + 2*(a*b^6*c^7*g^3*i^3 - 4*a^2*b^5*c^6*d*g^3*i^3 + 5*a^3*b^4*c^5*d^2*g^3*i^3 - 5*a^5*b^2*c^3*d^4*g^3*i^3 + 4*a^6*b*c^2*d^5*g^3*i^3 - a^7*c*d^6*g^3*i^3)*x)
\end{aligned}$$

mupad [B] time = 12.78, size = 1443, normalized size = 3.12

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{int}((A + B*\log((e*(a + b*x))/(c + d*x)))/((a*g + b*g*x)^3*(c*i + d*i*x)^3), x)$

[Out] $(A*b^2*d^2*\text{atan}((a*d*1i + b*c*1i + b*d*x*2i)/(a*d - b*c))*12i)/(g^3*i^3*(a*d - b*c)^5) - (3*B*b^2*d^2*\log((e*(a + b*x))/(c + d*x))^2)/(g^3*i^3*(a*d - b*c)^5) - (A*a^3*d^3)/(2*g^3*i^3*(a*d - b*c)^4*(a + b*x)^2*(c + d*x)^2) - (A*b^3*c^3)/(2*g^3*i^3*(a*d - b*c)^4*(a + b*x)^2*(c + d*x)^2) + (B*a^3*d^3)/(4*g^3*i^3*(a*d - b*c)^4*(a + b*x)^2*(c + d*x)^2) - (B*b^3*c^3)/(4*g^3*i^3*(a*d - b*c)^4*(a + b*x)^2*(c + d*x)^2) - (B*a*d*\log((e*(a + b*x))/(c + d*x)))/(2*g^3*i^3*(a*d - b*c)^2*(a + b*x)^2*(c + d*x)^2) - (B*b*c*\log((e*(a + b*x))/(c + d*x)))/(2*g^3*i^3*(a*d - b*c)^2*(a + b*x)^2*(c + d*x)^2) + (6*A*b^3*d^3*x^3)/(g^3*i^3*(a*d - b*c)^4*(a + b*x)^2*(c + d*x)^2) + (7*A*a*b^2*c^2*d)/(2*g^3*i^3*(a*d - b*c)^4*(a + b*x)^2*(c + d*x)^2) + (7*A*a^2*b*c*d^2)/(2*g^3*i^3*(a*d - b*c)^4*(a + b*x)^2*(c + d*x)^2) + (15*B*a*b^2*c^2*d)/(4*g^3*i^3*(a*d - b*c)^4*(a + b*x)^2*(c + d*x)^2) - (15*B*a^2*b*c*d^2)/(4*g^3*i^3*(a*d - b*c)^4*(a + b*x)^2*(c + d*x)^2) + (2*A*a^2*b*d^3*x)/(g^3*i^3*(a*d - b*c)^4*(a + b*x)^2*(c + d*x)^2) - (3*B*a^2*b*d^3*x)/(g^3*i^3*(a*d - b*c)$

$$\begin{aligned}
&^4*(a + b*x)^2*(c + d*x)^2) + (2*A*b^3*c^2*d*x)/(g^3*i^3*(a*d - b*c)^4*(a + \\
&b*x)^2*(c + d*x)^2) + (3*B*b^3*c^2*d*x)/(g^3*i^3*(a*d - b*c)^4*(a + b*x)^2 \\
&*(c + d*x)^2) + (9*A*a*b^2*d^3*x^2)/(g^3*i^3*(a*d - b*c)^4*(a + b*x)^2*(c + \\
&d*x)^2) - (3*B*a*b^2*d^3*x^2)/(g^3*i^3*(a*d - b*c)^4*(a + b*x)^2*(c + d*x) \\
&^2) + (9*A*b^3*c*d^2*x^2)/(g^3*i^3*(a*d - b*c)^4*(a + b*x)^2*(c + d*x)^2) + \\
&(3*B*b^3*c*d^2*x^2)/(g^3*i^3*(a*d - b*c)^4*(a + b*x)^2*(c + d*x)^2) - (B*b \\
&*d*x*log((e*(a + b*x))/(c + d*x)))/(g^3*i^3*(a*d - b*c)^2*(a + b*x)^2*(c + \\
&d*x)^2) + (6*B*b^3*d^3*x^3*log((e*(a + b*x))/(c + d*x)))/(g^3*i^3*(a*d - b* \\
&c)^4*(a + b*x)^2*(c + d*x)^2) + (9*B*a*b^2*d^3*x^2*log((e*(a + b*x))/(c + d \\
&x)))/(g^3*i^3*(a*d - b*c)^4*(a + b*x)^2*(c + d*x)^2) + (9*B*b^3*c*d^2*x^2* \\
&log((e*(a + b*x))/(c + d*x)))/(g^3*i^3*(a*d - b*c)^4*(a + b*x)^2*(c + d*x)^ \\
&2) + (14*A*a*b^2*c*d^2*x)/(g^3*i^3*(a*d - b*c)^4*(a + b*x)^2*(c + d*x)^2) + \\
&(3*B*a*b^2*c^2*d*log((e*(a + b*x))/(c + d*x)))/(g^3*i^3*(a*d - b*c)^4*(a + \\
&b*x)^2*(c + d*x)^2) + (3*B*a^2*b*c*d^2*log((e*(a + b*x))/(c + d*x)))/(g^3* \\
&i^3*(a*d - b*c)^4*(a + b*x)^2*(c + d*x)^2) + (3*B*a^2*b*d^3*x*log((e*(a + b \\
&x))/(c + d*x)))/(g^3*i^3*(a*d - b*c)^4*(a + b*x)^2*(c + d*x)^2) + (3*B*b^3 \\
&*c^2*d*x*log((e*(a + b*x))/(c + d*x)))/(g^3*i^3*(a*d - b*c)^4*(a + b*x)^2*(\\
&c + d*x)^2) + (12*B*a*b^2*c*d^2*x*log((e*(a + b*x))/(c + d*x)))/(g^3*i^3*(a \\
&d - b*c)^4*(a + b*x)^2*(c + d*x)^2)
\end{aligned}$$

sympy [B] time = 51.41, size = 2106, normalized size = 4.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)**3/(d*i*x+c*i)**3,x)

[Out] $6*A*b**2*d**2*log(x + (-6*A*a**6*b**2*d**8/(a*d - b*c)**5 + 36*A*a**5*b**3*c*d**7/(a*d - b*c)**5 - 90*A*a**4*b**4*c**2*d**6/(a*d - b*c)**5 + 120*A*a**3*b**5*c**3*d**5/(a*d - b*c)**5 - 90*A*a**2*b**6*c**4*d**4/(a*d - b*c)**5 + 36*A*a*b**7*c**5*d**3/(a*d - b*c)**5 + 6*A*a*b**2*d**3 - 6*A*b**8*c**6*d**2/(a*d - b*c)**5 + 6*A*b**3*c*d**2)/(12*A*b**3*d**3))/(g**3*i**3*(a*d - b*c)**5) - 6*A*b**2*d**2*log(x + (6*A*a**6*b**2*d**8/(a*d - b*c)**5 - 36*A*a**5*b**3*c*d**7/(a*d - b*c)**5 + 90*A*a**4*b**4*c**2*d**6/(a*d - b*c)**5 - 120*A*a**3*b**5*c**3*d**5/(a*d - b*c)**5 + 90*A*a**2*b**6*c**4*d**4/(a*d - b*c)**5 - 36*A*a*b**7*c**5*d**3/(a*d - b*c)**5 + 6*A*a*b**2*d**3 + 6*A*b**8*c**6*d**2/(a*d - b*c)**5 + 6*A*b**3*c*d**2)/(12*A*b**3*d**3))/(g**3*i**3*(a*d - b*c)**5) - 3*B*b**2*d**2*log(e*(a + b*x)/(c + d*x))**2/(a**5*d**5*g**3*i**3 - 5*a**4*b*c*d**4*g**3*i**3 + 10*a**3*b**2*c**2*d**3*g**3*i**3 - 10*a**2*b**3*c**3*d**2*g**3*i**3 + 5*a*b**4*c**4*d*g**3*i**3 - b**5*c**5*g**3*i**3) + (-B*a**3*d**3 + 7*B*a**2*b*c*d**2 + 4*B*a**2*b*d**3*x + 7*B*a*b**2*c**2*d + 28*B*a*b**2*c*d**2*x + 18*B*a*b**2*d**3*x**2 - B*b**3*c**3 + 4*B*b**3*c**2*d*x + 18*B*b**3*c*d**2*x**2 + 12*B*b**3*d**3*x**3)*log(e*(a + b*x)/(c + d*x))/(2*a**6*c**2*d**4*g**3*i**3 + 4*a**6*c*d**5*g**3*i**3*x + 2*a**6*d**6*g**3*i**3*x**2 - 8*a**5*b*c**3*d**3*g**3*i**3 - 12*a**5*b*c**2*d**4*g$

$$\begin{aligned}
& *3*i**3*x + 4*a**5*b*d**6*g**3*i**3*x**3 + 12*a**4*b**2*c**4*d**2*g**3*i**3 \\
& + 8*a**4*b**2*c**3*d**3*g**3*i**3*x - 18*a**4*b**2*c**2*d**4*g**3*i**3*x**2 \\
& - 12*a**4*b**2*c*d**5*g**3*i**3*x**3 + 2*a**4*b**2*d**6*g**3*i**3*x**4 - \\
& 8*a**3*b**3*c**5*d*g**3*i**3 + 8*a**3*b**3*c**4*d**2*g**3*i**3*x + 32*a**3* \\
& b**3*c**3*d**3*g**3*i**3*x**2 + 8*a**3*b**3*c**2*d**4*g**3*i**3*x**3 - 8*a* \\
& *3*b**3*c*d**5*g**3*i**3*x**4 + 2*a**2*b**4*c**6*g**3*i**3 - 12*a**2*b**4*c \\
& **5*d*g**3*i**3*x - 18*a**2*b**4*c**4*d**2*g**3*i**3*x**2 + 8*a**2*b**4*c** \\
& 3*d**3*g**3*i**3*x**3 + 12*a**2*b**4*c**2*d**4*g**3*i**3*x**4 + 4*a*b**5*c** \\
& *6*g**3*i**3*x - 12*a*b**5*c**4*d**2*g**3*i**3*x**3 - 8*a*b**5*c**3*d**3*g* \\
& *3*i**3*x**4 + 2*b**6*c**6*g**3*i**3*x**2 + 4*b**6*c**5*d*g**3*i**3*x**3 + \\
& 2*b**6*c**4*d**2*g**3*i**3*x**4) + (-2*A*a**3*d**3 + 14*A*a**2*b*c*d**2 + 1 \\
& 4*A*a*b**2*c**2*d - 2*A*b**3*c**3 + 24*A*b**3*d**3*x**3 + B*a**3*d**3 - 15* \\
& B*a**2*b*c*d**2 + 15*B*a*b**2*c**2*d - B*b**3*c**3 + x**2*(36*A*a*b**2*d**3 \\
& + 36*A*b**3*c*d**2 - 12*B*a*b**2*d**3 + 12*B*b**3*c*d**2) + x*(8*A*a**2*b* \\
& d**3 + 56*A*a*b**2*c*d**2 + 8*A*b**3*c**2*d - 12*B*a**2*b*d**3 + 12*B*b**3* \\
& c**2*d))/(4*a**6*c**2*d**4*g**3*i**3 - 16*a**5*b*c**3*d**3*g**3*i**3 + 24*a \\
& **4*b**2*c**4*d**2*g**3*i**3 - 16*a**3*b**3*c**5*d*g**3*i**3 + 4*a**2*b**4* \\
& c**6*g**3*i**3 + x**4*(4*a**4*b**2*d**6*g**3*i**3 - 16*a**3*b**3*c*d**5*g** \\
& 3*i**3 + 24*a**2*b**4*c**2*d**4*g**3*i**3 - 16*a*b**5*c**3*d**3*g**3*i**3 + \\
& 4*b**6*c**4*d**2*g**3*i**3) + x**3*(8*a**5*b*d**6*g**3*i**3 - 24*a**4*b**2 \\
& *c*d**5*g**3*i**3 + 16*a**3*b**3*c**2*d**4*g**3*i**3 + 16*a**2*b**4*c**3*d* \\
& *3*g**3*i**3 - 24*a*b**5*c**4*d**2*g**3*i**3 + 8*b**6*c**5*d*g**3*i**3) + x \\
& **2*(4*a**6*d**6*g**3*i**3 - 36*a**4*b**2*c**2*d**4*g**3*i**3 + 64*a**3*b** \\
& 3*c**3*d**3*g**3*i**3 - 36*a**2*b**4*c**4*d**2*g**3*i**3 + 4*b**6*c**6*g**3 \\
& *i**3) + x*(8*a**6*c*d**5*g**3*i**3 - 24*a**5*b*c**2*d**4*g**3*i**3 + 16*a* \\
& **4*b**2*c**3*d**3*g**3*i**3 + 16*a**3*b**3*c**4*d**2*g**3*i**3 - 24*a**2*b* \\
& **4*c**5*d*g**3*i**3 + 8*a*b**5*c**6*g**3*i**3))
\end{aligned}$$

$$3.54 \quad \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{(ag+bgx)^4(ci+dix)^3} dx$$

Optimal. Leaf size=563

$$\frac{b^5(c+dx)^3 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{3g^4i^3(a+bx)^3(bc-ad)^6} + \frac{5b^4d(c+dx)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{2g^4i^3(a+bx)^2(bc-ad)^6} - \frac{10b^3d^2(c+dx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{g^4i^3(a+bx)(bc-ad)^6}$$

[Out] $1/4*B*d^5*(b*x+a)^2/(-a*d+b*c)^6/g^4/i^3/(d*x+c)^2-5*b*B*d^4*(b*x+a)/(-a*d+b*c)^6/g^4/i^3/(d*x+c)-10*b^3*B*d^2*(d*x+c)/(-a*d+b*c)^6/g^4/i^3/(b*x+a)+5/4*b^4*B*d*(d*x+c)^2/(-a*d+b*c)^6/g^4/i^3/(b*x+a)^2-1/9*b^5*B*(d*x+c)^3/(-a*d+b*c)^6/g^4/i^3/(b*x+a)^3+5*b^2*B*d^3*\ln((b*x+a)/(d*x+c))^2/(-a*d+b*c)^6/g^4/i^3-1/2*d^5*(b*x+a)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^6/g^4/i^3/(d*x+c)^2+5*b*d^4*(b*x+a)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^6/g^4/i^3/(d*x+c)-10*b^3*d^2*(d*x+c)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^6/g^4/i^3/(b*x+a)+5/2*b^4*d*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^6/g^4/i^3/(b*x+a)^2-1/3*b^5*(d*x+c)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^6/g^4/i^3/(b*x+a)^3-10*b^2*d^3*\ln((b*x+a)/(d*x+c))*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^6/g^4/i^3$

Rubi [C] time = 1.70, antiderivative size = 825, normalized size of antiderivative = 1.47, number of steps used = 40, number of rules used = 11, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.275$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{5b^2B \log^2(a+bx)d^3}{(bc-ad)^6g^4i^3} + \frac{5b^2B \log^2(c+dx)d^3}{(bc-ad)^6g^4i^3} - \frac{10b^2B \log(a+bx)d^3}{3(bc-ad)^6g^4i^3} - \frac{10b^2 \log(a+bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right) d^3}{(bc-ad)^6g^4i^3} - 4b^2 \log(a+bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right) d^3$$

Antiderivative was successfully verified.

[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x]))/((a*g + b*g*x)^4*(c*i + d*i*x)^3), x]

[Out] $-(b^2*B)/(9*(b*c - a*d)^3*g^4*i^3*(a + b*x)^3) + (11*b^2*B*d)/(12*(b*c - a*d)^4*g^4*i^3*(a + b*x)^2) - (47*b^2*B*d^2)/(6*(b*c - a*d)^5*g^4*i^3*(a + b*x)) + (B*d^3)/(4*(b*c - a*d)^4*g^4*i^3*(c + d*x)^2) + (9*b*B*d^3)/(2*(b*c - a*d)^5*g^4*i^3*(c + d*x)) - (10*b^2*B*d^3*Log[a + b*x])/(3*(b*c - a*d)^6*g^4*i^3) + (5*b^2*B*d^3*Log[a + b*x]^2)/((b*c - a*d)^6*g^4*i^3) - (b^2*(A + B*Log[(e*(a + b*x))/(c + d*x])))/(3*(b*c - a*d)^3*g^4*i^3*(a + b*x)^3) + (3*b^2*d*(A + B*Log[(e*(a + b*x))/(c + d*x])))/(2*(b*c - a*d)^4*g^4*i^3*(a + b*x)^2) - (6*b^2*d^2*(A + B*Log[(e*(a + b*x))/(c + d*x])))/((b*c - a*d)^5*g^4*i^3*(a + b*x)) - (d^3*(A + B*Log[(e*(a + b*x))/(c + d*x])))/(2*(b*c - a*d)^4*g^4*i^3*(c + d*x)^2) - (4*b*d^3*(A + B*Log[(e*(a + b*x))/(c + d*x])))/((b*c - a*d)^5*g^4*i^3*(c + d*x)) - (10*b^2*d^3*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x])))/((b*c - a*d)^6*g^4*i^3)$

$$\frac{(a + b*x)/(c + d*x)}{\left(\frac{(b*c - a*d)^6*g^4*i^3}{3*(b*c - a*d)^6*g^4*i^3} - \frac{(10*b^2*B*d^3*\text{Log}[c + d*x])}{(3*(b*c - a*d)^6*g^4*i^3} - \frac{(10*b^2*B*d^3*\text{Log}[-((d*(a + b*x))/(b*c - a*d)])*\text{Log}[c + d*x])}{(b*c - a*d)^6*g^4*i^3} + \frac{(10*b^2*d^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)])*\text{Log}[c + d*x])}{(b*c - a*d)^6*g^4*i^3} + \frac{(5*b^2*B*d^3*\text{Log}[c + d*x]^2)}{(b*c - a*d)^6*g^4*i^3} - \frac{(10*b^2*B*d^3*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)])}{(b*c - a*d)^6*g^4*i^3} - \frac{(10*b^2*B*d^3*\text{PolyLog}[2, -(d*(a + b*x))/(b*c - a*d)])}{(b*c - a*d)^6*g^4*i^3} - \frac{(10*b^2*B*d^3*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])}{(b*c - a*d)^6*g^4*i^3}\right)}$$

Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n]]^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{A + B \log\left(\frac{e(a+bx)}{c+dx}\right)}{(54c + 54dx)^3(ag + bgx)^4} dx &= \int \left(\frac{b^3 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{157464(bc - ad)^3 g^4 (a + bx)^4} - \frac{b^3 d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{52488(bc - ad)^4 g^4 (a + bx)^3} + \frac{b^3 d^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{26244(bc - ad)^5 g^4 (a + bx)^2} \right. \\
&= -\frac{(5b^3 d^3) \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{a+bx} dx}{78732(bc - ad)^6 g^4} + \frac{(5b^2 d^4) \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{c+dx} dx}{78732(bc - ad)^6 g^4} + \frac{(b^3 d^2) \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{a+bx} dx}{26244(bc - ad)^5 g^4} \\
&= -\frac{b^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{472392(bc - ad)^3 g^4 (a + bx)^3} + \frac{b^2 d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{104976(bc - ad)^4 g^4 (a + bx)^2} - \frac{b^2 d^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{26244(bc - ad)^5 g^4 (a + bx)} \\
&= -\frac{b^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{472392(bc - ad)^3 g^4 (a + bx)^3} + \frac{b^2 d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{104976(bc - ad)^4 g^4 (a + bx)^2} - \frac{b^2 d^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{26244(bc - ad)^5 g^4 (a + bx)} \\
&= -\frac{b^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{472392(bc - ad)^3 g^4 (a + bx)^3} + \frac{b^2 d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{104976(bc - ad)^4 g^4 (a + bx)^2} - \frac{b^2 d^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)}{26244(bc - ad)^5 g^4 (a + bx)} \\
&= -\frac{b^2 B}{1417176(bc - ad)^3 g^4 (a + bx)^3} + \frac{11b^2 B d}{1889568(bc - ad)^4 g^4 (a + bx)^2} - \frac{4b^2 B d^2}{944784(bc - ad)^5 g^4 (a + bx)} \\
&= -\frac{b^2 B}{1417176(bc - ad)^3 g^4 (a + bx)^3} + \frac{11b^2 B d}{1889568(bc - ad)^4 g^4 (a + bx)^2} - \frac{4b^2 B d^2}{944784(bc - ad)^5 g^4 (a + bx)} \\
&= -\frac{b^2 B}{1417176(bc - ad)^3 g^4 (a + bx)^3} + \frac{11b^2 B d}{1889568(bc - ad)^4 g^4 (a + bx)^2} - \frac{4b^2 B d^2}{944784(bc - ad)^5 g^4 (a + bx)} \\
&= -\frac{b^2 B}{1417176(bc - ad)^3 g^4 (a + bx)^3} + \frac{11b^2 B d}{1889568(bc - ad)^4 g^4 (a + bx)^2} - \frac{4b^2 B d^2}{944784(bc - ad)^5 g^4 (a + bx)}
\end{aligned}$$

Mathematica [C] time = 1.89, size = 637, normalized size = 1.13

$$\frac{360b^2 d^3 \log(a + bx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right) - 360b^2 d^3 \log(c + dx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right) + \frac{216b^2 d^2 (bc - ad) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{a + bx}}{(54c + 54dx)^3 (ag + bgx)^4}$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x]))/((a*g + b*g*x)^4*(c*i + d*i*x)^3), x]

```
[Out] -1/36*((4*b^2*B*(b*c - a*d)^3)/(a + b*x)^3 - (33*b^2*B*d*(b*c - a*d)^2)/(a + b*x)^2 + (216*b^3*B*c*d^2)/(a + b*x) - (216*a*b^2*B*d^3)/(a + b*x) + (66*b^2*B*d^2*(b*c - a*d))/(a + b*x) - (9*B*d^3*(b*c - a*d)^2)/(c + d*x)^2 - (144*b^2*B*c*d^3)/(c + d*x) + (144*a*b*B*d^4)/(c + d*x) - (18*b*B*d^3*(b*c - a*d))/(c + d*x) + 120*b^2*B*d^3*Log[a + b*x] + (12*b^2*(b*c - a*d)^3*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(a + b*x)^3 - (54*b^2*d*(b*c - a*d)^2*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(a + b*x)^2 + (216*b^2*d^2*(b*c - a*d)*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(a + b*x) + (18*d^3*(b*c - a*d)^2*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(c + d*x)^2 + (144*b*d^3*(b*c - a*d)*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(c + d*x) + 360*b^2*d^3*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x]]) - 120*b^2*B*d^3*Log[c + d*x] - 360*b^2*d^3*(A + B*Log[(e*(a + b*x))/(c + d*x]])*Log[c + d*x] - 180*b^2*B*d^3*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-b*c) + a*d]) + 180*b^2*B*d^3*((2*Log[(d*(a + b*x))/(-b*c) + a*d]) - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(b*c - a*d)^6*g^4*i^3)
```

fricas [B] time = 1.08, size = 1509, normalized size = 2.68

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^4/(d*i*x+c*i)^3,x, algorithm="fricas")
```

```
[Out] -1/36*(4*(3*A + B)*b^5*c^5 - 45*(2*A + B)*a*b^4*c^4*d + 360*(A + B)*a^2*b^3*c^3*d^2 - 10*(12*A + 49*B)*a^3*b^2*c^2*d^3 - 180*(A - B)*a^4*b*c*d^4 + 9*(2*A - B)*a^5*d^5 + 120*((3*A + B)*b^5*c*d^4 - (3*A + B)*a*b^4*d^5)*x^4 + 60*(3*(3*A + 2*B)*b^5*c^2*d^3 + 2*(3*A - 2*B)*a*b^4*c*d^4 - (15*A + 2*B)*a^2*b^3*d^5)*x^3 + 20*((6*A + 11*B)*b^5*c^3*d^2 + 21*(3*A + B)*a*b^4*c^2*d^3 - 3*(12*A + 13*B)*a^2*b^3*c*d^4 - (33*A - 7*B)*a^3*b^2*d^5)*x^2 + 180*(B*b^5*d^5*x^5 + B*a^3*b^2*c^2*d^3 + (2*B*b^5*c*d^4 + 3*B*a*b^4*d^5)*x^4 + (B*b^5*c^2*d^3 + 6*B*a*b^4*c*d^4 + 3*B*a^2*b^3*d^5)*x^3 + (3*B*a*b^4*c^2*d^3 + 6*B*a^2*b^3*c*d^4 + B*a^3*b^2*d^5)*x^2 + (3*B*a^2*b^3*c^2*d^3 + 2*B*a^3*b^2*c*d^4)*x)*log((b*e*x + a*e)/(d*x + c))^2 - 5*((6*A + 5*B)*b^5*c^4*d - 36*(2*A + 3*B)*a*b^4*c^3*d^2 - 6*(24*A - 13*B)*a^2*b^3*c^2*d^3 + 4*(48*A + 13*B)*a^3*b^2*c*d^4 + 9*(2*A - 3*B)*a^4*b*d^5)*x + 6*(20*(3*A + B)*b^5*d^5*x^5 + 2*B*b^5*c^5 - 15*B*a*b^4*c^4*d + 60*B*a^2*b^3*c^3*d^2 + 60*A*a^3*b^2*c^2*d^3 - 30*B*a^4*b*c*d^4 + 3*B*a^5*d^5 + 20*((6*A + 5*B)*b^5*c*d^4 + 9*A*a*b^4*d^5)*x^4 + 10*((6*A + 11*B)*b^5*c^2*d^3 + 18*(2*A + B)*a*b^4*c*d^4 + 9*(2*A - B)*a^2*b^3*d^5)*x^3 + 10*(2*B*b^5*c^3*d^2 + 9*(2*A + 3*B)*a*b^4*c^2*d^3 + 36*A*a^2*b^3*c*d^4 + 3*(2*A - 3*B)*a^3*b^2*d^5)*x^2 - 5*(B*b^5*c^4*d - 12*B*a*b^4*c^3*d^2 - 36*(A + B)*a^2*b^3*c^2*d^3 - 24*(A - B)*a^3*b^2*c*d^4 + 3*B*a^4*b*d^5)*x)*log((b*e*x + a*e)/(d*x + c)))/((b^9*c^6*d^2 - 6*a*b^8*c^5*d^3 + 15*a^2*b^7*c^4*d^4 - 20*a^3*b^6*c^3*d^5 + 15*a^4*b^5*c^2*d^6 - 6*a^5*
```

$$b^4*c*d^7 + a^6*b^3*d^8)*g^4*i^3*x^5 + (2*b^9*c^7*d - 9*a*b^8*c^6*d^2 + 12*a^2*b^7*c^5*d^3 + 5*a^3*b^6*c^4*d^4 - 30*a^4*b^5*c^3*d^5 + 33*a^5*b^4*c^2*d^6 - 16*a^6*b^3*c*d^7 + 3*a^7*b^2*d^8)*g^4*i^3*x^4 + (b^9*c^8 - 18*a^2*b^7*c^6*d^2 + 52*a^3*b^6*c^5*d^3 - 60*a^4*b^5*c^4*d^4 + 24*a^5*b^4*c^3*d^5 + 10*a^6*b^3*c^2*d^6 - 12*a^7*b^2*c*d^7 + 3*a^8*b*d^8)*g^4*i^3*x^3 + (3*a*b^8*c^8 - 12*a^2*b^7*c^7*d + 10*a^3*b^6*c^6*d^2 + 24*a^4*b^5*c^5*d^3 - 60*a^5*b^4*c^4*d^4 + 52*a^6*b^3*c^3*d^5 - 18*a^7*b^2*c^2*d^6 + a^9*d^8)*g^4*i^3*x^2 + (3*a^2*b^7*c^8 - 16*a^3*b^6*c^7*d + 33*a^4*b^5*c^6*d^2 - 30*a^5*b^4*c^5*d^3 + 5*a^6*b^3*c^4*d^4 + 12*a^7*b^2*c^3*d^5 - 9*a^8*b*c^2*d^6 + 2*a^9*c*d^7)*g^4*i^3*x + (a^3*b^6*c^8 - 6*a^4*b^5*c^7*d + 15*a^5*b^4*c^6*d^2 - 20*a^6*b^3*c^5*d^3 + 15*a^7*b^2*c^4*d^4 - 6*a^8*b*c^3*d^5 + a^9*c^2*d^6)*g^4*i^3)$$

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^4/(d*i*x+c*i)^3,x, algorithm="giac")

[Out] Timed out

maple [B] time = 0.05, size = 2616, normalized size = 4.65

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^4/(d*i*x+c*i)^3,x)

[Out] $10*d^2*e/i^3/(a*d-b*c)^7/g^4*A*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c+3/4*d^4/i^3/(a*d-b*c)^7/g^4*B/(d*x+c)^2*a*b^2*c^2-1/2*d^6/i^3/(a*d-b*c)^7/g^4*A/(d*x+c)^2*a^3+1/4*d^6/i^3/(a*d-b*c)^7/g^4*B/(d*x+c)^2*a^3+3/2*d^5/i^3/(a*d-b*c)^7/g^4*A/(d*x+c)^2*a^2*b*c-10*d^3*e/i^3/(a*d-b*c)^7/g^4*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a-3/4*d^5/i^3/(a*d-b*c)^7/g^4*B/(d*x+c)^2*a^2*b*c+9*d^4/i^3/(a*d-b*c)^7/g^4*B*b^2/(d*x+c)*a*c-8*d^4/i^3/(a*d-b*c)^7/g^4*A*b^2/(d*x+c)*a*c-3/2*d^4/i^3/(a*d-b*c)^7/g^4*A/(d*x+c)^2*a*b^2*c^2+4*d^3/i^3/(a*d-b*c)^7/g^4*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^3/(d*x+c)*c^2+5/4*d^2*e^2/i^3/(a*d-b*c)^7/g^4*B*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a+5/2*d^2*e^2/i^3/(a*d-b*c)^7/g^4*A*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a-5/2*d*e^2/i^3/(a*d-b*c)^7/g^4*A*b^5/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*c-10*d^3*e/i^3/(a*d-b*c)^7/g^4*A*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a+1/2*d^3/i^3/(a*d-b*c)^7/g^4*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*b^3*c^3+4*d^5/i^3/(a*d-b*c)^7/g^4*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b/(d*x+c)*a^2-5/4*d*e^2/i^3/(a*d-b*c)^7/g^4*B*b^5/(1/(d*x+c)*a$

$$\begin{aligned}
& e^{-1/(dx+c)} \cdot b \cdot c / d \cdot e + b / d \cdot e)^{2c+9/2} \cdot d^4 / i^3 / (a \cdot d - b \cdot c)^7 / g^4 \cdot A \cdot b^2 \cdot a^{-9/2} \cdot d^3 \\
& / i^3 / (a \cdot d - b \cdot c)^7 / g^4 \cdot A \cdot b^3 \cdot c - 19/4 \cdot d^4 / i^3 / (a \cdot d - b \cdot c)^7 / g^4 \cdot B \cdot b^2 \cdot a + 19/4 \cdot d^3 / \\
& i^3 / (a \cdot d - b \cdot c)^7 / g^4 \cdot B \cdot b^3 \cdot c - 9/2 \cdot d^5 / i^3 / (a \cdot d - b \cdot c)^7 / g^4 \cdot B \cdot b / (dx+c) \cdot a^{2+1/2} \\
& \cdot d^3 / i^3 / (a \cdot d - b \cdot c)^7 / g^4 \cdot A / (dx+c)^2 \cdot b^3 \cdot c^3 - 1/4 \cdot d^3 / i^3 / (a \cdot d - b \cdot c)^7 / g^4 \cdot B / \\
& (dx+c)^2 \cdot b^3 \cdot c^3 + 10 \cdot d^3 / i^3 / (a \cdot d - b \cdot c)^7 / g^4 \cdot A \cdot b^3 \cdot \ln(b/d \cdot e + (a \cdot d - b \cdot c) / (dx+c) / d \cdot e) \\
& \cdot c - 1/2 \cdot d^6 / i^3 / (a \cdot d - b \cdot c)^7 / g^4 \cdot B \cdot \ln(b/d \cdot e + (a \cdot d - b \cdot c) / (dx+c) / d \cdot e) / (dx+c)^2 \cdot a^3 - 5 \cdot d^4 / i^3 / (a \cdot d - b \cdot c)^7 / g^4 \cdot B \cdot b^2 \cdot \ln(b/d \cdot e + (a \cdot d - b \cdot c) / (dx+c) / d \cdot e) \\
& ^{2a-10} \cdot d^4 / i^3 / (a \cdot d - b \cdot c)^7 / g^4 \cdot A \cdot b^2 \cdot \ln(b/d \cdot e + (a \cdot d - b \cdot c) / (dx+c) / d \cdot e) \cdot a + 9/2 \cdot d^4 / i^3 / (a \cdot d - b \cdot c)^7 / g^4 \cdot B \cdot \ln(b/d \cdot e + (a \cdot d - b \cdot c) / (dx+c) / d \cdot e) \cdot b^2 \cdot a + 5 \cdot d^3 / i^3 / (a \cdot d - b \cdot c)^7 / g^4 \cdot B \cdot b^3 \cdot \ln(b/d \cdot e + (a \cdot d - b \cdot c) / (dx+c) / d \cdot e)^{2c-9/2} \cdot d^3 / i^3 / (a \cdot d - b \cdot c)^7 / g^4 \cdot B \cdot \ln(b/d \cdot e + (a \cdot d - b \cdot c) / (dx+c) / d \cdot e) \cdot b^3 \cdot c + 4 \cdot d^5 / i^3 / (a \cdot d - b \cdot c)^7 / g^4 \cdot A \cdot b / (dx+c) \cdot a^{2+4} \cdot d^3 / i^3 / (a \cdot d - b \cdot c)^7 / g^4 \cdot A \cdot b^3 / (dx+c) \cdot c^{2-9/2} \cdot d^3 / i^3 / (a \cdot d - b \cdot c)^7 / g^4 \cdot B \cdot b^3 / (dx+c) \cdot c^{2+1/3} \cdot e^3 / i^3 / (a \cdot d - b \cdot c)^7 / g^4 \cdot A \cdot b^6 / (1/(dx+c)) \cdot a \cdot e^{-1/(dx+c)} \cdot b \cdot c / d \cdot e + b / d \cdot e)^{3c+1/9} \cdot e^3 / i^3 / (a \cdot d - b \cdot c)^7 / g^4 \cdot B \cdot b^6 / (1/(dx+c)) \cdot a \cdot e^{-1/(dx+c)} \cdot b \cdot c / d \cdot e + b / d \cdot e)^{3c+10} \cdot d^2 \cdot e / i^3 / (a \cdot d - b \cdot c)^7 / g^4 \cdot B \cdot b^4 / (1/(dx+c)) \cdot a \cdot e^{-1/(dx+c)} \cdot b \cdot c / d \cdot e + b / d \cdot e)^{3a-1/9} \cdot d \cdot e^3 / i^3 / (a \cdot d - b \cdot c)^7 / g^4 \cdot B \cdot b^5 / (1/(dx+c)) \cdot a \cdot e^{-1/(dx+c)} \cdot b \cdot c / d \cdot e + b / d \cdot e)^{3a-1/3} \cdot d \cdot e^3 / i^3 / (a \cdot d - b \cdot c)^7 / g^4 \cdot B \cdot b^5 / (1/(dx+c)) \cdot a \cdot e^{-1/(dx+c)} \cdot b \cdot c / d \cdot e + b / d \cdot e)^{3 \cdot \ln(b/d \cdot e + (a \cdot d - b \cdot c) / (dx+c) / d \cdot e)} \cdot a - 5/2 \cdot d \cdot e^2 / i^3 / (a \cdot d - b \cdot c)^7 / g^4 \cdot B \cdot b^5 / (1/(dx+c)) \cdot a \cdot e^{-1/(dx+c)} \cdot b \cdot c / d \cdot e + b / d \cdot e)^2 \cdot \ln(b/d \cdot e + (a \cdot d - b \cdot c) / (dx+c) / d \cdot e) \cdot c - 10 \cdot d^3 \cdot e / i^3 / (a \cdot d - b \cdot c)^7 / g^4 \cdot B \cdot b^3 / (1/(dx+c)) \cdot a \cdot e^{-1/(dx+c)} \cdot b \cdot c / d \cdot e + b / d \cdot e) \cdot \ln(b/d \cdot e + (a \cdot d - b \cdot c) / (dx+c) / d \cdot e) \cdot a + 5/2 \cdot d^2 \cdot e^2 / i^3 / (a \cdot d - b \cdot c)^7 / g^4 \cdot B \cdot b^4 / (1/(dx+c)) \cdot a \cdot e^{-1/(dx+c)} \cdot b \cdot c / d \cdot e + b / d \cdot e)^2 \cdot \ln(b/d \cdot e + (a \cdot d - b \cdot c) / (dx+c) / d \cdot e) \cdot a - 3/2 \cdot d^4 / i^3 / (a \cdot d - b \cdot c)^7 / g^4 \cdot B \cdot \ln(b/d \cdot e + (a \cdot d - b \cdot c) / (dx+c) / d \cdot e) / (dx+c)^2 \cdot a \cdot b^2 \cdot c^2 - 8 \cdot d^4 / i^3 / (a \cdot d - b \cdot c)^7 / g^4 \cdot B \cdot \ln(b/d \cdot e + (a \cdot d - b \cdot c) / (dx+c) / d \cdot e) \cdot b^2 / (dx+c) \cdot c \cdot a + 3/2 \cdot d^5 / i^3 / (a \cdot d - b \cdot c)^7 / g^4 \cdot B \cdot \ln(b/d \cdot e + (a \cdot d - b \cdot c) / (dx+c) / d \cdot e) / (dx+c)^2 \cdot a^2 \cdot b \cdot c + 10 \cdot d^2 \cdot e / i^3 / (a \cdot d - b \cdot c)^7 / g^4 \cdot B \cdot b^4 / (1/(dx+c)) \cdot a \cdot e^{-1/(dx+c)} \cdot b \cdot c / d \cdot e + b / d \cdot e) \cdot \ln(b/d \cdot e + (a \cdot d - b \cdot c) / (dx+c) / d \cdot e) \cdot c + 1/3 \cdot e^3 / i^3 / (a \cdot d - b \cdot c)^7 / g^4 \cdot B \cdot b^6 / (1/(dx+c)) \cdot a \cdot e^{-1/(dx+c)} \cdot b \cdot c / d \cdot e + b / d \cdot e)^3 \cdot \ln(b/d \cdot e + (a \cdot d - b \cdot c) / (dx+c) / d \cdot e) \cdot c
\end{aligned}$$

maxima [B] time = 5.65, size = 3816, normalized size = 6.78

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^4/(d*i*x+c*i)^3,x, algorithm="maxima")

[Out]
$$\begin{aligned}
& -1/6 \cdot B \cdot ((60 \cdot b^4 \cdot d^4 \cdot x^4 + 2 \cdot b^4 \cdot c^4 - 13 \cdot a \cdot b^3 \cdot c^3 \cdot d + 47 \cdot a^2 \cdot b^2 \cdot c^2 \cdot d^2 + 27 \cdot a^3 \cdot b \cdot c \cdot d^3 - 3 \cdot a^4 \cdot d^4 + 30 \cdot (3 \cdot b^4 \cdot c \cdot d^3 + 5 \cdot a \cdot b^3 \cdot d^4) \cdot x^3 + 10 \cdot (2 \cdot b^4 \cdot c^2 \cdot d^2 + 23 \cdot a \cdot b^3 \cdot c \cdot d^3 + 11 \cdot a^2 \cdot b^2 \cdot d^4) \cdot x^2 - 5 \cdot (b^4 \cdot c^3 \cdot d - 11 \cdot a \cdot b^3 \cdot c^2 \cdot d^2 - 35 \cdot a^2 \cdot b^2 \cdot c \cdot d^3 - 3 \cdot a^3 \cdot b \cdot d^4) \cdot x) / ((b^8 \cdot c^5 \cdot d^2 - 5 \cdot a \cdot b^7 \cdot c^4 \cdot d^3 + 10 \cdot a^2 \cdot b^6 \cdot c^3 \cdot d^4 - 10 \cdot a^3 \cdot b^5 \cdot c^2 \cdot d^5 + 5 \cdot a^4 \cdot b^4 \cdot c \cdot d^6 - a^5 \cdot b^3 \cdot d^7) \cdot g^4 \cdot i^3 \cdot x^5 + (2 \cdot b^8 \cdot c^6 \cdot d - 7 \cdot a \cdot b^7 \cdot c^5 \cdot d^2 + 5 \cdot a^2 \cdot b^6 \cdot c^4 \cdot d^3 + 10 \cdot a^3
\end{aligned}$$

$$\begin{aligned}
& *b^5*c^3*d^4 - 20*a^4*b^4*c^2*d^5 + 13*a^5*b^3*c*d^6 - 3*a^6*b^2*d^7)*g^4*i \\
& ^3*x^4 + (b^8*c^7 + a*b^7*c^6*d - 17*a^2*b^6*c^5*d^2 + 35*a^3*b^5*c^4*d^3 - \\
& 25*a^4*b^4*c^3*d^4 - a^5*b^3*c^2*d^5 + 9*a^6*b^2*c*d^6 - 3*a^7*b*d^7)*g^4* \\
& i^3*x^3 + (3*a*b^7*c^7 - 9*a^2*b^6*c^6*d + a^3*b^5*c^5*d^2 + 25*a^4*b^4*c^4 \\
& *d^3 - 35*a^5*b^3*c^3*d^4 + 17*a^6*b^2*c^2*d^5 - a^7*b*c*d^6 - a^8*d^7)*g^4 \\
& *i^3*x^2 + (3*a^2*b^6*c^7 - 13*a^3*b^5*c^6*d + 20*a^4*b^4*c^5*d^2 - 10*a^5* \\
& b^3*c^4*d^3 - 5*a^6*b^2*c^3*d^4 + 7*a^7*b*c^2*d^5 - 2*a^8*c*d^6)*g^4*i^3*x \\
& + (a^3*b^5*c^7 - 5*a^4*b^4*c^6*d + 10*a^5*b^3*c^5*d^2 - 10*a^6*b^2*c^4*d^3 \\
& + 5*a^7*b*c^3*d^4 - a^8*c^2*d^5)*g^4*i^3) + 60*b^2*d^3*log(b*x + a)/((b^6*c \\
& ^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c \\
& ^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)*g^4*i^3) - 60*b^2*d^3*log(d*x + c)/((b^6*c \\
& ^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c \\
& ^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)*g^4*i^3))*log(b*e*x/(d*x + c) + a*e/(d*x \\
& + c)) - 1/6*A*((60*b^4*d^4*x^4 + 2*b^4*c^4 - 13*a*b^3*c^3*d + 47*a^2*b^2*c \\
& ^2*d^2 + 27*a^3*b*c*d^3 - 3*a^4*d^4 + 30*(3*b^4*c*d^3 + 5*a*b^3*d^4)*x^3 + \\
& 10*(2*b^4*c^2*d^2 + 23*a*b^3*c*d^3 + 11*a^2*b^2*d^4)*x^2 - 5*(b^4*c^3*d - 1 \\
& 1*a*b^3*c^2*d^2 - 35*a^2*b^2*c*d^3 - 3*a^3*b*d^4)*x)/((b^8*c^5*d^2 - 5*a*b^ \\
& 7*c^4*d^3 + 10*a^2*b^6*c^3*d^4 - 10*a^3*b^5*c^2*d^5 + 5*a^4*b^4*c*d^6 - a^5 \\
& *b^3*d^7)*g^4*i^3*x^5 + (2*b^8*c^6*d - 7*a*b^7*c^5*d^2 + 5*a^2*b^6*c^4*d^3 \\
& + 10*a^3*b^5*c^3*d^4 - 20*a^4*b^4*c^2*d^5 + 13*a^5*b^3*c*d^6 - 3*a^6*b^2*d^ \\
& 7)*g^4*i^3*x^4 + (b^8*c^7 + a*b^7*c^6*d - 17*a^2*b^6*c^5*d^2 + 35*a^3*b^5*c \\
& ^4*d^3 - 25*a^4*b^4*c^3*d^4 - a^5*b^3*c^2*d^5 + 9*a^6*b^2*c*d^6 - 3*a^7*b*d \\
& ^7)*g^4*i^3*x^3 + (3*a*b^7*c^7 - 9*a^2*b^6*c^6*d + a^3*b^5*c^5*d^2 + 25*a^4 \\
& *b^4*c^4*d^3 - 35*a^5*b^3*c^3*d^4 + 17*a^6*b^2*c^2*d^5 - a^7*b*c*d^6 - a^8* \\
& d^7)*g^4*i^3*x^2 + (3*a^2*b^6*c^7 - 13*a^3*b^5*c^6*d + 20*a^4*b^4*c^5*d^2 - \\
& 10*a^5*b^3*c^4*d^3 - 5*a^6*b^2*c^3*d^4 + 7*a^7*b*c^2*d^5 - 2*a^8*c*d^6)*g^ \\
& 4*i^3*x + (a^3*b^5*c^7 - 5*a^4*b^4*c^6*d + 10*a^5*b^3*c^5*d^2 - 10*a^6*b^2* \\
& c^4*d^3 + 5*a^7*b*c^3*d^4 - a^8*c^2*d^5)*g^4*i^3) + 60*b^2*d^3*log(b*x + a) \\
& /((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a \\
& ^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)*g^4*i^3) - 60*b^2*d^3*log(d*x + c) \\
& /((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15* \\
& a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)*g^4*i^3)) - 1/36*(4*b^5*c^5 - 45 \\
& *a*b^4*c^4*d + 360*a^2*b^3*c^3*d^2 - 490*a^3*b^2*c^2*d^3 + 180*a^4*b*c*d^4 \\
& - 9*a^5*d^5 + 120*(b^5*c*d^4 - a*b^4*d^5)*x^4 + 120*(3*b^5*c^2*d^3 - 2*a*b^ \\
& 4*c*d^4 - a^2*b^3*d^5)*x^3 + 20*(11*b^5*c^3*d^2 + 21*a*b^4*c^2*d^3 - 39*a^2 \\
& *b^3*c*d^4 + 7*a^3*b^2*d^5)*x^2 - 180*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b \\
& ^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5) \\
& *x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c \\
& ^2*d^3 + 2*a^3*b^2*c*d^4)*x)*log(b*x + a)^2 - 180*(b^5*d^5*x^5 + a^3*b^2*c^ \\
& 2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3* \\
& a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + \\
& (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x)*log(d*x + c)^2 - 5*(5*b^5*c^4*d - \\
& 108*a*b^4*c^3*d^2 + 78*a^2*b^3*c^2*d^3 + 52*a^3*b^2*c*d^4 - 27*a^4*b*d^5)*x \\
& + 120*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (\\
& b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2
\end{aligned}$$

```

*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x)*log
(b*x + a) - 120*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^
5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d
^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*
d^4)*x - 3*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4
+ (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6
*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x
)*log(b*x + a))*log(d*x + c))*B/(a^3*b^6*c^8*g^4*i^3 - 6*a^4*b^5*c^7*d*g^4*
i^3 + 15*a^5*b^4*c^6*d^2*g^4*i^3 - 20*a^6*b^3*c^5*d^3*g^4*i^3 + 15*a^7*b^2*
c^4*d^4*g^4*i^3 - 6*a^8*b*c^3*d^5*g^4*i^3 + a^9*c^2*d^6*g^4*i^3 + (b^9*c^6*
d^2*g^4*i^3 - 6*a*b^8*c^5*d^3*g^4*i^3 + 15*a^2*b^7*c^4*d^4*g^4*i^3 - 20*a^3
*b^6*c^3*d^5*g^4*i^3 + 15*a^4*b^5*c^2*d^6*g^4*i^3 - 6*a^5*b^4*c*d^7*g^4*i^3
+ a^6*b^3*d^8*g^4*i^3)*x^5 + (2*b^9*c^7*d*g^4*i^3 - 9*a*b^8*c^6*d^2*g^4*i^
3 + 12*a^2*b^7*c^5*d^3*g^4*i^3 + 5*a^3*b^6*c^4*d^4*g^4*i^3 - 30*a^4*b^5*c^3
*d^5*g^4*i^3 + 33*a^5*b^4*c^2*d^6*g^4*i^3 - 16*a^6*b^3*c*d^7*g^4*i^3 + 3*a^
7*b^2*d^8*g^4*i^3)*x^4 + (b^9*c^8*g^4*i^3 - 18*a^2*b^7*c^6*d^2*g^4*i^3 + 52
*a^3*b^6*c^5*d^3*g^4*i^3 - 60*a^4*b^5*c^4*d^4*g^4*i^3 + 24*a^5*b^4*c^3*d^5*
g^4*i^3 + 10*a^6*b^3*c^2*d^6*g^4*i^3 - 12*a^7*b^2*c*d^7*g^4*i^3 + 3*a^8*b*d
^8*g^4*i^3)*x^3 + (3*a*b^8*c^8*g^4*i^3 - 12*a^2*b^7*c^7*d*g^4*i^3 + 10*a^3*
b^6*c^6*d^2*g^4*i^3 + 24*a^4*b^5*c^5*d^3*g^4*i^3 - 60*a^5*b^4*c^4*d^4*g^4*i
^3 + 52*a^6*b^3*c^3*d^5*g^4*i^3 - 18*a^7*b^2*c^2*d^6*g^4*i^3 + a^9*d^8*g^4*
i^3)*x^2 + (3*a^2*b^7*c^8*g^4*i^3 - 16*a^3*b^6*c^7*d*g^4*i^3 + 33*a^4*b^5*c
^6*d^2*g^4*i^3 - 30*a^5*b^4*c^5*d^3*g^4*i^3 + 5*a^6*b^3*c^4*d^4*g^4*i^3 + 1
2*a^7*b^2*c^3*d^5*g^4*i^3 - 9*a^8*b*c^2*d^6*g^4*i^3 + 2*a^9*c*d^7*g^4*i^3)*
x)

```

mupad [B] time = 16.59, size = 2291, normalized size = 4.07

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```

[In] int((A + B*log((e*(a + b*x))/(c + d*x)))/((a*g + b*g*x)^4*(c*i + d*i*x)^3),
x)

```

```

[Out] ((12*A*b^4*c^4 - 18*A*a^4*d^4 + 9*B*a^4*d^4 + 4*B*b^4*c^4 + 282*A*a^2*b^2*c
^2*d^2 + 319*B*a^2*b^2*c^2*d^2 - 78*A*a*b^3*c^3*d + 162*A*a^3*b*c*d^3 - 41*
B*a*b^3*c^3*d - 171*B*a^3*b*c*d^3)/(6*(a*d - b*c)) + (10*x^2*(33*A*a^2*b^2*
d^4 - 7*B*a^2*b^2*d^4 + 6*A*b^4*c^2*d^2 + 11*B*b^4*c^2*d^2 + 69*A*a*b^3*c*d
^3 + 32*B*a*b^3*c*d^3))/(3*(a*d - b*c)) + (5*x*(18*A*a^3*b*d^4 - 27*B*a^3*b
*d^4 - 6*A*b^4*c^3*d - 5*B*b^4*c^3*d + 66*A*a*b^3*c^2*d^2 + 210*A*a^2*b^2*c
*d^3 + 103*B*a*b^3*c^2*d^2 + 25*B*a^2*b^2*c*d^3))/(6*(a*d - b*c)) + (10*x^3
*(15*A*a*b^3*d^4 + 2*B*a*b^3*d^4 + 9*A*b^4*c*d^3 + 6*B*b^4*c*d^3))/(a*d - b
*c) + (20*x^4*(3*A*b^4*d^4 + B*b^4*d^4))/(a*d - b*c)/(x^5*(6*a^4*b^3*d^6*g
^4*i^3 + 6*b^7*c^4*d^2*g^4*i^3 - 24*a*b^6*c^3*d^3*g^4*i^3 - 24*a^3*b^4*c*d^
5*g^4*i^3 + 36*a^2*b^5*c^2*d^4*g^4*i^3) + x*(18*a^2*b^5*c^6*g^4*i^3 + 12*a^

```

```

7*c*d^5*g^4*i^3 - 60*a^3*b^4*c^5*d*g^4*i^3 - 30*a^6*b*c^2*d^4*g^4*i^3 + 60*
a^4*b^3*c^4*d^2*g^4*i^3) + x^2*(6*a^7*d^6*g^4*i^3 + 18*a*b^6*c^6*g^4*i^3 +
12*a^6*b*c*d^5*g^4*i^3 - 36*a^2*b^5*c^5*d*g^4*i^3 - 30*a^3*b^4*c^4*d^2*g^4*
i^3 + 120*a^4*b^3*c^3*d^3*g^4*i^3 - 90*a^5*b^2*c^2*d^4*g^4*i^3) + x^3*(6*b^
7*c^6*g^4*i^3 + 18*a^6*b*d^6*g^4*i^3 + 12*a*b^6*c^5*d*g^4*i^3 - 36*a^5*b^2*
c*d^5*g^4*i^3 - 90*a^2*b^5*c^4*d^2*g^4*i^3 + 120*a^3*b^4*c^3*d^3*g^4*i^3 -
30*a^4*b^3*c^2*d^4*g^4*i^3) + x^4*(18*a^5*b^2*d^6*g^4*i^3 + 12*b^7*c^5*d*g^
4*i^3 - 30*a*b^6*c^4*d^2*g^4*i^3 - 60*a^4*b^3*c*d^5*g^4*i^3 + 60*a^3*b^4*c^
2*d^4*g^4*i^3) + 6*a^3*b^4*c^6*g^4*i^3 + 6*a^7*c^2*d^4*g^4*i^3 - 24*a^4*b^3
*c^5*d*g^4*i^3 - 24*a^6*b*c^3*d^3*g^4*i^3 + 36*a^5*b^2*c^4*d^2*g^4*i^3) + (
log((e*(a + b*x))/(c + d*x))*(x^2*((5*B*b*d*(a*d + b*c))/(g^4*i^3*(a^2*d^2
+ b^2*c^2 - 2*a*b*c*d)^2) + (5*B*b*d*(2*a*d + b*c))/(3*g^4*i^3*(a^2*d^2 + b
^2*c^2 - 2*a*b*c*d)^2) + (10*B*b^2*d^3*((2*a*c*(a*d - b*c))/d + ((a*d + b*c
)^2*(a*d - b*c))/(b*d^2)))/(g^4*i^3*(a*d - b*c)^4*(a^2*d^2 + b^2*c^2 - 2*a*
b*c*d))) + x^3*((5*B*b^2*d^2)/(g^4*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2) +
(20*B*b^2*d^2*(a*d + b*c))/(g^4*i^3*(a*d - b*c)^3*(a^2*d^2 + b^2*c^2 - 2*a
*b*c*d))) + x*((5*B*(a*d + b*c)*(2*a*d + b*c))/(3*g^4*i^3*(a^2*d^2 + b^2*c^
2 - 2*a*b*c*d)^2) - (5*B)/(6*g^4*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (5*
B*a*b*c*d)/(g^4*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2) + (20*B*a*b*c*d*(a*d
+ b*c))/(g^4*i^3*(a*d - b*c)^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))) - (B*(3*a
*d + 2*b*c))/(6*g^4*i^3*(a^2*b*d^3 + b^3*c^2*d - 2*a*b^2*c*d^2)) + (5*B*a*c
*(2*a*d + b*c))/(3*g^4*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2) + (10*B*b^3*d
^3*x^4)/(g^4*i^3*(a*d - b*c)^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (10*B*a^2
*b*c^2*d)/(g^4*i^3*(a*d - b*c)^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)))/(b^2*d*
x^5 + (x^4*(3*a*b^2*d^2 + 2*b^3*c*d))/(b*d) + (a^3*c^2)/(b*d) + (x^2*(a^3*d
^2 + 3*a*b^2*c^2 + 6*a^2*b*c*d))/(b*d) + (x^3*(b^3*c^2 + 3*a^2*b*d^2 + 6*a*
b^2*c*d))/(b*d) + (x*(3*a^2*b*c^2 + 2*a^3*c*d))/(b*d)) + (b^2*d^3*atan((b^2
*d^3*(3*A + B)*((a^6*d^6*g^4*i^3 - b^6*c^6*g^4*i^3 + 4*a*b^5*c^5*d*g^4*i^3
- 4*a^5*b*c*d^5*g^4*i^3 - 5*a^2*b^4*c^4*d^2*g^4*i^3 + 5*a^4*b^2*c^2*d^4*g^4
*i^3)/(a^5*d^5*g^4*i^3 - b^5*c^5*g^4*i^3 + 5*a*b^4*c^4*d*g^4*i^3 - 5*a^4*b*
c*d^4*g^4*i^3 - 10*a^2*b^3*c^3*d^2*g^4*i^3 + 10*a^3*b^2*c^2*d^3*g^4*i^3) +
2*b*d*x)*(a^5*d^5*g^4*i^3 - b^5*c^5*g^4*i^3 + 5*a*b^4*c^4*d*g^4*i^3 - 5*a^4
*b*c*d^4*g^4*i^3 - 10*a^2*b^3*c^3*d^2*g^4*i^3 + 10*a^3*b^2*c^2*d^3*g^4*i^3)
*10i)/(g^4*i^3*(a*d - b*c)^6*(30*A*b^2*d^3 + 10*B*b^2*d^3)))*(3*A + B)*20i)
/(3*g^4*i^3*(a*d - b*c)^6) - (5*B*b^2*d^3*log((e*(a + b*x))/(c + d*x))^2)/(
g^4*i^3*(a*d - b*c)^4*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))

```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)**4/(d*i*x+c*i)**3,x)

[Out] Timed out

$$3.55 \quad \int (ag + bgx)^3 (ci + dix) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 dx$$

Optimal. Leaf size=539

$$\frac{Bg^3i(bc - ad)^5 \log \left(\frac{bc-ad}{b(c+dx)} \right) \left(6B \log \left(\frac{e(a+bx)}{c+dx} \right) + 6A + 11B \right)}{60b^2d^4} - \frac{Bg^3i(a + bx)(bc - ad)^4 \left(6B \log \left(\frac{e(a+bx)}{c+dx} \right) + 6A + 5B \right)}{60b^2d^3}$$

[Out] $3/10*B^2*(-a*d+b*c)^4*g^3*i*x/b/d^3-3/20*B^2*(-a*d+b*c)^3*g^3*i*(d*x+c)^2/d^4+1/30*b*B^2*(-a*d+b*c)^2*g^3*i*(d*x+c)^3/d^4-1/30*B*(-a*d+b*c)^2*g^3*i*(b*x+a)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^2/d-1/10*B*(-a*d+b*c)*g^3*i*(b*x+a)^4*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^2+1/20*(-a*d+b*c)*g^3*i*(b*x+a)^4*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/b^2+1/5*g^3*i*(b*x+a)^4*(d*x+c)*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/b+1/60*B*(-a*d+b*c)^3*g^3*i*(b*x+a)^2*(3*A+B+3*B*\ln(e*(b*x+a)/(d*x+c)))/b^2/d^2-1/60*B*(-a*d+b*c)^4*g^3*i*(b*x+a)*(6*A+5*B+6*B*\ln(e*(b*x+a)/(d*x+c)))/b^2/d^3-1/60*B*(-a*d+b*c)^5*g^3*i*\ln((-a*d+b*c)/b/(d*x+c))*(6*A+11*B+6*B*\ln(e*(b*x+a)/(d*x+c)))/b^2/d^4-1/10*B^2*(-a*d+b*c)^5*g^3*i*\ln(d*x+c)/b^2/d^4-1/10*B^2*(-a*d+b*c)^5*g^3*i*polylog(2,d*(b*x+a)/b/(d*x+c))/b^2/d^4$

Rubi [A] time = 1.78, antiderivative size = 622, normalized size of antiderivative = 1.15, number of steps used = 54, number of rules used = 13, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.325$, Rules used = {2528, 2525, 12, 2486, 31, 43, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$\frac{B^2g^3i(bc - ad)^5 \text{PolyLog} \left(2, \frac{b(c+dx)}{bc-ad} \right)}{10b^2d^4} + \frac{Bg^3i(bc - ad)^5 \log(c + dx) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{10b^2d^4} + \frac{Bg^3i(a + bx)^2(bc - ad)}{20b^2d^3}$$

Antiderivative was successfully verified.

[In] $\text{Int}[(a*g + b*g*x)^3*(c*i + d*i*x)*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)])^2,x]$

[Out] $-(A*B*(b*c - a*d)^4*g^3*i*x)/(10*b*d^3) + (B^2*(b*c - a*d)^4*g^3*i*x)/(60*b*d^3) - (B^2*(b*c - a*d)^3*g^3*i*(a + b*x)^2)/(30*b^2*d^2) + (B^2*(b*c - a*d)^2*g^3*i*(a + b*x)^3)/(30*b^2*d) - (B^2*(b*c - a*d)^4*g^3*i*(a + b*x)*\text{Log}[(e*(a + b*x))/(c + d*x)])/(10*b^2*d^3) + (B*(b*c - a*d)^3*g^3*i*(a + b*x)^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(20*b^2*d^2) - (B*(b*c - a*d)^2*g^3*i*(a + b*x)^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(30*b^2*d) - (B*(b*c - a*d)*g^3*i*(a + b*x)^4*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(10*b^2) + ((b*c - a*d)*g^3*i*(a + b*x)^4*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)])^2)/(4*b^2) + (d*g^3*i*(a + b*x)^5*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)])^2)/(5*b^2) + (B^2*(b*c - a*d)^5*g^3*i*\text{Log}[c + d*x])/(12*b^2*d^4) - (B^2*(b*c - a*d)^5*g^3*i*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c + d*x])/(10*b^2*d^4) + (B*(b*c - a*d)^5*g^3*i*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)])*\text{Log}[c + d*x])/(10*b^2*d^4)$

$$\wedge 4) + (B^2*(b*c - a*d)^5*g^3*i*\text{Log}[c + d*x]^2)/(20*b^2*d^4) - (B^2*(b*c - a*d)^5*g^3*i*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/(10*b^2*d^4)$$
Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^-1, x_Symbol] := Simp[Log[RemoveContent[a + b*x, x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && (!IntegerQ[n] || (EqQ[c, 0] && LeQ[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*((f_) + (g_.)*(x_)^(q_.)), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFX_), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFX, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFX, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.))/((d_.) + (e_.)*(x_)), x_Symbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFX^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFX^p])^(n - 1)*D[RFX, x])/RFX, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFX, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFX^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFX^p])^(n - 1)*D[RFX, x])/RFX, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFX, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*RFX^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFX, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int (55c + 55dx)(ag + bgx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 dx &= \int \left(\frac{55(bc - ad)(ag + bgx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b} + \dots \right) dx \\
&= \frac{(55(bc - ad)) \int (ag + bgx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 dx}{b} \\
&= \frac{55(bc - ad)g^3(a + bx)^4 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{4b^2} + \frac{11dg^3}{4b^2} \\
&= \frac{55(bc - ad)g^3(a + bx)^4 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{4b^2} + \frac{11dg^3}{4b^2} \\
&= \frac{55(bc - ad)g^3(a + bx)^4 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{4b^2} + \frac{11dg^3}{4b^2} \\
&= \frac{55(bc - ad)g^3(a + bx)^4 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{4b^2} + \frac{11dg^3}{4b^2} \\
&= -\frac{11AB(bc - ad)^4 g^3 x}{2bd^3} + \frac{11B(bc - ad)^3 g^3 (a + bx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{4b^2 d^2} \\
&= -\frac{11AB(bc - ad)^4 g^3 x}{2bd^3} - \frac{11B^2(bc - ad)^4 g^3 (a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{2b^2 d^3} \\
&= -\frac{11AB(bc - ad)^4 g^3 x}{2bd^3} - \frac{11B^2(bc - ad)^4 g^3 (a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{2b^2 d^3} \\
&= -\frac{11AB(bc - ad)^4 g^3 x}{2bd^3} + \frac{11B^2(bc - ad)^4 g^3 x}{12bd^3} - \frac{11B^2(bc - ad)^4 g^3 (a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{12bd^3} \\
&= -\frac{11AB(bc - ad)^4 g^3 x}{2bd^3} + \frac{11B^2(bc - ad)^4 g^3 x}{12bd^3} - \frac{11B^2(bc - ad)^4 g^3 (a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{12bd^3} \\
&= -\frac{11AB(bc - ad)^4 g^3 x}{2bd^3} + \frac{11B^2(bc - ad)^4 g^3 x}{12bd^3} - \frac{11B^2(bc - ad)^4 g^3 (a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{12bd^3}
\end{aligned}$$

Mathematica [A] time = 0.76, size = 905, normalized size = 1.68

$$g^3 i \left(4d \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 (a+bx)^5 + 5(bc-ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 (a+bx)^4 - \frac{5B(bc-ad)^2 (-6B \log(c+dx)(bc-ad)}{\dots} \right)$$

Antiderivative was successfully verified.

[In] Integrate[(a*g + b*g*x)^3*(c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2,x]

[Out] (g^3*i*(5*(b*c - a*d)*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2 + 4*d*(a + b*x)^5*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2 - (5*B*(b*c - a*d)^2*(6*A*b*d*(b*c - a*d)^2*x + 6*B*d*(b*c - a*d)^2*(a + b*x)*Log[(e*(a + b*x))/(c + d*x]) + 3*d^2*(-(b*c) + a*d)*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x])) + 2*d^3*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x])) - 6*B*(b*c - a*d)^3*Log[c + d*x] - 6*(b*c - a*d)^3*(A + B*Log[(e*(a + b*x))/(c + d*x]))*Log[c + d*x] + B*(b*c - a*d)*(2*b*d*(b*c - a*d)*x - d^2*(a + b*x)^2 - 2*(b*c - a*d)^2*Log[c + d*x]) + 3*B*(b*c - a*d)^2*(b*d*x + (- (b*c) + a*d)*Log[c + d*x] + 3*B*(b*c - a*d)^3*((2*Log[(d*(a + b*x))/(- (b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(3*d^4) + (B*(b*c - a*d)*(24*A*b*d*(b*c - a*d)^3*x + 24*B*d*(b*c - a*d)^3*(a + b*x)*Log[(e*(a + b*x))/(c + d*x]) - 12*d^2*(b*c - a*d)^2*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x])) + 8*d^3*(b*c - a*d)*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x])) - 6*d^4*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x])) - 24*B*(b*c - a*d)^4*Log[c + d*x] - 24*(b*c - a*d)^4*(A + B*Log[(e*(a + b*x))/(c + d*x]))*Log[c + d*x] + 4*B*(b*c - a*d)^2*(2*b*d*(b*c - a*d)*x - d^2*(a + b*x)^2 - 2*(b*c - a*d)^2*Log[c + d*x]) + B*(b*c - a*d)*(6*b*d*(b*c - a*d)^2*x + 3*d^2*(-(b*c) + a*d)*(a + b*x)^2 + 2*d^3*(a + b*x)^3 - 6*(b*c - a*d)^3*Log[c + d*x]) + 12*B*(b*c - a*d)^3*(b*d*x + (- (b*c) + a*d)*Log[c + d*x]) + 12*B*(b*c - a*d)^4*((2*Log[(d*(a + b*x))/(- (b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(3*d^4))/(20*b^2)

fricas [F] time = 0.84, size = 0, normalized size = 0.00

$$\text{integral} \left(A^2 b^3 d g^3 i x^4 + A^2 a^3 c g^3 i + (A^2 b^3 c + 3 A^2 a b^2 d) g^3 i x^3 + 3 (A^2 a b^2 c + A^2 a^2 b d) g^3 i x^2 + (3 A^2 a^2 b c + A^2 a^3) \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorithm="fricas")

[Out] integral(A^2*b^3*d*g^3*i*x^4 + A^2*a^3*c*g^3*i + (A^2*b^3*c + 3*A^2*a*b^2*d)*g^3*i*x^3 + 3*(A^2*a*b^2*c + A^2*a^2*b*d)*g^3*i*x^2 + (3*A^2*a^2*b*c + A^2*a^3)

$2*a^3*d)*g^3*i*x + (B^2*b^3*d*g^3*i*x^4 + B^2*a^3*c*g^3*i + (B^2*b^3*c + 3*B^2*a*b^2*d)*g^3*i*x^3 + 3*(B^2*a*b^2*c + B^2*a^2*b*d)*g^3*i*x^2 + (3*B^2*a^2*b*c + B^2*a^3*d)*g^3*i*x)*\log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*B*b^3*d*g^3*i*x^4 + A*B*a^3*c*g^3*i + (A*B*b^3*c + 3*A*B*a*b^2*d)*g^3*i*x^3 + 3*(A*B*a*b^2*c + A*B*a^2*b*d)*g^3*i*x^2 + (3*A*B*a^2*b*c + A*B*a^3*d)*g^3*i*x)*\log((b*e*x + a*e)/(d*x + c)), x$

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorithm="giac")

[Out] Timed out

maple [F] time = 2.59, size = 0, normalized size = 0.00

$$\int (bgx + ag)^3 (dix + ci) \left(B \ln \left(\frac{(bx + a)e}{dx + c} \right) + A \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)^3*(d*i*x+c*i)*(B*ln((b*x+a)/(d*x+c)*e)+A)^2,x)

[Out] int((b*g*x+a*g)^3*(d*i*x+c*i)*(B*ln((b*x+a)/(d*x+c)*e)+A)^2,x)

maxima [B] time = 2.60, size = 3186, normalized size = 5.91

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorithm="maxima")

[Out] $1/5*A^2*b^3*d*g^3*i*x^5 + 1/4*A^2*b^3*c*g^3*i*x^4 + 3/4*A^2*a*b^2*d*g^3*i*x^4 + A^2*a*b^2*c*g^3*i*x^3 + A^2*a^2*b*d*g^3*i*x^3 + 3/2*A^2*a^2*b*c*g^3*i*x^2 + 1/2*A^2*a^3*d*g^3*i*x^2 + 2*(x*\log(b*e*x/(d*x + c) + a*e/(d*x + c)) + a*\log(b*x + a)/b - c*\log(d*x + c)/d)*A*B*a^3*c*g^3*i + 3*(x^2*\log(b*e*x/(d*x + c) + a*e/(d*x + c)) - a^2*\log(b*x + a)/b^2 + c^2*\log(d*x + c)/d^2 - (b*c - a*d)*x/(b*d))*A*B*a^2*b*c*g^3*i + (2*x^3*\log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 2*a^3*\log(b*x + a)/b^3 - 2*c^3*\log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*A*B*a*b^2*c*g^3*i + 1/12*(6*x^4*\log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 6*a^4*\log(b*x + a)/b^4 + 6*c^4*$

$$\begin{aligned} & ^3i + 47*a^3*b^2*c^2*d^3*g^3i - (30*g^3i*\log(e) + 31*g^3i)*a^4*b*c*d^4 \\ & + (6*g^3i*\log(e) + 5*g^3i)*a^5*d^5)*B^2)*\log(b*x + a) - (24*B^2*b^5*d^5*g \\ & ^3i*x^5*\log(e) + 6*((5*g^3i*\log(e) - g^3i)*b^5*c*d^4 + (15*g^3i*\log(e) \\ & + g^3i)*a*b^4*d^5)*B^2*x^4 - 2*(b^5*c^2*d^3*g^3i - 10*(6*g^3i*\log(e) - g \\ & ^3i)*a*b^4*c*d^4 - (60*g^3i*\log(e) + 11*g^3i)*a^2*b^3*d^5)*B^2*x^3 + 3*(\\ & b^5*c^3*d^2*g^3i - 5*a*b^4*c^2*d^3*g^3i + 5*(12*g^3i*\log(e) - g^3i)*a^2 \\ & *b^3*c*d^4 + (20*g^3i*\log(e) + 9*g^3i)*a^3*b^2*d^5)*B^2*x^2 - 6*(b^5*c^4* \\ & d*g^3i - 5*a*b^4*c^3*d^2*g^3i + 10*a^2*b^3*c^2*d^3*g^3i - a^4*b*d^5*g^3i \\ & - 5*(4*g^3i*\log(e) + g^3i)*a^3*b^2*c*d^4)*B^2*x + 6*(4*B^2*b^5*d^5*g^3i \\ & *x^5 + 20*B^2*a^3*b^2*c*d^4*g^3i*x + 5*(b^5*c*d^4*g^3i + 3*a*b^4*d^5*g^3i \\ & *i)*B^2*x^4 + 20*(a*b^4*c*d^4*g^3i + a^2*b^3*d^5*g^3i)*B^2*x^3 + 10*(3*a^ \\ & 2*b^3*c*d^4*g^3i + a^3*b^2*d^5*g^3i)*B^2*x^2 + (5*a^4*b*c*d^4*g^3i - a^5 \\ & *d^5*g^3i)*B^2)*\log(b*x + a))*\log(d*x + c))/(b^2*d^4) \end{aligned}$$

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (ag + bgx)^3 (ci + dix) \left(A + B \ln \left(\frac{e(a + bx)}{c + dx} \right) \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a*g + b*g*x)^3*(c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x)))^2,x)

[Out] int((a*g + b*g*x)^3*(c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x)))^2, x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)**3*(d*i*x+c*i)*(A+B*ln(e*(b*x+a)/(d*x+c)))**2,x)

[Out] Timed out

$$3.56 \quad \int (ag + bgx)^2 (ci + dix) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 dx$$

Optimal. Leaf size=450

$$\frac{Bg^2i(bc - ad)^4 \log \left(\frac{bc-ad}{b(c+dx)} \right) \left(2B \log \left(\frac{e(a+bx)}{c+dx} \right) + 2A + 3B \right)}{12b^2d^3} + \frac{Bg^2i(a + bx)(bc - ad)^3 \left(2B \log \left(\frac{e(a+bx)}{c+dx} \right) + 2A + B \right)}{12b^2d^2}$$

[Out] $-1/3*B^2*(-a*d+b*c)^3*g^2*i*x/b/d^2+1/12*B^2*(-a*d+b*c)^2*g^2*i*(d*x+c)^2/d^3-1/12*B*(-a*d+b*c)^2*g^2*i*(b*x+a)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^2/d-1/6*B*(-a*d+b*c)*g^2*i*(b*x+a)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^2+1/12*(-a*d+b*c)*g^2*i*(b*x+a)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/b^2+1/4*g^2*i*(b*x+a)^3*(d*x+c)*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/b+1/12*B*(-a*d+b*c)^3*g^2*i*(b*x+a)*(2*A+B+2*B*\ln(e*(b*x+a)/(d*x+c)))/b^2/d^2+1/12*B*(-a*d+b*c)^4*g^2*i*\ln((-a*d+b*c)/b/(d*x+c))*(2*A+3*B+2*B*\ln(e*(b*x+a)/(d*x+c)))/b^2/d^3+1/6*B^2*(-a*d+b*c)^4*g^2*i*\ln(d*x+c)/b^2/d^3+1/6*B^2*(-a*d+b*c)^4*g^2*i*polylog(2,d*(b*x+a)/b/(d*x+c))/b^2/d^3$

Rubi [A] time = 1.49, antiderivative size = 537, normalized size of antiderivative = 1.19, number of steps used = 46, number of rules used = 13, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.325$, Rules used = {2528, 2525, 12, 2486, 31, 43, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$\frac{B^2g^2i(bc - ad)^4 \text{PolyLog} \left(2, \frac{b(c+dx)}{bc-ad} \right)}{6b^2d^3} - \frac{Bg^2i(bc - ad)^4 \log(c + dx) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{6b^2d^3} - \frac{Bg^2i(a + bx)^2(bc - ad)^2}{12b^2}$$

Antiderivative was successfully verified.

[In] $\text{Int}[(a*g + b*g*x)^2*(c*i + d*i*x)*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)])^2,x]$

[Out] $(A*B*(b*c - a*d)^3*g^2*i*x)/(6*b*d^2) - (B^2*(b*c - a*d)^3*g^2*i*x)/(12*b*d^2) + (B^2*(b*c - a*d)^2*g^2*i*(a + b*x)^2)/(12*b^2*d) + (B^2*(b*c - a*d)^3*g^2*i*(a + b*x)*\text{Log}[(e*(a + b*x))/(c + d*x)])/(6*b^2*d^2) - (B*(b*c - a*d)^2*g^2*i*(a + b*x)^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(12*b^2*d) - (B*(b*c - a*d)*g^2*i*(a + b*x)^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(6*b^2) + ((b*c - a*d)*g^2*i*(a + b*x)^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)])^2)/(3*b^2) + (d*g^2*i*(a + b*x)^4*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)])^2)/(4*b^2) - (B^2*(b*c - a*d)^4*g^2*i*\text{Log}[c + d*x])/(12*b^2*d^3) + (B^2*(b*c - a*d)^4*g^2*i*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c + d*x])/(6*b^2*d^3) - (B*(b*c - a*d)^4*g^2*i*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)])*\text{Log}[c + d*x])/(6*b^2*d^3) - (B^2*(b*c - a*d)^4*g^2*i*\text{Log}[c + d*x]^2)/(12*b^2*d^3) + (B^2*(b*c - a*d)^4*g^2*i*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/(6*b^2*d^3)$

Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^-1, x_Symbol] := Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && (!IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]/(x_), x_Symbol] := -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e^n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
```

, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2418

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]

Rule 2486

Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]

Rule 2524

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]

Rule 2525

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]

Rule 2528

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]

Rubi steps

$$\begin{aligned}
\int (56c + 56dx)(ag + bgx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 dx &= \int \left(\frac{56(bc - ad)(ag + bgx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b} + \dots \right) dx \\
&= \frac{(56(bc - ad)) \int (ag + bgx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 dx}{b} \\
&= \frac{56(bc - ad)g^2(a + bx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{3b^2} + \frac{14dg^2}{3b^2} \\
&= \frac{56(bc - ad)g^2(a + bx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{3b^2} + \frac{14dg^2}{3b^2} \\
&= \frac{56(bc - ad)g^2(a + bx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{3b^2} + \frac{14dg^2}{3b^2} \\
&= \frac{56(bc - ad)g^2(a + bx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{3b^2} + \frac{14dg^2}{3b^2} \\
&= \frac{28AB(bc - ad)^3 g^2 x}{3bd^2} - \frac{14B(bc - ad)^2 g^2 (a + bx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{3b^2 d} \\
&= \frac{28AB(bc - ad)^3 g^2 x}{3bd^2} + \frac{28B^2(bc - ad)^3 g^2 (a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{3b^2 d^2} \\
&= \frac{28AB(bc - ad)^3 g^2 x}{3bd^2} + \frac{28B^2(bc - ad)^3 g^2 (a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{3b^2 d^2} \\
&= \frac{28AB(bc - ad)^3 g^2 x}{3bd^2} - \frac{14B^2(bc - ad)^3 g^2 x}{3bd^2} + \frac{14B^2(bc - ad)^3 g^2 x}{3bd^2} \\
&= \frac{28AB(bc - ad)^3 g^2 x}{3bd^2} - \frac{14B^2(bc - ad)^3 g^2 x}{3bd^2} + \frac{14B^2(bc - ad)^3 g^2 x}{3bd^2} \\
&= \frac{28AB(bc - ad)^3 g^2 x}{3bd^2} - \frac{14B^2(bc - ad)^3 g^2 x}{3bd^2} + \frac{14B^2(bc - ad)^3 g^2 x}{3bd^2} \\
&= \frac{28AB(bc - ad)^3 g^2 x}{3bd^2} - \frac{14B^2(bc - ad)^3 g^2 x}{3bd^2} + \frac{14B^2(bc - ad)^3 g^2 x}{3bd^2}
\end{aligned}$$

Mathematica [A] time = 0.54, size = 680, normalized size = 1.51

$$g^2 i \left(\frac{4B(bc-ad)^2 \left(-d^2(a+bx)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right) - 2(bc-ad)^2 \log(c+dx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right) + 2Abdx(bc-ad) + 2Bd(a+bx)(bc-ad) \log\left(\frac{e(a+bx)}{c+dx}\right) + B(bc-ad)^2 \right)}{d^3} \right)$$

Antiderivative was successfully verified.

[In] Integrate[(a*g + b*g*x)^2*(c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2,x]

[Out] (g^2*i*(4*(b*c - a*d)*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2 + 3*d*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2 + (4*B*(b*c - a*d)^2*(2*A*b*d*(b*c - a*d)*x + 2*B*d*(b*c - a*d)*(a + b*x)*Log[(e*(a + b*x))/(c + d*x]) - d^2*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x])) - 2*B*(b*c - a*d)^2*Log[c + d*x] - 2*(b*c - a*d)^2*(A + B*Log[(e*(a + b*x))/(c + d*x]))*Log[c + d*x] + B*(b*c - a*d)*(b*d*x + (-b*c) + a*d)*Log[c + d*x]) + B*(b*c - a*d)^2*((2*Log[(d*(a + b*x))/(-b*c) + a*d]) - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/d^3 - (B*(b*c - a*d)*(6*A*b*d*(b*c - a*d)^2*x + 6*B*d*(b*c - a*d)^2*(a + b*x)*Log[(e*(a + b*x))/(c + d*x]) + 3*d^2*(-b*c) + a*d)*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x])) + 2*d^3*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x])) - 6*B*(b*c - a*d)^3*Log[c + d*x] - 6*(b*c - a*d)^3*(A + B*Log[(e*(a + b*x))/(c + d*x]))*Log[c + d*x] + B*(b*c - a*d)*(2*b*d*(b*c - a*d)*x - d^2*(a + b*x)^2 - 2*(b*c - a*d)^2*Log[c + d*x]) + 3*B*(b*c - a*d)^2*(b*d*x + (-b*c) + a*d)*Log[c + d*x]) + 3*B*(b*c - a*d)^3*((2*Log[(d*(a + b*x))/(-b*c) + a*d]) - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/d^3)/(12*b^2)

fricas [F] time = 0.94, size = 0, normalized size = 0.00

$$\text{integral} \left(A^2 b^2 d g^2 i x^3 + A^2 a^2 c g^2 i + (A^2 b^2 c + 2 A^2 a b d) g^2 i x^2 + (2 A^2 a b c + A^2 a^2 d) g^2 i x + (B^2 b^2 d g^2 i x^3 + B^2 a^2 c g^2 i) \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorithm="fricas")

[Out] integral(A^2*b^2*d*g^2*i*x^3 + A^2*a^2*c*g^2*i + (A^2*b^2*c + 2*A^2*a*b*d)*g^2*i*x^2 + (2*A^2*a*b*c + A^2*a^2*d)*g^2*i*x + (B^2*b^2*d*g^2*i*x^3 + B^2*a^2*c*g^2*i + (B^2*b^2*c + 2*B^2*a*b*d)*g^2*i*x^2 + (2*B^2*a*b*c + B^2*a^2*d)*g^2*i*x)*log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*B*b^2*d*g^2*i*x^3 + A*B*a^2*c*g^2*i + (A*B*b^2*c + 2*A*B*a*b*d)*g^2*i*x^2 + (2*A*B*a*b*c + A*B*a^2*d)*g^2*i*x)*log((b*e*x + a*e)/(d*x + c)), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorithm="giac")

[Out] Timed out

maple [F] time = 2.09, size = 0, normalized size = 0.00

$$\int (bgx + ag)^2 (dix + ci) \left(B \ln \left(\frac{(bx + a)e}{dx + c} \right) + A \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)^2*(d*i*x+c*i)*(B*ln((b*x+a)/(d*x+c)*e)+A)^2,x)

[Out] int((b*g*x+a*g)^2*(d*i*x+c*i)*(B*ln((b*x+a)/(d*x+c)*e)+A)^2,x)

maxima [B] time = 2.24, size = 2243, normalized size = 4.98

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorithm="maxima")

[Out] 1/4*A^2*b^2*d*g^2*i*x^4 + 1/3*A^2*b^2*c*g^2*i*x^3 + 2/3*A^2*a*b*d*g^2*i*x^3 + A^2*a*b*c*g^2*i*x^2 + 1/2*A^2*a^2*d*g^2*i*x^2 + 2*(x*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + a*log(b*x + a)/b - c*log(d*x + c)/d)*A*B*a^2*c*g^2*i + 2*(x^2*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - a^2*log(b*x + a)/b^2 + c^2*log(d*x + c)/d^2 - (b*c - a*d)*x/(b*d))*A*B*a*b*c*g^2*i + 1/3*(2*x^3*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*A*B*b^2*c*g^2*i + (x^2*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - a^2*log(b*x + a)/b^2 + c^2*log(d*x + c)/d^2 - (b*c - a*d)*x/(b*d))*A*B*a^2*d*g^2*i + 2/3*(2*x^3*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*A*B*a*b*d*g^2*i + 1/12*(6*x^4*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 6*a^4*log(b*x + a)/b^4 + 6*c^4*log(d*x + c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*A*B*b^2*d*g^2*i + A^2*a^2*c*g^2*i*x - 1/12*(2*a^3*c*d^3*g^2*i + (2*g^2*i*log

```
(e) + g^2*i)*b^3*c^4 - 2*(4*g^2*i*log(e) + g^2*i)*a*b^2*c^3*d + (12*g^2*i*log(e) - g^2*i)*a^2*b*c^2*d^2)*B^2*log(d*x + c)/(b*d^3) - 1/6*(b^4*c^4*g^2*i - 4*a*b^3*c^3*d*g^2*i + 6*a^2*b^2*c^2*d^2*g^2*i - 4*a^3*b*c*d^3*g^2*i + a^4*d^4*g^2*i)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d)))*B^2/(b^2*d^3) + 1/12*(3*B^2*b^4*d^4*g^2*i*x^4*log(e)^2 + 2*((2*g^2*i*log(e)^2 - g^2*i*log(e))*b^4*c*d^3 + (4*g^2*i*log(e)^2 + g^2*i*log(e))*a*b^3*d^4)*B^2*x^3 - ((g^2*i*log(e) - g^2*i)*b^4*c^2*d^2 - 2*(6*g^2*i*log(e)^2 - 2*g^2*i*log(e) - g^2*i)*a*b^3*c*d^3 - (6*g^2*i*log(e)^2 + 5*g^2*i*log(e) + g^2*i)*a^2*b^2*d^4)*B^2*x^2 + ((2*g^2*i*log(e) - g^2*i)*b^4*c^3*d - (8*g^2*i*log(e) - 5*g^2*i)*a*b^3*c^2*d^2 + (12*g^2*i*log(e)^2 + 4*g^2*i*log(e) - 7*g^2*i)*a^2*b^2*c*d^3 + (2*g^2*i*log(e) + 3*g^2*i)*a^3*b*d^4)*B^2*x + (3*B^2*b^4*d^4*g^2*i*x^4 + 12*B^2*a^2*b^2*c*d^3*g^2*i*x + 4*(b^4*c*d^3*g^2*i + 2*a*b^3*d^4*g^2*i)*B^2*x^3 + 6*(2*a*b^3*c*d^3*g^2*i + a^2*b^2*d^4*g^2*i)*B^2*x^2 + (4*a^3*b*c*d^3*g^2*i - a^4*d^4*g^2*i)*B^2)*log(b*x + a)^2 + (3*B^2*b^4*d^4*g^2*i*x^4 + 12*B^2*a^2*b^2*c*d^3*g^2*i*x + 4*(b^4*c*d^3*g^2*i + 2*a*b^3*d^4*g^2*i)*B^2*x^3 + 6*(2*a*b^3*c*d^3*g^2*i + a^2*b^2*d^4*g^2*i)*B^2*x^2 + (b^4*c^4*g^2*i - 4*a*b^3*c^3*d*g^2*i + 6*a^2*b^2*c^2*d^2*g^2*i)*B^2)*log(d*x + c)^2 + (6*B^2*b^4*d^4*g^2*i*x^4*log(e) + 2*((4*g^2*i*log(e) - g^2*i)*b^4*c*d^3 + (8*g^2*i*log(e) + g^2*i)*a*b^3*d^4)*B^2*x^3 - (b^4*c^2*d^2*g^2*i - 4*(6*g^2*i*log(e) - g^2*i)*a*b^3*c*d^3 - (12*g^2*i*log(e) + 5*g^2*i)*a^2*b^2*d^4)*B^2*x^2 + 2*(b^4*c^3*d*g^2*i - 4*a*b^3*c^2*d^2*g^2*i + a^3*b*d^4*g^2*i + 2*(6*g^2*i*log(e) + g^2*i)*a^2*b^2*c*d^3)*B^2*x + (2*a*b^3*c^3*d*g^2*i - 7*a^2*b^2*c^2*d^2*g^2*i + 2*(4*g^2*i*log(e) + 3*g^2*i)*a^3*b*c*d^3 - (2*g^2*i*log(e) + g^2*i)*a^4*d^4)*B^2)*log(b*x + a) - (6*B^2*b^4*d^4*g^2*i*x^4*log(e) + 2*((4*g^2*i*log(e) - g^2*i)*b^4*c*d^3 + (8*g^2*i*log(e) + g^2*i)*a*b^3*d^4)*B^2*x^3 - (b^4*c^2*d^2*g^2*i - 4*(6*g^2*i*log(e) - g^2*i)*a*b^3*c*d^3 - (12*g^2*i*log(e) + 5*g^2*i)*a^2*b^2*d^4)*B^2*x^2 + 2*(b^4*c^3*d*g^2*i - 4*a*b^3*c^2*d^2*g^2*i + a^3*b*d^4*g^2*i + 2*(6*g^2*i*log(e) + g^2*i)*a^2*b^2*c*d^3)*B^2*x + 2*(3*B^2*b^4*d^4*g^2*i*x^4 + 12*B^2*a^2*b^2*c*d^3*g^2*i*x + 4*(b^4*c*d^3*g^2*i + 2*a*b^3*d^4*g^2*i)*B^2*x^3 + 6*(2*a*b^3*c*d^3*g^2*i + a^2*b^2*d^4*g^2*i)*B^2*x^2 + (4*a^3*b*c*d^3*g^2*i - a^4*d^4*g^2*i)*B^2)*log(b*x + a))*log(d*x + c))/(b^2*d^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (ag + bgx)^2 (ci + dix) \left(A + B \ln \left(\frac{e(a + bx)}{c + dx} \right) \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a*g + b*g*x)^2*(c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x)))^2,x)

[Out] int((a*g + b*g*x)^2*(c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x)))^2, x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**2*(d*i*x+c*i)*(A+B*ln(e*(b*x+a)/(d*x+c)))**2,x)
```

```
[Out] Timed out
```

$$3.57 \quad \int (ag + bgx)(ci + dix) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 dx$$

Optimal. Leaf size=343

$$\frac{Bgi(bc - ad)^3 \log \left(\frac{bc-ad}{b(c+dx)} \right) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A + B \right)}{3b^2d^2} - \frac{Bgi(a + bx)(bc - ad)^2 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{3b^2d} + \frac{gi(a + bx)^2}{3b^2d}$$

[Out] $\frac{1}{3}B^2(-a*d+b*c)^2*g*i*x/b/d - \frac{1}{3}B*(-a*d+b*c)^2*g*i*(b*x+a)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^2/d - \frac{1}{3}B*(-a*d+b*c)*g*i*(b*x+a)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^2 + \frac{1}{6}*(-a*d+b*c)*g*i*(b*x+a)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/b^2 + \frac{1}{3}g*i*(b*x+a)^2*(d*x+c)*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/b - \frac{1}{3}B*(-a*d+b*c)^3*g*i*\ln((-a*d+b*c)/b/(d*x+c))*(A+B*B*\ln(e*(b*x+a)/(d*x+c)))/b^2/d^2 - \frac{1}{3}B^2*(-a*d+b*c)^3*g*i*\ln(d*x+c)/b^2/d^2 - \frac{1}{3}B^2*(-a*d+b*c)^3*g*i*\text{polylog}(2, d*(b*x+a)/b/(d*x+c))/b^2/d^2$

Rubi [B] time = 2.82, antiderivative size = 1214, normalized size of antiderivative = 3.54, number of steps used = 78, number of rules used = 14, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}} = 0.368$, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 2486, 31, 72}

$$\frac{B^2dgi \log^2(a + bx)a^3}{3b^2} + \frac{2Bdgi \log(a + bx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) a^3}{3b^2} + \frac{2B^2dgi \log(a + bx) \log \left(\frac{b(c+dx)}{bc-ad} \right) a^3}{3b^2} + \frac{2B^2dgi}{3b^2}$$

Antiderivative was successfully verified.

[In] Int[(a*g + b*g*x)*(c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2,x]

[Out] $(-2*A*b*B*(a^2/b^2 - c^2/d^2)*d*g*i*x)/3 + (B^2*(b*c - a*d)^2*g*i*x)/(3*b*d) - (A*B*(b*c - a*d)*(b*c + a*d)*g*i*x)/(b*d) + (a^2*B^2*(b*c - a*d)*g*i*Log[a + b*x])/(3*b^2) - (a^2*B^2*c*g*i*Log[a + b*x]^2)/b - (a^3*B^2*d*g*i*Log[a + b*x]^2)/(3*b^2) + (a^2*B^2*(b*c + a*d)*g*i*Log[a + b*x]^2)/(2*b^2) - (B^2*(b*c - a*d)*(b*c + a*d)*g*i*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)])/(3*b^2*d) - (B*(b*c - a*d)*g*i*x^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/3 + (2*a^2*B*c*g*i*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/b + (2*a^3*B*d*g*i*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/3 - (a^2*B*(b*c + a*d)*g*i*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/b^2 + a*c*g*i*x*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 + ((b*c + a*d)*g*i*x^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/2 + (b*d*g*i*x^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/3 - (B^2*c^2*(b*c - a*d)*g*i*Log[c + d*x])/(3*d^2) + (B^2*(b*c - a*d)^2*(b*c + a*d)*g*i*Log[c + d*x])/(3*b^2*d^2) + (2*b*B^2*c^3*g*i*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(3*d^2) + (2*a*B^2*c^2*g*i*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/d - (B^2*c^2*(b*c + a*d)*$

$$g*i*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/d^2 - (2*b*B*c^3*g*i*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/(3*d^2) - (2*a*B*c^2*g*i*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/d + (B*c^2*(b*c + a*d)*g*i*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/d^2 - (b*B^2*c^3*g*i*Log[c + d*x]^2)/(3*d^2) - (a*B^2*c^2*g*i*Log[c + d*x]^2)/d + (B^2*c^2*(b*c + a*d)*g*i*Log[c + d*x]^2)/(2*d^2) + (2*a^2*B^2*c*g*i*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)]/b + (2*a^3*B^2*d*g*i*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(3*b^2) - (a^2*B^2*(b*c + a*d)*g*i*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)]/b^2 + (2*a^2*B^2*c*g*i*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/b + (2*a^3*B^2*d*g*i*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/ (3*b^2) - (a^2*B^2*(b*c + a*d)*g*i*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/b^2 + (2*b*B^2*c^3*g*i*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]/(3*d^2) + (2*a*B^2*c^2*g*i*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]/d - (B^2*c^2*(b*c + a*d)*g*i*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]/d^2$$
Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^-1, x_Symbol] := Simp[Log[RemoveContent[a + b*x, x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 72

```
Int[((e_.) + (f_.)*(x_))^(p_.)/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] := Int[ExpandIntegrand[(e + f*x)^p/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IntegerQ[p]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_)^(p_.))*((c_.) + (d_.)*(x_)^(q_.))^(r_.))^(s_.), x_Symbol] := Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2523

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] := Simp[x*(a + b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
```

FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int (57c + 57dx)(ag + bgx) \left(A + B \log \left(\frac{e(a + bx)}{c + dx} \right) \right)^2 dx &= \int \left(57acg \left(A + B \log \left(\frac{e(a + bx)}{c + dx} \right) \right)^2 + 57(bc + ad)gx \right. \\
&= (57acg) \int \left(A + B \log \left(\frac{e(a + bx)}{c + dx} \right) \right)^2 dx + (57bdg) \int \left(A + B \log \left(\frac{e(a + bx)}{c + dx} \right) \right)^2 dx \\
&= 57acgx \left(A + B \log \left(\frac{e(a + bx)}{c + dx} \right) \right)^2 + \frac{57}{2}(bc + ad)gx^2 \left(A + B \log \left(\frac{e(a + bx)}{c + dx} \right) \right)^2 \\
&= 57acgx \left(A + B \log \left(\frac{e(a + bx)}{c + dx} \right) \right)^2 + \frac{57}{2}(bc + ad)gx^2 \left(A + B \log \left(\frac{e(a + bx)}{c + dx} \right) \right)^2 \\
&= 57acgx \left(A + B \log \left(\frac{e(a + bx)}{c + dx} \right) \right)^2 + \frac{57}{2}(bc + ad)gx^2 \left(A + B \log \left(\frac{e(a + bx)}{c + dx} \right) \right)^2 \\
&= 57acgx \left(A + B \log \left(\frac{e(a + bx)}{c + dx} \right) \right)^2 + \frac{57}{2}(bc + ad)gx^2 \left(A + B \log \left(\frac{e(a + bx)}{c + dx} \right) \right)^2 \\
&= -\frac{19AB(bc - ad)(bc + ad)gx}{bd} - 19B(bc - ad)gx^2 \left(A + B \log \left(\frac{e(a + bx)}{c + dx} \right) \right)^2 \\
&= -\frac{19AB(bc - ad)(bc + ad)gx}{bd} - \frac{19B^2(bc - ad)(bc + ad)gx^2}{bd} \left(A + B \log \left(\frac{e(a + bx)}{c + dx} \right) \right)^2 \\
&= -\frac{19AB(bc - ad)(bc + ad)gx}{bd} - \frac{19B^2(bc - ad)(bc + ad)gx^2}{bd} \left(A + B \log \left(\frac{e(a + bx)}{c + dx} \right) \right)^2 \\
&= \frac{19B^2(bc - ad)^2gx}{bd} - \frac{19AB(bc - ad)(bc + ad)gx}{bd} + \frac{19A^2(bc - ad)gx^2}{bd} \\
&= \frac{19B^2(bc - ad)^2gx}{bd} - \frac{19AB(bc - ad)(bc + ad)gx}{bd} + \frac{19A^2(bc - ad)gx^2}{bd} \\
&= \frac{19B^2(bc - ad)^2gx}{bd} - \frac{19AB(bc - ad)(bc + ad)gx}{bd} + \frac{19A^2(bc - ad)gx^2}{bd} \\
&= \frac{19B^2(bc - ad)^2gx}{bd} - \frac{19AB(bc - ad)(bc + ad)gx}{bd} + \frac{19A^2(bc - ad)gx^2}{bd}
\end{aligned}$$

Mathematica [B] time = 0.73, size = 869, normalized size = 2.53

$$gi\left(2b^3B\left(A + B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)\log(c+dx)c^3 - b^3B^2\left(\left(2\log\left(\frac{d(a+bx)}{ad-bc}\right) - \log(c+dx)\right)\log(c+dx) + 2\text{Li}_2\left(\frac{b(c+dx)}{bc-ad}\right)\right)\right)$$

Antiderivative was successfully verified.

[In] Integrate[(a*g + b*g*x)*(c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2, x]

[Out] (g*i*(-6*A*b^2*B*c*d*(b*c - a*d)*x + 6*a*A*b*B*d^2*(-(b*c) + a*d)*x + 4*A*b*B*d*(b*c - a*d)*(b*c + a*d)*x - 6*b*B^2*c*d*(b*c - a*d)*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)] + 6*a*B^2*d^2*(-(b*c) + a*d)*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)] + 4*B^2*d*(b*c - a*d)*(b*c + a*d)*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)] - 2*b^2*B*d^2*(b*c - a*d)*x^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 6*a^2*b*B*c*d^2*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 2*a^3*B*d^3*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 6*a*b^2*c*d^2*x*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 + 3*b^2*d^2*(b*c + a*d)*x^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 + 2*b^3*d^3*x^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 + 6*b*B^2*c*(b*c - a*d)^2*Log[c + d*x] + 6*a*B^2*d*(b*c - a*d)^2*Log[c + d*x] - 4*B^2*(b*c - a*d)^2*(b*c + a*d)*Log[c + d*x] + 2*b^3*B*c^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x] - 6*a*b^2*B*c^2*d*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x] + 2*B^2*(b*c - a*d)*(a^2*d^2*Log[a + b*x] - b*(d*(-(b*c) + a*d)*x + b*c^2*Log[c + d*x])) - 3*a^2*b*B^2*c*d^2*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + a^3*B^2*d^3*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) - b^3*B^2*c^3*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]) + 3*a*b^2*B^2*c^2*d*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(6*b^2*d^2)

fricas [F] time = 0.93, size = 0, normalized size = 0.00

$$\text{integral}\left(A^2bdgix^2 + A^2acgi + (A^2bc + A^2ad)gix + (B^2bdgix^2 + B^2acgi + (B^2bc + B^2ad)gix)\log\left(\frac{bex + ae}{dx + c}\right)^2 + \dots\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorithm="fricas")

[Out] integral(A^2*b*d*g*i*x^2 + A^2*a*c*g*i + (A^2*b*c + A^2*a*d)*g*i*x + (B^2*b*d*g*i*x^2 + B^2*a*c*g*i + (B^2*b*c + B^2*a*d)*g*i*x)*log((b*e*x + a*e)/(d*

$x + c)^2 + 2*(A*B*b*d*g*i*x^2 + A*B*a*c*g*i + (A*B*b*c + A*B*a*d)*g*i*x)*\log((b*e*x + a*e)/(d*x + c)), x)$

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorithm="giac")

[Out] Timed out

maple [F] time = 1.82, size = 0, normalized size = 0.00

$$\int (bgx + ag)(dix + ci) \left(B \ln \left(\frac{(bx + a)e}{dx + c} \right) + A \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)*(d*i*x+c*i)*(B*ln((b*x+a)/(d*x+c)*e)+A)^2,x)

[Out] int((b*g*x+a*g)*(d*i*x+c*i)*(B*ln((b*x+a)/(d*x+c)*e)+A)^2,x)

maxima [B] time = 2.17, size = 1252, normalized size = 3.65

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorithm="maxima")

[Out] $\frac{1}{3}A^2b*d*g*i*x^3 + \frac{1}{2}A^2b*c*g*i*x^2 + \frac{1}{2}A^2a*d*g*i*x^2 + 2*(x*\log(b*e*x/(d*x + c) + a*e/(d*x + c)) + a*\log(b*x + a)/b - c*\log(d*x + c)/d)*A*B*a*c*g*i + (x^2*\log(b*e*x/(d*x + c) + a*e/(d*x + c)) - a^2*\log(b*x + a)/b^2 + c^2*\log(d*x + c)/d^2 - (b*c - a*d)*x/(b*d))*A*B*b*c*g*i + (x^2*\log(b*e*x/(d*x + c) + a*e/(d*x + c)) - a^2*\log(b*x + a)/b^2 + c^2*\log(d*x + c)/d^2 - (b*c - a*d)*x/(b*d))*A*B*a*d*g*i + \frac{1}{3}*(2*x^3*\log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 2*a^3*\log(b*x + a)/b^3 - 2*c^3*\log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*A*B*b*d*g*i + A^2*a*c*g*i*x + \frac{1}{3}*(b^2*c^3*g*i*\log(e) - a^2*c*d^2*g*i - (3*g*i*\log(e) - g*i)*a*b*c^2*d)*B^2*\log(d*x + c)/(b*d^2) + \frac{1}{3}*(b^3*c^3*g*i - 3*a*b^2*c^2*d*g*i + 3*a^2*b*c*d^2*g*i - a^3*d^3*g*i)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + \operatorname{dilog}(-(b*d*x + a*d)/(b*c - a*d)))*B^2/(b^2*d^2) + \frac{1}{6}*(2*B^2*b^3*d^3*g*i*x^3*\log(e)^2 + ((3*g*i*\log(e)^2 - 2*g*i*\log(e))*b^3*c*d^2 + (3*g*i*\log(e)$

$$\begin{aligned} &^2 + 2*g*i*log(e))*a*b^2*d^3)*B^2*x^2 - 2*((g*i*log(e) - g*i)*b^3*c^2*d - (\\ &3*g*i*log(e)^2 - 2*g*i)*a*b^2*c*d^2 - (g*i*log(e) + g*i)*a^2*b*d^3)*B^2*x + \\ &(2*B^2*b^3*d^3*g*i*x^3 + 6*B^2*a*b^2*c*d^2*g*i*x + 3*(b^3*c*d^2*g*i + a*b^ \\ &2*d^3*g*i)*B^2*x^2 + (3*a^2*b*c*d^2*g*i - a^3*d^3*g*i)*B^2)*log(b*x + a)^2 \\ &+ (2*B^2*b^3*d^3*g*i*x^3 + 6*B^2*a*b^2*c*d^2*g*i*x + 3*(b^3*c*d^2*g*i + a*b \\ &^2*d^3*g*i)*B^2*x^2 - (b^3*c^3*g*i - 3*a*b^2*c^2*d*g*i)*B^2)*log(d*x + c)^2 \\ &+ 2*(2*B^2*b^3*d^3*g*i*x^3*log(e) + ((3*g*i*log(e) - g*i)*b^3*c*d^2 + (3*g \\ &i*log(e) + g*i)*a*b^2*d^3)*B^2*x^2 + (6*a*b^2*c*d^2*g*i*log(e) - b^3*c^2*d \\ &*g*i + a^2*b*d^3*g*i)*B^2*x - (a^3*d^3*g*i*log(e) + a*b^2*c^2*d*g*i - (3*g* \\ &i*log(e) + g*i)*a^2*b*c*d^2)*B^2)*log(b*x + a) - 2*(2*B^2*b^3*d^3*g*i*x^3*l \\ &og(e) + ((3*g*i*log(e) - g*i)*b^3*c*d^2 + (3*g*i*log(e) + g*i)*a*b^2*d^3)*B \\ &^2*x^2 + (6*a*b^2*c*d^2*g*i*log(e) - b^3*c^2*d*g*i + a^2*b*d^3*g*i)*B^2*x + \\ &(2*B^2*b^3*d^3*g*i*x^3 + 6*B^2*a*b^2*c*d^2*g*i*x + 3*(b^3*c*d^2*g*i + a*b^ \\ &2*d^3*g*i)*B^2*x^2 + (3*a^2*b*c*d^2*g*i - a^3*d^3*g*i)*B^2)*log(b*x + a))*l \\ &og(d*x + c))/(b^2*d^2) \end{aligned}$$

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (ag + bgx)(ci + dix) \left(A + B \ln \left(\frac{e(a + bx)}{c + dx} \right) \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a*g + b*g*x)*(c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x)))^2,x)

[Out] int((a*g + b*g*x)*(c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x)))^2, x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(d*i*x+c*i)*(A+B*ln(e*(b*x+a)/(d*x+c)))**2,x)

[Out] Timed out

$$3.58 \quad \int (ci + dix) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 dx$$

Optimal. Leaf size=203

$$\frac{Bi(bc - ad)^2 \log \left(1 - \frac{b(c+dx)}{d(a+bx)} \right) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{b^2 d} - \frac{Bi(a + bx)(bc - ad) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{b^2} + \frac{i(c + dx)^2 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)^2}{2d}$$

[Out] $-B*(-a*d+b*c)*i*(b*x+a)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^2+1/2*i*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/d+B^2*(-a*d+b*c)^2*i*\ln(d*x+c)/b^2/d+B*(-a*d+b*c)^2*i*(A+B*\ln(e*(b*x+a)/(d*x+c)))*\ln(1-b*(d*x+c)/d/(b*x+a))/b^2/d-B^2*(-a*d+b*c)^2*i*polylog(2,b*(d*x+c)/d/(b*x+a))/b^2/d$

Rubi [A] time = 0.43, antiderivative size = 283, normalized size of antiderivative = 1.39, number of steps used = 16, number of rules used = 12, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.400$, Rules used = {2525, 12, 2528, 2486, 31, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{B^2 i(bc - ad)^2 \text{PolyLog} \left(2, -\frac{d(a+bx)}{bc-ad} \right)}{b^2 d} - \frac{Bi(bc - ad)^2 \log(a + bx) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{b^2 d} + \frac{i(c + dx)^2 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)^2}{2d}$$

Antiderivative was successfully verified.

[In] $\text{Int}[(c*i + d*i*x)*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]])^2, x]$

[Out] $-((A*B*(b*c - a*d)*i*x)/b) + (B^2*(b*c - a*d)^2*i*\text{Log}[a + b*x]^2)/(2*b^2*d) - (B^2*(b*c - a*d)*i*(a + b*x)*\text{Log}[(e*(a + b*x))/(c + d*x)]/b^2 - (B*(b*c - a*d)^2*i*\text{Log}[a + b*x]*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]]))/b^2*d) + (i*(c + d*x)^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]])^2)/(2*d) + (B^2*(b*c - a*d)^2*i*\text{Log}[c + d*x])/b^2*d - (B^2*(b*c - a*d)^2*i*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)]/b^2*d) - (B^2*(b*c - a*d)^2*i*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))]/b^2*d)$

Rule 12

$\text{Int}[(a_)*(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \&\& \text{!MatchQ}[u, (b_)*(v_)] /; \text{FreeQ}[b, x]$

Rule 31

$\text{Int}[(a_ + (b_)*(x_))^{-1}, x_Symbol] \rightarrow \text{Simp}[\text{Log}[\text{RemoveContent}[a + b*x, x]]/b, x] /; \text{FreeQ}[\{a, b\}, x]$

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*((f_) + (g_.)*(x_)^(q_.)), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_)^(p_.))*((c_.) + (d_.)*(x_)^(q_.))^(r_.)]^(s_.), x_Symbol] := Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r)^s/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol]
:> Simp[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol]
:> With[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int (58c + 58dx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 dx &= \frac{29(c+dx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{d} - \frac{B \int \frac{3364(bc-ad)(c+dx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{a+bx}}{58d} \\
&= \frac{29(c+dx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{d} - \frac{(58B(bc-ad)) \int \frac{(c+dx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{a+bx}}{d} \\
&= \frac{29(c+dx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{d} - \frac{(58B(bc-ad)) \int \left(\frac{d \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b} \right)}{d} \\
&= \frac{29(c+dx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{d} - \frac{(58B(bc-ad)) \int \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b} \\
&= -\frac{58AB(bc-ad)x}{b} - \frac{58B(bc-ad)^2 \log(a+bx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2 d} \\
&= -\frac{58AB(bc-ad)x}{b} - \frac{58B^2(bc-ad)(a+bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{b^2} - \frac{58B(bc-ad)}{b^2} \\
&= -\frac{58AB(bc-ad)x}{b} - \frac{58B^2(bc-ad)(a+bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{b^2} - \frac{58B(bc-ad)}{b^2} \\
&= -\frac{58AB(bc-ad)x}{b} - \frac{58B^2(bc-ad)(a+bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{b^2} - \frac{58B(bc-ad)}{b^2} \\
&= -\frac{58AB(bc-ad)x}{b} - \frac{58B^2(bc-ad)(a+bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{b^2} - \frac{58B(bc-ad)}{b^2} \\
&= -\frac{58AB(bc-ad)x}{b} + \frac{29B^2(bc-ad)^2 \log^2(a+bx)}{b^2 d} - \frac{58B^2(bc-ad)}{b^2} \\
&= -\frac{58AB(bc-ad)x}{b} + \frac{29B^2(bc-ad)^2 \log^2(a+bx)}{b^2 d} - \frac{58B^2(bc-ad)}{b^2}
\end{aligned}$$

Mathematica [A] time = 0.20, size = 205, normalized size = 1.01

$$i \left((c+dx)^2 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right) \right)^2 - \frac{B(bc-ad) \left(2(bc-ad) \log(a+bx) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + B \log \left(\frac{b(c+dx)}{bc-ad} \right) + A \right) + 2 \left(Bd(a+bx) \log \left(\frac{e(a+bx)}{c+dx} \right) + \log(c+dx) \right) \right)}{b^2}$$

Antiderivative was successfully verified.

[In] Integrate[(c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2,x]

[Out] (i*((c + d*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 - (B*(b*c - a*d)*((- (b*B*c) + a*B*d)*Log[a + b*x]^2 + 2*(A*b*d*x + B*d*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)] + (- (b*B*c) + a*B*d)*Log[c + d*x]) + 2*(b*c - a*d)*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)] + B*Log[(b*(c + d*x))/(b*c - a*d)])) + 2*B*(b*c - a*d)*PolyLog[2, (d*(a + b*x))/(- (b*c) + a*d)]))/b^2)/(2*d)

fricas [F] time = 0.72, size = 0, normalized size = 0.00

$$\text{integral}\left(A^2dix + A^2ci + (B^2dix + B^2ci)\log\left(\frac{bex + ae}{dx + c}\right)^2 + 2(ABdix + ABci)\log\left(\frac{bex + ae}{dx + c}\right), x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorithm="fricas")

[Out] integral(A^2*d*i*x + A^2*c*i + (B^2*d*i*x + B^2*c*i)*log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*B*d*i*x + A*B*c*i)*log((b*e*x + a*e)/(d*x + c)), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorithm="giac")

[Out] Timed out

maple [F] time = 1.58, size = 0, normalized size = 0.00

$$\int (dix + ci) \left(B \ln\left(\frac{(bx + a)e}{dx + c}\right) + A \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*i*x+c*i)*(B*ln((b*x+a)/(d*x+c)*e)+A)^2,x)

[Out] int((d*i*x+c*i)*(B*ln((b*x+a)/(d*x+c)*e)+A)^2,x)

maxima [B] time = 1.97, size = 633, normalized size = 3.12

$$\frac{1}{2}A^2dix^2 + 2\left(x\log\left(\frac{bex}{dx + c} + \frac{ae}{dx + c}\right) + \frac{a\log(bx + a)}{b} - \frac{c\log(dx + c)}{d}\right)ABci + \left(x^2\log\left(\frac{bex}{dx + c} + \frac{ae}{dx + c}\right) - \frac{a^2}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorithm="maxima")

[Out] $\frac{1}{2}A^2d^2ix^2 + 2(x\log(bex/(dx+c)) + a/(dx+c)) + a\log(bx+a)/b - c\log(dx+c)/d)ABci + (x^2\log(bex/(dx+c)) + a/(dx+c)) - a^2\log(bx+a)/b^2 + c^2\log(dx+c)/d^2 - (bc-ad)x/(bd)ABdi + A^2cix - ((i\log(e) - i)bc^2 + acdi)B^2\log(dx+c)/(bd) - (b^2c^2i - 2abci + a^2d^2i)(\log(bx+a)\log((bdx+a)/(bc-ad) + 1) + \operatorname{dilog}(-(bdx+a)/(bc-ad)))B^2/(b^2d) + 1/2(B^2b^2d^2i x^2 \log(e)^2 + 2(abd^2i \log(e) + (i\log(e)^2 - i\log(e))b^2cd)B^2x + (B^2b^2d^2i x^2 + 2B^2b^2cdix + (2abci - a^2d^2i)B^2)\log(bx+a)^2 + (B^2b^2d^2i x^2 + 2B^2b^2cdix + B^2b^2c^2i)\log(dx+c)^2 + 2(B^2b^2d^2i x^2 \log(e) + ((2i\log(e) - i)bd^2cd + abd^2i)B^2x + ((2i\log(e) - i)abcd - (i\log(e) - i)a^2d^2)B^2)\log(bx+a) - 2(B^2b^2d^2i x^2 \log(e) + ((2i\log(e) - i)bd^2cd + abd^2i)B^2x + (B^2b^2d^2i x^2 + 2B^2b^2cdix + (2abci - a^2d^2i)B^2)\log(bx+a))\log(dx+c))/(b^2d)$

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (ci + dix) \left(A + B \ln \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x)))^2,x)

[Out] int((c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x)))^2, x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*ln(e*(b*x+a)/(d*x+c)))**2,x)

[Out] Timed out

$$3.59 \quad \int \frac{(ci+dx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{ag+bgx} dx$$

Optimal. Leaf size=286

$$\frac{2Bi(bc-ad)\text{Li}_2\left(\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^2g} + \frac{2Bi(bc-ad)\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^2g} + \frac{di(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^2g}$$

[Out] $2*B*(-a*d+b*c)*i*\ln((-a*d+b*c)/b/(d*x+c))*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^2/g + d*i*(b*x+a)*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/b^2/g - (a*d+b*c)*i*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2*\ln(1-b*(d*x+c)/d/(b*x+a))/b^2/g + 2*B^2*(-a*d+b*c)*i*polylog(2,d*(b*x+a)/b/(d*x+c))/b^2/g + 2*B^2*(-a*d+b*c)*i*(A+B*\ln(e*(b*x+a)/(d*x+c)))*polylog(2,b*(d*x+c)/d/(b*x+a))/b^2/g + 2*B^2*(-a*d+b*c)*i*polylog(3,b*(d*x+c)/d/(b*x+a))/b^2/g$

Rubi [B] time = 2.94, antiderivative size = 644, normalized size of antiderivative = 2.25, number of steps used = 39, number of rules used = 19, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.475$, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610}

$$\frac{2ABi(bc-ad)\text{PolyLog}\left(2, -\frac{d(a+bx)}{bc-ad}\right)}{b^2g} + \frac{2B^2i(bc-ad)\text{PolyLog}\left(2, \frac{bc-ad}{d(a+bx)} + 1\right)\log\left(\frac{e(a+bx)}{c+dx}\right)}{b^2g} + \frac{2aB^2di\text{PolyLog}\left(2, -\frac{d(a+bx)}{bc-ad}\right)}{b^2g}$$

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b*g*x), x]

[Out] $-((a*B^2*d*i*\text{Log}[a + b*x]^2)/(b^2*g)) - (A*B*(b*c - a*d)*i*\text{Log}[a + b*x]^2)/(b^2*g) - (B^2*(b*c - a*d)*i*\text{Log}[-((b*c - a*d)/(d*(a + b*x))])* \text{Log}[(e*(a + b*x))/(c + d*x])^2)/(b^2*g) - (B^2*(b*c - a*d)*i*\text{Log}[a + b*x]* \text{Log}[(e*(a + b*x))/(c + d*x])^2)/(b^2*g) + (2*a*B*d*i*\text{Log}[a + b*x]*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x])^2)/(b*g) + (d*i*x*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x])^2)/(b*g) + ((b*c - a*d)*i*\text{Log}[a + b*x]*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x])^2)/(b^2*g) + (2*B^2*c*i*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]* \text{Log}[c + d*x])/(b*g) - (2*B*c*i*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x])*\text{Log}[c + d*x])/(b*g) - (B^2*c*i*\text{Log}[c + d*x]^2)/(b*g) + (2*a*B^2*d*i*\text{Log}[a + b*x]* \text{Log}[(b*(c + d*x))/(b*c - a*d])/(b^2*g) + (2*A*B*(b*c - a*d)*i*\text{Log}[a + b*x]* \text{Log}[(b*(c + d*x))/(b*c - a*d])/(b^2*g) + (2*a*B^2*d*i*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d)])/(b^2*g) + (2*A*B*(b*c - a*d)*i*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d)])/(b^2*g) + (2*B^2*c*i*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d])/(b*g) + (2*B^2*(b*c - a*d)*i*\text{Log}[(e*(a + b*x))/(c + d*x])* \text{PolyLog}[2, 1 + (b*c - a*d)/(d*(a$

$$\frac{+ b*x)))]/(b^2*g) + (2*B^2*(b*c - a*d)*i*PolyLog[3, 1 + (b*c - a*d)/(d*(a + b*x)))]/(b^2*g)$$

Rule 12

$$\text{Int}[(a_)*(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \ \&\& \ !\text{MatchQ}[u, (b_)*(v_)] /; \text{FreeQ}[b, x]$$

Rule 2301

$$\text{Int}[(a_.) + \text{Log}[(c_.)*(x_)^(n_.)]*(b_.)]/(x_), x_Symbol] \rightarrow \text{Simp}[(a + b*\text{Log}[c*x^n])^2/(2*b*n), x] /; \text{FreeQ}[\{a, b, c, n\}, x]$$

Rule 2317

$$\text{Int}[(a_.) + \text{Log}[(c_.)*(x_)^(n_.)]*(b_.)]^(p_.)/((d_) + (e_.)*(x_)), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[1 + (e*x)/d]*(a + b*\text{Log}[c*x^n])^p)/e, x] - \text{Dist}[(b*n*p)/e, \text{Int}[(\text{Log}[1 + (e*x)/d]*(a + b*\text{Log}[c*x^n])^(p - 1))/x, x], x] /; \text{FreeQ}[\{a, b, c, d, e, n\}, x] \ \&\& \ \text{IGtQ}[p, 0]$$

Rule 2344

$$\text{Int}[(a_.) + \text{Log}[(c_.)*(x_)^(n_.)]*(b_.)]^(p_.)/((x_)*((d_) + (e_.)*(x_))), x_Symbol] \rightarrow \text{Dist}[1/d, \text{Int}[(a + b*\text{Log}[c*x^n])^p/x, x], x] - \text{Dist}[e/d, \text{Int}[(a + b*\text{Log}[c*x^n])^p/(d + e*x), x], x] /; \text{FreeQ}[\{a, b, c, d, e, n\}, x] \ \&\& \ \text{IGtQ}[p, 0]$$

Rule 2390

$$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.)]^(p_.)*((f_) + (g_.)*(x_))^(q_.), x_Symbol] \rightarrow \text{Dist}[1/e, \text{Subst}[\text{Int}[(f*x)/d]^q*(a + b*\text{Log}[c*x^n])^p, x], x, d + e*x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g, n, p, q\}, x] \ \&\& \ \text{EqQ}[e*f - d*g, 0]$$

Rule 2391

$$\text{Int}[\text{Log}[(c_.)*((d_) + (e_.)*(x_))^(n_.)]/(x_), x_Symbol] \rightarrow -\text{Simp}[\text{PolyLog}[2, -(c*e*x^n)]/n, x] /; \text{FreeQ}[\{c, d, e, n\}, x] \ \&\& \ \text{EqQ}[c*d, 1]$$

Rule 2393

$$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_) + (e_.)*(x_))]*(b_.)]/((f_.) + (g_.)*(x_)), x_Symbol] \rightarrow \text{Dist}[1/g, \text{Subst}[\text{Int}[(a + b*\text{Log}[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g\}, x] \ \&\& \ \text{NeQ}[e*f - d*g, 0] \ \&\& \ \text{EqQ}[g + c*(e*f - d*g), 0]$$

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] := Dist[1/e, Subst[Int[((g*x)/e)^q*(e*h - d*i)/e + (i*x)/e]^r*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] := -Simp[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/h, x] + Dist[(p*r*s*(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c, d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] := With[{g = Simplify[((v - 1)*(c + d*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/(b*c - a*d), x] + Dist[h*p*r*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
```

```

^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] := With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^(s + 1))/(p*r*(s + 1)*(b*c
- a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q]^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
EqQ[p + q, 0] && NeQ[s, -1]

```

Rule 2523

```

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] := Simp[x*(a +
b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*
RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, p}, x] && Rat
ionalFunctionQ[RFx, x] && IGtQ[n, 0]

```

Rule 2524

```

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]

```

Rule 2528

```

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x], Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]

```

Rule 6610

```

Int[(u_)*PolyLog[n_, v_], x_Symbol] := With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /; !FalseQ[w] /; FreeQ[n, x]

```

Rule 6688

```

Int[u_, x_Symbol] := With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]

```

Rule 6742

```

Int[u_, x_Symbol] := With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]

```

Rubi steps

$$\begin{aligned}
\int \frac{(59c + 59dx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{ag + bgx} dx &= \int \left(\frac{59d \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{bg} + \frac{59(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{bg(a + bx)} \right) dx \\
&= \frac{(59d) \int \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 dx}{bg} + \frac{(59(bc - ad)) \int \frac{\left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{a+bx} dx}{bg} \\
&= \frac{59dx \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{bg} + \frac{59(bc - ad) \log(a + bx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^2g} \\
&= \frac{59dx \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{bg} + \frac{59(bc - ad) \log(a + bx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^2g} \\
&= \frac{59dx \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{bg} + \frac{59(bc - ad) \log(a + bx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^2g} \\
&= \frac{59dx \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{bg} + \frac{59(bc - ad) \log(a + bx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^2g} \\
&= \frac{118aBd \log(a + bx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g} + \frac{59dx \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{bg} \\
&= \frac{118aBd \log(a + bx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g} + \frac{59dx \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{bg} \\
&= -\frac{59B^2(bc - ad) \log(a + bx) \log^2 \left(\frac{e(a+bx)}{c+dx} \right)}{b^2g} + \frac{118aBd \log(a + bx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g} \\
&= -\frac{59B^2(bc - ad) \log \left(-\frac{bc-ad}{d(a+bx)} \right) \log^2 \left(\frac{e(a+bx)}{c+dx} \right)}{b^2g} - \frac{59B^2(bc - ad) \log(a + bx)}{b^2g} \\
&= -\frac{59AB(bc - ad) \log^2(a + bx)}{b^2g} - \frac{59B^2(bc - ad) \log \left(-\frac{bc-ad}{d(a+bx)} \right) \log^2 \left(\frac{e(a+bx)}{c+dx} \right)}{b^2g} \\
&= -\frac{59aB^2d \log^2(a + bx)}{b^2g} - \frac{59AB(bc - ad) \log^2(a + bx)}{b^2g} - \frac{59B^2(bc - ad)}{b^2g} \\
&= -\frac{59aB^2d \log^2(a + bx)}{b^2g} - \frac{59AB(bc - ad) \log^2(a + bx)}{b^2g} - \frac{59B^2(bc - ad)}{b^2g}
\end{aligned}$$

Mathematica [B] time = 1.30, size = 987, normalized size = 3.45

$$i \left(3bdxA^2 + 3(bc - ad) \log(a + bx)A^2 - 3B \left(ad \log^2 \left(\frac{a}{b} + x \right) - 2ad(\log(a + bx) + 1) \log \left(\frac{a}{b} + x \right) + 2(-bc + ad + \dots \right. \right.$$

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b*g*x),x]

[Out] (i*(3*A^2*b*d*x + 3*A^2*(b*c - a*d)*Log[a + b*x] - 3*A*B*(a*d*Log[a/b + x]^2 - 2*a*d*Log[a/b + x]*(1 + Log[a + b*x]) + 2*(-(b*c) + a*d + Log[c/d + x]*(b*c + a*d*Log[a + b*x] - a*d*Log[(d*(a + b*x))/(- (b*c) + a*d)])) + (- (b*d*x) + a*d*Log[a + b*x])*Log[(e*(a + b*x))/(c + d*x)] - 2*a*d*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]) + 3*A*b*B*c*(Log[a/b + x]^2 - 2*Log[a + b*x]*(Log[a/b + x] - Log[c/d + x] - Log[(e*(a + b*x))/(c + d*x)]) - 2*(Log[c/d + x]*Log[(d*(a + b*x))/(- (b*c) + a*d)] + PolyLog[2, (b*(c + d*x))/(b*c - a*d)])) - B^2*(a*d*Log[a/b + x]^3 - 3*d*(2*b*x - 2*(a + b*x)*Log[a/b + x] + (a + b*x)*Log[a/b + x]^2) - 3*b*(2*d*x - 2*(c + d*x)*Log[c/d + x] + (c + d*x)*Log[c/d + x]^2) - 3*d*(b*x - a*Log[a + b*x])*(-Log[a/b + x] + Log[c/d + x] + Log[(e*(a + b*x))/(c + d*x)])^2 + 6*(a*d + 2*b*d*x - b*d*x*Log[c/d + x] - b*c*Log[c + d*x] + Log[a/b + x]*(- (d*(a + b*x)) + d*(a + b*x)*Log[c/d + x] + (b*c - a*d)*Log[(b*(c + d*x))/(b*c - a*d)]) + (b*c - a*d)*PolyLog[2, (d*(a + b*x))/(- (b*c) + a*d)]) - 3*(Log[a/b + x] - Log[c/d + x] - Log[(e*(a + b*x))/(c + d*x)])*(-2*b*c + 2*a*d - 2*d*(a + b*x)*Log[a/b + x] + a*d*Log[a/b + x]^2 + 2*Log[c/d + x]*(b*(c + d*x) - a*d*Log[(d*(a + b*x))/(- (b*c) + a*d)]) - 2*a*d*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]) - 3*a*d*(Log[a/b + x]^2*(Log[c/d + x] - Log[(b*(c + d*x))/(b*c - a*d)]) - 2*Log[a/b + x]*PolyLog[2, (d*(a + b*x))/(- (b*c) + a*d)] + 2*PolyLog[3, (d*(a + b*x))/(- (b*c) + a*d)]) + 3*a*d*(Log[c/d + x]^2*Log[(d*(a + b*x))/(- (b*c) + a*d)] + 2*Log[c/d + x]*PolyLog[2, (b*(c + d*x))/(b*c - a*d)] - 2*PolyLog[3, (b*(c + d*x))/(b*c - a*d)])) - 3*b*B^2*c*(Log[(- (b*c) + a*d)/(d*(a + b*x))]*Log[(e*(a + b*x))/(c + d*x)]^2 - 2*Log[(e*(a + b*x))/(c + d*x)]*PolyLog[2, (b*(c + d*x))/(d*(a + b*x))] - 2*PolyLog[3, (b*(c + d*x))/(d*(a + b*x))]))/(3*b^2*g)

fricas [F] time = 0.60, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{A^2dix + A^2ci + (B^2dix + B^2ci) \log \left(\frac{bex+ae}{dx+c} \right)^2 + 2(ABdix + ABci) \log \left(\frac{bex+ae}{dx+c} \right)}{bgx + ag}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g),x, algorithm="fricas")

[Out] integral((A^2*d*i*x + A^2*c*i + (B^2*d*i*x + B^2*c*i)*log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*B*d*i*x + A*B*c*i)*log((b*e*x + a*e)/(d*x + c)))/(b*g*x + a*g), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g),x, algorithm="giac")

[Out] Timed out

maple [F] time = 1.87, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci) \left(B \ln \left(\frac{bx+a}{dx+c} \right) + A \right)^2}{bgx + ag} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*i*x+c*i)*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g),x)

[Out] int((d*i*x+c*i)*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g),x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$A^2 di \left(\frac{x}{bg} - \frac{a \log(bx+a)}{b^2 g} \right) + \frac{A^2 ci \log(bgx+ag)}{bg} + \frac{(B^2 b dix + (bci - adi) B^2 \log(bx+a)) \log(dx+c)^2}{b^2 g} - \int - \frac{B^2 b^2 c^2}{b^2 g}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g),x, algorithm="maxima")

[Out] A^2*d*i*(x/(b*g) - a*log(b*x + a)/(b^2*g)) + A^2*c*i*log(b*g*x + a*g)/(b*g) + (B^2*b*d*i*x + (b*c*i - a*d*i)*B^2*log(b*x + a))*log(d*x + c)^2/(b^2*g) - integrate(-(B^2*b^2*c^2*i*log(e)^2 + 2*A*B*b^2*c^2*i*log(e) + (B^2*b^2*d^2*i*log(e)^2 + 2*A*B*b^2*d^2*i*log(e))*x^2 + (B^2*b^2*d^2*i*x^2 + 2*B^2*b^2*c*d*i*x + B^2*b^2*c^2*i)*log(b*x + a)^2 + 2*(B^2*b^2*c*d*i*log(e)^2 + 2*A*B*b^2*c*d*i*log(e))*x + 2*(B^2*b^2*c^2*i*log(e) + A*B*b^2*c^2*i + (B^2*b^2*d^2*i*log(e) + A*B*b^2*d^2*i))*x^2 + 2*(B^2*b^2*c*d*i*log(e) + A*B*b^2*c*d*i)*x)*log(b*x + a) - 2*(B^2*b^2*c^2*i*log(e) + A*B*b^2*c^2*i + ((i*log(e) + i)*B^2*b^2*d^2 + A*B*b^2*d^2*i))*x^2 + (2*A*B*b^2*c*d*i + (2*b^2*c*d*i*log(e)

) + a*b*d^2*i)*B^2)*x + (B^2*b^2*d^2*i*x^2 + (3*b^2*c*d*i - a*b*d^2*i)*B^2*x + (b^2*c^2*i + a*b*c*d*i - a^2*d^2*i)*B^2)*log(b*x + a))*log(d*x + c))/(b^3*d*g*x^2 + a*b^2*c*g + (b^3*c*g + a*b^2*d*g)*x), x)

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ci + dix) \left(A + B \ln \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{ag + bgx} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x))))^2)/(a*g + b*g*x), x)

[Out] int(((c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x))))^2)/(a*g + b*g*x), x)

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$i \left(\int \frac{A^2 c}{a+bx} dx + \int \frac{A^2 dx}{a+bx} dx + \int \frac{B^2 c \log \left(\frac{ae}{c+dx} + \frac{bex}{c+dx} \right)^2}{a+bx} dx + \int \frac{2ABc \log \left(\frac{ae}{c+dx} + \frac{bex}{c+dx} \right)}{a+bx} dx + \int \frac{B^2 dx \log \left(\frac{ae}{c+dx} + \frac{bex}{c+dx} \right)^2}{a+bx} dx + \int \frac{2ABdx}{a+bx} dx \right)$$

g

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*ln(e*(b*x+a)/(d*x+c)))*2/(b*g*x+a*g), x)

[Out] i*(Integral(A**2*c/(a + b*x), x) + Integral(A**2*d*x/(a + b*x), x) + Integral(B**2*c*log(a*e/(c + d*x) + b*e*x/(c + d*x))**2/(a + b*x), x) + Integral(2*A*B*c*log(a*e/(c + d*x) + b*e*x/(c + d*x))/(a + b*x), x) + Integral(B**2*d*x*log(a*e/(c + d*x) + b*e*x/(c + d*x))**2/(a + b*x), x) + Integral(2*A*B*d*x*log(a*e/(c + d*x) + b*e*x/(c + d*x))/(a + b*x), x))/g

$$3.60 \quad \int \frac{(ci+dx) \left(A+B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{(ag+bgx)^2} dx$$

Optimal. Leaf size=241

$$\frac{2BdiLi_2 \left(\frac{b(c+dx)}{d(a+bx)} \right) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{b^2g^2} - \frac{di \log \left(1 - \frac{b(c+dx)}{d(a+bx)} \right) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)^2}{b^2g^2} - \frac{2Bi(c+dx) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{bg^2(a+bx)}$$

[Out] $-2*B^2*i*(d*x+c)/b/g^2/(b*x+a)-2*B*i*(d*x+c)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b/g^2/(b*x+a)-i*(d*x+c)*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/b/g^2/(b*x+a)-d*i*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2*\ln(1-b*(d*x+c)/d/(b*x+a))/b^2/g^2+2*B*d*i*(A+B*\ln(e*(b*x+a)/(d*x+c)))*\text{polylog}(2,b*(d*x+c)/d/(b*x+a))/b^2/g^2+2*B^2*d*i*\text{polylog}(3,b*(d*x+c)/d/(b*x+a))/b^2/g^2$

Rubi [B] time = 3.03, antiderivative size = 705, normalized size of antiderivative = 2.93, number of steps used = 43, number of rules used = 20, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.500$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610}

$$\frac{2ABdiPolyLog \left(2, -\frac{d(a+bx)}{bc-ad} \right)}{b^2g^2} + \frac{2B^2diPolyLog \left(2, \frac{bc-ad}{d(a+bx)} + 1 \right) \log \left(\frac{e(a+bx)}{c+dx} \right)}{b^2g^2} - \frac{2B^2diPolyLog \left(2, -\frac{d(a+bx)}{bc-ad} \right)}{b^2g^2} - \frac{2B^2diPolyLog \left(2, -\frac{d(a+bx)}{bc-ad} \right)}{b^2g^2}$$

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2)/(a*g + b*g*x)^2, x]

[Out] $(-2*B^2*(b*c - a*d)*i)/(b^2*g^2*(a + b*x)) - (2*B^2*d*i*Log[a + b*x])/(b^2*g^2) - (A*B*d*i*Log[a + b*x]^2)/(b^2*g^2) + (B^2*d*i*Log[a + b*x]^2)/(b^2*g^2) - (B^2*d*i*Log[-((b*c - a*d)/(d*(a + b*x))])*Log[(e*(a + b*x))/(c + d*x)]^2)/(b^2*g^2) - (B^2*d*i*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)]^2)/(b^2*g^2) - (2*B*(b*c - a*d)*i*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(b^2*g^2*(a + b*x)) - (2*B*d*i*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(b^2*g^2) - ((b*c - a*d)*i*(A + B*Log[(e*(a + b*x))/(c + d*x)]^2)/(b^2*g^2*(a + b*x)) + (d*i*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]^2)/(b^2*g^2) + (2*B^2*d*i*Log[c + d*x])/(b^2*g^2) - (2*B^2*d*i*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(b^2*g^2) + (2*B*d*i*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/(b^2*g^2) + (B^2*d*i*Log[c + d*x]^2)/(b^2*g^2) + (2*A*B*d*i*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(b^2*g^2) - (2*B^2*d*i*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(b^2*g^2) + (2*A*B*d*i*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(b^2*g^2) - (2*B^2*d*i*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(b^2*g^2) - (2*B^2*d*i*PolyLog[2, (b*(c + d*x))])$

$$\frac{1}{(b*c - a*d)} \left(\frac{1}{b^2*g^2} + (2*B^2*d*i*\text{Log}[\frac{e*(a + b*x)}{c + d*x}]*\text{PolyLog}[2, 1 + \frac{b*c - a*d}{d*(a + b*x)}]) \right) \frac{1}{b^2*g^2} + (2*B^2*d*i*\text{PolyLog}[3, 1 + \frac{b*c - a*d}{d*(a + b*x)}]) \frac{1}{b^2*g^2}$$
Rule 12

$$\text{Int}[(a_*)(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] \text{ /; FreeQ}[a, x] \&\& \text{!MatchQ}[u, (b_*)(v_)] \text{ /; FreeQ}[b, x]$$
Rule 44

$$\text{Int}[(a_*) + (b_*)(x_)^{(m_*)} * ((c_*) + (d_*)(x_)^{(n_*)}), x_Symbol] \rightarrow \text{Int}[\text{ExpandIntegrand}[(a + b*x)^m * (c + d*x)^n, x], x] \text{ /; FreeQ}[\{a, b, c, d\}, x] \&\& \text{NeQ}[b*c - a*d, 0] \&\& \text{ILtQ}[m, 0] \&\& \text{IntegerQ}[n] \&\& \text{!(IGtQ}[n, 0] \&\& \text{LtQ}[m + n + 2, 0])$$
Rule 2301

$$\text{Int}[(a_*) + \text{Log}[(c_*)(x_)^{(n_*)}] * (b_*)] / (x_), x_Symbol] \rightarrow \text{Simp}[(a + b*\text{Log}[c*x^n])^2 / (2*b*n), x] \text{ /; FreeQ}[\{a, b, c, n\}, x]$$
Rule 2317

$$\text{Int}[(a_*) + \text{Log}[(c_*)(x_)^{(n_*)}] * (b_*)]^{(p_*)} / ((d_*) + (e_*)(x_)), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[1 + (e*x)/d] * (a + b*\text{Log}[c*x^n])^p) / e, x] - \text{Dist}[(b*n*p) / e, \text{Int}[(\text{Log}[1 + (e*x)/d] * (a + b*\text{Log}[c*x^n])^{(p-1)}) / x, x], x] \text{ /; FreeQ}[\{a, b, c, d, e, n\}, x] \&\& \text{IGtQ}[p, 0]$$
Rule 2344

$$\text{Int}[(a_*) + \text{Log}[(c_*)(x_)^{(n_*)}] * (b_*)]^{(p_*)} / ((x_*) * ((d_*) + (e_*)(x_))), x_Symbol] \rightarrow \text{Dist}[1/d, \text{Int}[(a + b*\text{Log}[c*x^n])^p / x, x], x] - \text{Dist}[e/d, \text{Int}[(a + b*\text{Log}[c*x^n])^p / (d + e*x), x], x] \text{ /; FreeQ}[\{a, b, c, d, e, n\}, x] \&\& \text{IGtQ}[p, 0]$$
Rule 2390

$$\text{Int}[(a_*) + \text{Log}[(c_*) * ((d_*) + (e_*)(x_))^{(n_*)}] * (b_*)]^{(p_*)} * ((f_*) + (g_*)(x_))^{(q_*)}, x_Symbol] \rightarrow \text{Dist}[1/e, \text{Subst}[\text{Int}[(f*x)/d]^q * (a + b*\text{Log}[c*x^n])^p, x], x, d + e*x], x] \text{ /; FreeQ}[\{a, b, c, d, e, f, g, n, p, q\}, x] \&\& \text{EqQ}[e*f - d*g, 0]$$
Rule 2391

$$\text{Int}[\text{Log}[(c_*) * ((d_*) + (e_*)(x_))^{(n_*)})] / (x_), x_Symbol] \rightarrow -\text{Simp}[\text{PolyLog}[2, -(c*e*x^n)] / n, x] \text{ /; FreeQ}[\{c, d, e, n\}, x] \&\& \text{EqQ}[c*d, 1]$$

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x
), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] := Dist[1/e, Subst[Int
[(g*x)/e]^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] := -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q]^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_
))^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] := With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
```

$1 - v$]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]

Rule 2507

Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_Symbol] := With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g + h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1))/(p*r*(s + 1)*(b*c - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && NeQ[s, -1]

Rule 2524

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]

Rule 2525

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]

Rule 2528

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]

Rule 6610

Int[(u_)*PolyLog[n_, v_], x_Symbol] := With[{w = DerivativeDivides[v, u*v, x]}, Simp[w*PolyLog[n + 1, v], x] /; !FalseQ[w]] /; FreeQ[n, x]

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl  
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]  
]
```

Rubi steps

$$\begin{aligned}
\int \frac{(60c + 60dx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{(ag + bgx)^2} dx &= \int \left(\frac{60(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{bg^2(a + bx)^2} + \frac{60d \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{bg^2(a + bx)} \right) dx \\
&= \frac{(60d) \int \frac{\left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{a+bx} dx}{bg^2} + \frac{(60(bc - ad)) \int \frac{\left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{(a+bx)^2} dx}{bg^2} \\
&= -\frac{60(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^2g^2(a + bx)} + \frac{60d \log(a + bx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g^2} \\
&= -\frac{60(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^2g^2(a + bx)} + \frac{60d \log(a + bx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g^2} \\
&= -\frac{60(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^2g^2(a + bx)} + \frac{60d \log(a + bx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g^2} \\
&= -\frac{60(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^2g^2(a + bx)} + \frac{60d \log(a + bx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g^2} \\
&= -\frac{120B(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g^2(a + bx)} - \frac{120Bd \log(a + bx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g^2} \\
&= -\frac{120B(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g^2(a + bx)} - \frac{120Bd \log(a + bx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g^2} \\
&= -\frac{60B^2d \log(a + bx) \log^2 \left(\frac{e(a+bx)}{c+dx} \right)}{b^2g^2} - \frac{120B(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g^2(a + bx)} \\
&= -\frac{120B^2(bc - ad)}{b^2g^2(a + bx)} - \frac{120B^2d \log(a + bx)}{b^2g^2} - \frac{60B^2d \log \left(-\frac{bc-ad}{d(a+bx)} \right) \log \left(\frac{e(a+bx)}{c+dx} \right)}{b^2g^2} \\
&= -\frac{120B^2(bc - ad)}{b^2g^2(a + bx)} - \frac{120B^2d \log(a + bx)}{b^2g^2} - \frac{60ABd \log^2(a + bx)}{b^2g^2} - \frac{60B^2d \log \left(-\frac{bc-ad}{d(a+bx)} \right) \log \left(\frac{e(a+bx)}{c+dx} \right)}{b^2g^2} \\
&= -\frac{120B^2(bc - ad)}{b^2g^2(a + bx)} - \frac{120B^2d \log(a + bx)}{b^2g^2} - \frac{60ABd \log^2(a + bx)}{b^2g^2} + \frac{60B^2d \log \left(-\frac{bc-ad}{d(a+bx)} \right) \log \left(\frac{e(a+bx)}{c+dx} \right)}{b^2g^2} \\
&= -\frac{120B^2(bc - ad)}{b^2g^2(a + bx)} - \frac{120B^2d \log(a + bx)}{b^2g^2} - \frac{60ABd \log^2(a + bx)}{b^2g^2} + \frac{60B^2d \log \left(-\frac{bc-ad}{d(a+bx)} \right) \log \left(\frac{e(a+bx)}{c+dx} \right)}{b^2g^2}
\end{aligned}$$

Mathematica [B] time = 2.05, size = 1407, normalized size = 5.84

result too large to display

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b*g*x)^2,x]

[Out] (i*((3*A^2*(-(b*c) + a*d))/(a + b*x) + 3*A^2*d*Log[a + b*x] - (6*A*b*B*c*(-(d*(a + b*x)*Log[c/d + x]) + d*(a + b*x)*Log[(d*(a + b*x))/(-(b*c) + a*d)] + (b*c - a*d)*(1 + Log[(e*(a + b*x))/(c + d*x]))))/((b*c - a*d)*(a + b*x)) + (3*b*B^2*c*(-2*b*c + 2*a*d - 2*d*(a + b*x)*Log[a + b*x] - 2*(b*c - a*d)*Log[(e*(a + b*x))/(c + d*x)] - 2*d*(a + b*x)*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)] - (b*c - a*d)*Log[(e*(a + b*x))/(c + d*x)]^2 + 2*d*(a + b*x)*Log[c + d*x] - 2*d*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] + d*(a + b*x)*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)] + d*(a + b*x)*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b*c) + a*d)] + Log[(b*c - a*d)/(b*c + b*d*x)] - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/((b*c - a*d)*(a + b*x)) + 3*A*B*d*(Log[a/b + x]^2 - 2*Log[a/b + x]*Log[a + b*x] - 2*Log[c/d + x]*Log[(d*(a + b*x))/(-(b*c) + a*d)] + 2*Log[a + b*x]*((a*d)/(b*c - a*d) + Log[c/d + x] + Log[(e*(a + b*x))/(c + d*x)] + 2*a*((a + b*x)^(-1) + Log[(e*(a + b*x))/(c + d*x)]/(a + b*x) + (d*Log[c + d*x])/(-(b*c) + a*d)) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)] + (B^2*d*((b*c - a*d)*(a + b*x)*Log[a/b + x]^3 + 3*a*(b*c - a*d)*(2 + 2*Log[a/b + x] + Log[a/b + x]^2) + 3*(b*c - a*d)*(a + (a + b*x)*Log[a + b*x])*(-Log[a/b + x] + Log[c/d + x] + Log[(e*(a + b*x))/(c + d*x)]^2 + 3*a*(d*(a + b*x)*Log[a/b + x]^2 + 2*((-(b*c) + a*d)*Log[c/d + x] + d*(a + b*x)*(Log[a + b*x] - Log[c + d*x])) - 2*Log[a/b + x]*((b*c - a*d)*Log[c/d + x] + d*(a + b*x)*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*d*(a + b*x)*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)] + 3*a*(Log[c/d + x]*(b*(c + d*x)*Log[c/d + x] - 2*d*(a + b*x)*Log[(d*(a + b*x))/(-(b*c) + a*d)]) - 2*d*(a + b*x)*PolyLog[2, (b*(c + d*x))/(b*c - a*d)] - 3*(Log[a/b + x] - Log[c/d + x] - Log[(e*(a + b*x))/(c + d*x]))*((b*c - a*d)*(a + b*x)*Log[a/b + x]^2 + 2*a*(b*c - a*d)*(1 + Log[a/b + x]) + 2*a*(-(b*c) + a*d)*Log[c/d + x] + 2*a*d*(a + b*x)*(Log[a + b*x] - Log[c + d*x]) - 2*(b*c - a*d)*(a + b*x)*(Log[c/d + x]*Log[(d*(a + b*x))/(-(b*c) + a*d)] + PolyLog[2, (b*(c + d*x))/(b*c - a*d)])) - 3*(b*c - a*d)*(a + b*x)*(Log[a/b + x]^2*(Log[c/d + x] - Log[(b*(c + d*x))/(b*c - a*d)]) - 2*Log[a/b + x]*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)] + 2*PolyLog[3, (d*(a + b*x))/(-(b*c) + a*d)] + 3*(b*c - a*d)*(a + b*x)*(Log[c/d + x]^2*Log[(d*(a + b*x))/(-(b*c) + a*d)] + 2*Log[c/d + x]*PolyLog[2, (b*(c + d*x))/(b*c - a*d)] - 2*PolyLog[3, (b*(c + d*x))/(b*c - a*d)])))/((b*c - a*d)*(a + b*x)))/(3*b^2*g^2)

fricas [F] time = 0.91, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{A^2 dx + A^2 ci + (B^2 dx + B^2 ci) \log \left(\frac{bex+ae}{dx+c} \right)^2 + 2(ABdx + ABci) \log \left(\frac{bex+ae}{dx+c} \right)}{b^2 g^2 x^2 + 2 abg^2 x + a^2 g^2}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^2,x, algorithm="fricas")

[Out] integral((A^2*d*i*x + A^2*c*i + (B^2*d*i*x + B^2*c*i)*log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*B*d*i*x + A*B*c*i)*log((b*e*x + a*e)/(d*x + c)))/(b^2*g^2*x^2 + 2*a*b*g^2*x + a^2*g^2), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^2,x, algorithm="giac")

[Out] Timed out

maple [F] time = 1.70, size = 0, normalized size = 0.00

$$\int \frac{(dx + ci) \left(B \ln \left(\frac{bx+a}{dx+c} \right) + A \right)^2}{(bgx + ag)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*i*x+c*i)*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^2,x)

[Out] int((d*i*x+c*i)*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^2,x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$A^2 di \left(\frac{a}{b^3 g^2 x + ab^2 g^2} + \frac{\log(bx + a)}{b^2 g^2} \right) - 2 ABci \left(\frac{\log \left(\frac{bex}{dx+c} + \frac{ae}{dx+c} \right)}{b^2 g^2 x + abg^2} + \frac{1}{b^2 g^2 x + abg^2} + \frac{d \log(bx + a)}{(b^2 c - abd) g^2} - \frac{d \log(dx + a)}{(b^2 c - abd)} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^2,x, algorithm="maxima")

[Out] $A^2*d*i*(a/(b^3*g^2*x + a*b^2*g^2) + \log(b*x + a)/(b^2*g^2)) - 2*A*B*c*i*(\log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^2*g^2*x + a*b*g^2) + 1/(b^2*g^2*x + a*b*g^2) + d*\log(b*x + a)/((b^2*c - a*b*d)*g^2) - d*\log(d*x + c)/((b^2*c - a*b*d)*g^2)) - A^2*c*i/(b^2*g^2*x + a*b*g^2) - ((b*c*i - a*d*i)*B^2 - (B^2*b*d*i*x + B^2*a*d*i)*\log(b*x + a))*\log(d*x + c)^2/(b^3*g^2*x + a*b^2*g^2) - \int (- (B^2*b^2*c^2*i*\log(e)^2 + (B^2*b^2*d^2*i*\log(e)^2 + 2*A*B*b^2*d^2*i*\log(e))*x^2 + (B^2*b^2*d^2*i*x^2 + 2*B^2*b^2*c*d*i*x + B^2*b^2*c^2*i)*\log(b*x + a)^2 + 2*(B^2*b^2*c*d*i*\log(e)^2 + A*B*b^2*c*d*i*\log(e))*x + 2*(B^2*b^2*c^2*i*\log(e) + (B^2*b^2*d^2*i*\log(e) + A*B*b^2*d^2*i))*x^2 + (2*B^2*b^2*c*d*i*\log(e) + A*B*b^2*c*d*i)*x)*\log(b*x + a) - 2*((b^2*c^2*i*\log(e) - a*b*c*d*i + a^2*d^2*i)*B^2 + (B^2*b^2*d^2*i*\log(e) + A*B*b^2*d^2*i))*x^2 + (A*B*b^2*c*d*i + ((2*i*\log(e) - i)*b^2*c*d + a*b*d^2*i)*B^2)*x + (2*B^2*b^2*d^2*i*x^2 + 2*(b^2*c*d*i + a*b*d^2*i)*B^2*x + (b^2*c^2*i + a^2*d^2*i)*B^2)*\log(b*x + a))*\log(d*x + c))/(b^4*d*g^2*x^3 + a^2*b^2*c*g^2 + (b^4*c*g^2 + 2*a*b^3*d*g^2)*x^2 + (2*a*b^3*c*g^2 + a^2*b^2*d*g^2)*x), x$

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ci + dix) \left(A + B \ln \left(\frac{e^{(a+bx)}}{c+dx} \right) \right)^2}{(ag + bgx)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x)^2, x)

[Out] int(((c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x)^2, x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)**2,x)

[Out] Timed out

$$3.61 \quad \int \frac{(ci+dx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^3} dx$$

Optimal. Leaf size=141

$$\frac{i(c+dx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{2g^3(a+bx)^2(bc-ad)} - \frac{Bi(c+dx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2g^3(a+bx)^2(bc-ad)} - \frac{B^2i(c+dx)^2}{4g^3(a+bx)^2(bc-ad)}$$

[Out] $-1/4*B^2*i*(d*x+c)^2/(-a*d+b*c)/g^3/(b*x+a)^2-1/2*B*i*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)/g^3/(b*x+a)^2-1/2*i*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/(-a*d+b*c)/g^3/(b*x+a)^2$

Rubi [C] time = 1.94, antiderivative size = 639, normalized size of antiderivative = 4.53, number of steps used = 58, number of rules used = 11, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.275$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{B^2d^2i\text{PolyLog}\left(2, -\frac{d(a+bx)}{bc-ad}\right)}{b^2g^3(bc-ad)} - \frac{B^2d^2i\text{PolyLog}\left(2, \frac{b(c+dx)}{bc-ad}\right)}{b^2g^3(bc-ad)} - \frac{Bd^2i\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^2g^3(bc-ad)} + \frac{Bd^2i\log(c+dx)}{b^2g^3(bc-ad)}$$

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2)/(a*g + b*g*x)^3, x]

[Out] $-(B^2*(b*c - a*d)*i)/(4*b^2*g^3*(a + b*x)^2) - (B^2*d*i)/(2*b^2*g^3*(a + b*x)) - (B^2*d^2*i*Log[a + b*x])/(2*b^2*(b*c - a*d)*g^3) + (B^2*d^2*i*Log[a + b*x]^2)/(2*b^2*(b*c - a*d)*g^3) - (B*(b*c - a*d)*i*(A + B*Log[(e*(a + b*x))/(c + d*x]))/(2*b^2*g^3*(a + b*x)^2) - (B*d*i*(A + B*Log[(e*(a + b*x))/(c + d*x]))/(b^2*g^3*(a + b*x)) - (B*d^2*i*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x]))/(b^2*(b*c - a*d)*g^3) - ((b*c - a*d)*i*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2)/(2*b^2*g^3*(a + b*x)^2) - (d*i*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2)/(b^2*g^3*(a + b*x)) + (B^2*d^2*i*Log[c + d*x])/(2*b^2*(b*c - a*d)*g^3) - (B^2*d^2*i*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(b^2*(b*c - a*d)*g^3) + (B*d^2*i*(A + B*Log[(e*(a + b*x))/(c + d*x]))*Log[c + d*x])/(b^2*(b*c - a*d)*g^3) + (B^2*d^2*i*Log[c + d*x]^2)/(2*b^2*(b*c - a*d)*g^3) - (B^2*d^2*i*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(b^2*(b*c - a*d)*g^3) - (B^2*d^2*i*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(b^2*(b*c - a*d)*g^3) - (B^2*d^2*i*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(b^2*(b*c - a*d)*g^3)$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 44

Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])

Rule 2301

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2418

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},

```
Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFX, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFX^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFX^p])^(n - 1)*D[RFX, x])/RFX, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFX, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFX^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFX^p])^(n - 1)*D[RFX, x])/RFX, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFX, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*RFX^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFX, x] && RationalFunctionQ[
RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(61c + 61dx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{(ag + bgx)^3} dx &= \int \left(\frac{61(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{bg^3(a + bx)^3} + \frac{61d \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{bg^3(a + bx)^2} \right) dx \\
&= \frac{(61d) \int \frac{\left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{(a+bx)^2} dx}{bg^3} + \frac{(61(bc - ad)) \int \frac{\left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{(a+bx)^3} dx}{bg^3} \\
&= -\frac{61(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{2b^2g^3(a + bx)^2} - \frac{61d \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^2g^3(a + bx)} + \dots \\
&= -\frac{61(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{2b^2g^3(a + bx)^2} - \frac{61d \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^2g^3(a + bx)} + \dots \\
&= -\frac{61(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{2b^2g^3(a + bx)^2} - \frac{61d \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^2g^3(a + bx)} + \dots \\
&= -\frac{61(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{2b^2g^3(a + bx)^2} - \frac{61d \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^2g^3(a + bx)} + \dots \\
&= -\frac{61B(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{2b^2g^3(a + bx)^2} - \frac{61Bd \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g^3(a + bx)} + \dots \\
&= -\frac{61B(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{2b^2g^3(a + bx)^2} - \frac{61Bd \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g^3(a + bx)} + \dots \\
&= -\frac{61B(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{2b^2g^3(a + bx)^2} - \frac{61Bd \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g^3(a + bx)} + \dots \\
&= -\frac{61B^2(bc - ad)}{4b^2g^3(a + bx)^2} - \frac{61B^2d}{2b^2g^3(a + bx)} - \frac{61B^2d^2 \log(a + bx)}{2b^2(bc - ad)g^3} - \frac{61B(bc - ad)}{2b^2(bc - ad)g^3} + \dots \\
&= -\frac{61B^2(bc - ad)}{4b^2g^3(a + bx)^2} - \frac{61B^2d}{2b^2g^3(a + bx)} - \frac{61B^2d^2 \log(a + bx)}{2b^2(bc - ad)g^3} - \frac{61B(bc - ad)}{2b^2(bc - ad)g^3} + \dots \\
&= -\frac{61B^2(bc - ad)}{4b^2g^3(a + bx)^2} - \frac{61B^2d}{2b^2g^3(a + bx)} - \frac{61B^2d^2 \log(a + bx)}{2b^2(bc - ad)g^3} + \frac{61B^2d^2 \log(a + bx)}{2b^2(bc - ad)g^3} + \dots \\
&= -\frac{61B^2(bc - ad)}{4b^2g^3(a + bx)^2} - \frac{61B^2d}{2b^2g^3(a + bx)} - \frac{61B^2d^2 \log(a + bx)}{2b^2(bc - ad)g^3} + \frac{61B^2d^2 \log(a + bx)}{2b^2(bc - ad)g^3} + \dots
\end{aligned}$$

Mathematica [C] time = 0.91, size = 765, normalized size = 5.43

$$i \left(B \left(-4d^2(a+bx)^2 \log(a+bx) \left(B \log\left(\frac{e^{(a+bx)}}{c+dx}\right) + A \right) + 4d^2(a+bx)^2 \log(c+dx) \left(B \log\left(\frac{e^{(a+bx)}}{c+dx}\right) + A \right) + 2(bc - \right.$$

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b*g*x)^3,x]

[Out]
$$-1/4*(i*(2*(b*c - a*d)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 - 4*d*(-(b*c) + a*d)*(a + b*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 + 4*B*d*(a + b*x)*(2*(b*c - a*d)*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 2*d*(a + b*x)*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 2*d*(a + b*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x] + 2*B*(b*c - a*d + d*(a + b*x))*Log[a + b*x] - d*(a + b*x)*Log[c + d*x]) - B*d*(a + b*x)*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + B*d*(a + b*x)*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]) + B*(2*(b*c - a*d)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 4*d*(-(b*c) + a*d)*(a + b*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 4*d^2*(a + b*x)^2*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 4*d^2*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x] - 4*B*d*(a + b*x)*(b*c - a*d + d*(a + b*x))*Log[a + b*x] - d*(a + b*x)*Log[c + d*x]) + B*((b*c - a*d)^2 + 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d^2*(a + b*x)^2*Log[a + b*x] + 2*d^2*(a + b*x)^2*Log[c + d*x]) + 2*B*d^2*(a + b*x)^2*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) - 2*B*d^2*(a + b*x)^2*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(b^2*(b*c - a*d)*g^3*(a + b*x)^2)$$

fricas [B] time = 0.85, size = 289, normalized size = 2.05

$$\frac{2 \left((2A^2 + 2AB + B^2)b^2cd - (2A^2 + 2AB + B^2)abd^2 \right) ix + 2 \left(B^2b^2d^2ix^2 + 2B^2b^2cdix + B^2b^2c^2i \right) \log\left(\frac{bex+ae}{dx+c}\right)^2}{4 \left((b^5c - ab^4d) \right) g^3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^3,x, algorith="fricas")

[Out]
$$-1/4*(2*((2*A^2 + 2*A*B + B^2)*b^2*c*d - (2*A^2 + 2*A*B + B^2)*a*b*d^2)*i*x + 2*(B^2*b^2*d^2*i*x^2 + 2*B^2*b^2*c*d*i*x + B^2*b^2*c^2*i)*log((b*e*x + a*e)/(d*x + c))^2 + ((2*A^2 + 2*A*B + B^2)*b^2*c^2 - (2*A^2 + 2*A*B + B^2)*a$$

$$\begin{aligned} &^2*d^2)*i + 2*((2*A*B + B^2)*b^2*d^2*i*x^2 + 2*(2*A*B + B^2)*b^2*c*d*i*x + \\ &(2*A*B + B^2)*b^2*c^2*i)*\log((b*e*x + a*e)/(d*x + c))/((b^5*c - a*b^4*d)*g \\ &^3*x^2 + 2*(a*b^4*c - a^2*b^3*d)*g^3*x + (a^2*b^3*c - a^3*b^2*d)*g^3) \end{aligned}$$

giac [A] time = 1.29, size = 185, normalized size = 1.31

$$\frac{\left(2 B^2 i e^3 \log\left(\frac{b x e+a e}{d x+c}\right)^2+4 A B i e^3 \log\left(\frac{b x e+a e}{d x+c}\right)+2 B^2 i e^3 \log\left(\frac{b x e+a e}{d x+c}\right)+2 A^2 i e^3+2 A B i e^3+B^2 i e^3\right)(d x+c)^2\left(\frac{\quad}{(b c e-a d)}\right)}{4(b x e+a e)^2 g^3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^3,x, algorithm="giac")

[Out] -1/4*(2*B^2*i*e^3*log((b*x*e + a*e)/(d*x + c))^2 + 4*A*B*i*e^3*log((b*x*e + a*e)/(d*x + c)) + 2*B^2*i*e^3*log((b*x*e + a*e)/(d*x + c)) + 2*A^2*i*e^3 + 2*A*B*i*e^3 + B^2*i*e^3)*(d*x + c)^2*(b*c/((b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))/((b*x*e + a*e)^2*g^3)

maple [B] time = 0.05, size = 865, normalized size = 6.13

$$\frac{B^2 a d e^2 i \ln\left(\frac{b e}{d} + \frac{(a d-b c) e}{(d x+c) d}\right)^2}{2(a d-b c)^2\left(\frac{a e}{d x+c} - \frac{b c e}{(d x+c) d} + \frac{b e}{d}\right)^2 g^3} - \frac{B^2 b c e^2 i \ln\left(\frac{b e}{d} + \frac{(a d-b c) e}{(d x+c) d}\right)^2}{2(a d-b c)^2\left(\frac{a e}{d x+c} - \frac{b c e}{(d x+c) d} + \frac{b e}{d}\right)^2 g^3} + \frac{A B a d e^2 i \ln\left(\frac{b e}{d} + \frac{(a d-b c) e}{(d x+c) d}\right)}{(a d-b c)^2\left(\frac{a e}{d x+c} - \frac{b c e}{(d x+c) d} + \frac{b e}{d}\right)^2 g^3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*i*x+c*i)*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^3,x)

[Out] 1/2*d*e^2*i/(a*d-b*c)^2/g^3*A^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a-1/2*e^2*i/(a*d-b*c)^2/g^3*A^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*b*c+d*e^2*i/(a*d-b*c)^2/g^3*A*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-e^2*i/(a*d-b*c)^2/g^3*A*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*c+1/2*d*e^2*i/(a*d-b*c)^2/g^3*A*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a-1/2*e^2*i/(a*d-b*c)^2/g^3*A*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*b*c+1/2*d*e^2*i/(a*d-b*c)^2/g^3*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a-1/2*e^2*i/(a*d-b*c)^2/g^3*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*c+1/2*d*e^2*i/(a*d-b*c)^2/g^3*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*c+1/4*d*e^2*i/(a*d-b*c)^2/g^3*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a-1/4*e^2*i/(a*d-b*c)^2/g^3*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*b*c

maxima [B] time = 2.39, size = 1987, normalized size = 14.09

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^3,x, algorithm="maxima")

[Out]
$$-1/2*(2*b*x + a)*B^2*d*i*\log(b*e*x/(d*x + c) + a*e/(d*x + c))^2/(b^4*g^3*x^2 + 2*a*b^3*g^3*x + a^2*b^2*g^3) + 1/4*(2*((2*b*d*x - b*c + 3*a*d)/((b^4*c - a*b^3*d)*g^3*x^2 + 2*(a*b^3*c - a^2*b^2*d)*g^3*x + (a^2*b^2*c - a^3*b*d)*g^3) + 2*d^2*\log(b*x + a)/((b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*g^3) - 2*d^2*\log(d*x + c)/((b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*g^3))*\log(b*e*x/(d*x + c) + a*e/(d*x + c)) - (b^2*c^2 - 8*a*b*c*d + 7*a^2*d^2 + 2*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*\log(b*x + a)^2 + 2*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*\log(d*x + c)^2 - 6*(b^2*c*d - a*b*d^2)*x - 6*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*\log(b*x + a) + 2*(3*b^2*d^2*x^2 + 6*a*b*d^2*x + 3*a^2*d^2 - 2*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*\log(b*x + a))*\log(d*x + c))/(a^2*b^3*c^2*g^3 - 2*a^3*b^2*c*d*g^3 + a^4*b*d^2*g^3 + (b^5*c^2*g^3 - 2*a*b^4*c*d*g^3 + a^2*b^3*d^2*g^3)*x^2 + 2*(a*b^4*c^2*g^3 - 2*a^2*b^3*c*d*g^3 + a^3*b^2*d^2*g^3)*x))*B^2*c*i - 1/4*(2*((3*a*b*c - a^2*d + 2*(2*b^2*c - a*b*d)*x)/((b^5*c - a*b^4*d)*g^3*x^2 + 2*(a*b^4*c - a^2*b^3*d)*g^3*x + (a^2*b^3*c - a^3*b^2*d)*g^3) + 2*(2*b*c*d - a*d^2)*\log(b*x + a)/((b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)*g^3) - 2*(2*b*c*d - a*d^2)*\log(d*x + c)/((b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)*g^3))*\log(b*e*x/(d*x + c) + a*e/(d*x + c)) + (7*a*b^2*c^2 - 8*a^2*b*c*d + a^3*d^2 - 2*(2*a^2*b*c*d - a^3*d^2 + (2*b^3*c*d - a*b^2*d^2)*x^2 + 2*(2*a*b^2*c*d - a^2*b*d^2)*x)*\log(b*x + a)^2 - 2*(2*a^2*b*c*d - a^3*d^2 + (2*b^3*c*d - a*b^2*d^2)*x^2 + 2*(2*a*b^2*c*d - a^2*b*d^2)*x)*\log(d*x + c)^2 + 2*(4*b^3*c^2 - 5*a*b^2*c*d + a^2*b*d^2)*x + 2*(4*a^2*b*c*d - a^3*d^2 + (4*b^3*c*d - a*b^2*d^2)*x^2 + 2*(4*a*b^2*c*d - a^2*b*d^2)*x)*\log(b*x + a) - 2*(4*a^2*b*c*d - a^3*d^2 + (4*b^3*c*d - a*b^2*d^2)*x^2 + 2*(4*a*b^2*c*d - a^2*b*d^2)*x - 2*(2*a^2*b*c*d - a^3*d^2 + (2*b^3*c*d - a*b^2*d^2)*x^2 + 2*(2*a*b^2*c*d - a^2*b*d^2)*x)*\log(b*x + a))*\log(d*x + c))/(a^2*b^4*c^2*g^3 - 2*a^3*b^3*c*d*g^3 + a^4*b^2*d^2*g^3 + (b^6*c^2*g^3 - 2*a*b^5*c*d*g^3 + a^2*b^4*d^2*g^3)*x^2 + 2*(a*b^5*c^2*g^3 - 2*a^2*b^4*c*d*g^3 + a^3*b^3*d^2*g^3)*x))*B^2*d*i - 1/2*A*B*d*i*(2*(2*b*x + a)*\log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^4*g^3*x^2 + 2*a*b^3*g^3*x + a^2*b^2*g^3) + (3*a*b*c - a^2*d + 2*(2*b^2*c - a*b*d)*x)/((b^5*c - a*b^4*d)*g^3*x^2 + 2*(a*b^4*c - a^2*b^3*d)*g^3*x + (a^2*b^3*c - a^3*b^2*d)*g^3) + 2*(2*b*c*d - a*d^2)*\log(b*x + a)/((b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)*g^3) - 2*(2*b*c*d - a*d^2)*\log(d*x + c)/((b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)*g^3)) + 1/2*A*B*c*i*((2*b*d*x - b*c + 3*a*d)/((b^4*c - a*b^3*d)*g^3*x^2 + 2*(a*b^3*c - a^2*b^2*d)*g^3*x + (a^2*b^2*c - a^3*b*d)*g^3) - 2*\log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^3*g^3*x^2 + 2*a*b^2*g^3*x + a^2*b*g^3) + 2*d^2*\log(b*x + a)/((b^3*c^2 - 2*a*b^2*c*d +$$

$a^2*b*d^2)*g^3) - 2*d^2*log(d*x + c)/((b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*g^3) - 1/2*B^2*c*i*log(b*e*x/(d*x + c) + a*e/(d*x + c))^2/(b^3*g^3*x^2 + 2*a*b^2*g^3*x + a^2*b*g^3) - 1/2*(2*b*x + a)*A^2*d*i/(b^4*g^3*x^2 + 2*a*b^3*g^3*x + a^2*b^2*g^3) - 1/2*A^2*c*i/(b^3*g^3*x^2 + 2*a*b^2*g^3*x + a^2*b*g^3)$

mupad [B] time = 6.18, size = 469, normalized size = 3.33

$$\frac{x(2bdiA^2 + 2bdiAB + bdiB^2) + A^2adi + A^2bci + \frac{B^2adi}{2} + \frac{B^2bci}{2} + ABadi + ABbci}{2a^2b^2g^3 + 4ab^3g^3x + 2b^4g^3x^2} - \ln\left(\frac{e(a+bx)}{c+dx}\right)^2$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int(((c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x)^3, x)`

[Out] $-(x*(2A^2*b*d*i + B^2*b*d*i + 2A*B*b*d*i) + A^2*a*d*i + A^2*b*c*i + (B^2*a*d*i)/2 + (B^2*b*c*i)/2 + A*B*a*d*i + A*B*b*c*i)/(2*a^2*b^2*g^3 + 2*b^4*g^3*x^2 + 4*a*b^3*g^3*x) - \log((e*(a + b*x))/(c + d*x))^2*((B^2*c*i)/(2*b^2*g^3) + (B^2*a*d*i)/(2*b^3*g^3) + (B^2*d*i*x)/(b^2*g^3))/(2*a*x + b*x^2 + a^2/b) - (B^2*d^2*i)/(2*b^2*g^3*(a*d - b*c)) - (\log((e*(a + b*x))/(c + d*x)))*(x*((B^2*i)/(b^2*g^3) + (2A*B*i)/(b^2*g^3)) + (A*B*a*i)/(b^3*g^3) + (B*i*(A*b*c - B*a*d + B*b*c))/(b^3*d*g^3) + (B^2*d^2*i*((2*a^2*d^2 + b^2*c^2 - 3*a*b*c*d)/(2*b*d^3) + (a*(a*d - b*c))/(2*b*d^2)))/(b^2*g^3*(a*d - b*c)))/((b*x^2)/d + a^2/(b*d) + (2*a*x)/d) - (B*d^2*i*atan(((2*b^3*c*g^3 + 2*a*b^2*d*g^3)/(2*b^2*g^3) + 2*b*d*x)*1i)/(a*d - b*c))*(2A + B)*1i)/(b^2*g^3*(a*d - b*c))$

sympy [B] time = 14.31, size = 714, normalized size = 5.06

$$\frac{Bd^2i(2A + B) \log\left(x + \frac{2ABad^3i + 2ABbcd^2i + B^2ad^3i + B^2bcd^2i - \frac{Ba^2d^4i(2A+B)}{ad-bc} + \frac{2Babcd^3i(2A+B)}{ad-bc} - \frac{Bb^2c^2d^2i(2A+B)}{ad-bc}}{4ABbd^3i + 2B^2bd^3i}\right)}{2b^2g^3(ad - bc)} + \frac{Bd^2i(2A + B) \log(x)}{2b^2g^3(ad - bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((d*i*x+c*i)*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)**3,x)`

[Out] $-B*d**2*i*(2A + B)*\log(x + (2A*B*a*d**3*i + 2A*B*b*c*d**2*i + B**2*a*d**3*i + B**2*b*c*d**2*i - B*a**2*d**4*i*(2A + B)/(a*d - b*c) + 2*B*a*b*c*d**3*i*(2A + B)/(a*d - b*c) - B*b**2*c**2*d**2*i*(2A + B)/(a*d - b*c))/(4A*B*b*d**3*i + 2*B**2*b*d**3*i))/(2*b**2*g**3*(a*d - b*c)) + B*d**2*i*(2A + B)*\log(x + (2A*B*a*d**3*i + 2A*B*b*c*d**2*i + B**2*a*d**3*i + B**2*b*c*d**2*i + B*a**2*d**4*i*(2A + B)/(a*d - b*c) - 2*B*a*b*c*d**3*i*(2A + B)/(a$

$$\begin{aligned}
& d - b*c) + B*b**2*c**2*d**2*i*(2*A + B)/(a*d - b*c))/(4*A*B*b*d**3*i + 2*B* \\
& *2*b*d**3*i))/(2*b**2*g**3*(a*d - b*c)) + (B**2*c**2*i + 2*B**2*c*d*i*x + B \\
& **2*d**2*i*x**2)*\log(e*(a + b*x)/(c + d*x))**2/(2*a**3*d*g**3 - 2*a**2*b*c* \\
& g**3 + 4*a**2*b*d*g**3*x - 4*a*b**2*c*g**3*x + 2*a*b**2*d*g**3*x**2 - 2*b** \\
& 3*c*g**3*x**2) + (-2*A**2*a*d*i - 2*A**2*b*c*i - 2*A*B*a*d*i - 2*A*B*b*c*i \\
& - B**2*a*d*i - B**2*b*c*i + x*(-4*A**2*b*d*i - 4*A*B*b*d*i - 2*B**2*b*d*i)) \\
& / (4*a**2*b**2*g**3 + 8*a*b**3*g**3*x + 4*b**4*g**3*x**2) + (-2*A*B*a*d*i - \\
& 2*A*B*b*c*i - 4*A*B*b*d*i*x - B**2*a*d*i - B**2*b*c*i - 2*B**2*b*d*i*x)*\log \\
& (e*(a + b*x)/(c + d*x))/(2*a**2*b**2*g**3 + 4*a*b**3*g**3*x + 2*b**4*g**3*x \\
& **2)
\end{aligned}$$

$$3.62 \quad \int \frac{(ci+dx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^4} dx$$

Optimal. Leaf size=287

$$\frac{bi(c+dx)^3\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{3g^4(a+bx)^3(bc-ad)^2} - \frac{2bBi(c+dx)^3\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{9g^4(a+bx)^3(bc-ad)^2} + \frac{di(c+dx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{2g^4(a+bx)^2(bc-ad)^2} + \frac{Bd^3i\log(c+dx)}{3b^2g^4(bc-ad)^2}$$

[Out] $\frac{1}{4}B^2d^3i\frac{(d^2x+c)^2(-ad+bc)^2g^4(b^2x+a)^{-2}-2/27b^2B^2i(d^2x+c)^3(-ad+bc)^2g^4(b^2x+a)^{-3}+1/2B^2d^3i(d^2x+c)^2(A+B\ln(e(b^2x+a)/(d^2x+c)))}{(-ad+bc)^2g^4(b^2x+a)^{-2}-2/9b^2B^2i(d^2x+c)^3(A+B\ln(e(b^2x+a)/(d^2x+c)))} - \frac{2bBi(c+dx)^3\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{9g^4(a+bx)^3(bc-ad)^2} + \frac{di(c+dx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{2g^4(a+bx)^2(bc-ad)^2} + \frac{Bd^3i\log(c+dx)}{3b^2g^4(bc-ad)^2}$

Rubi [C] time = 2.29, antiderivative size = 741, normalized size of antiderivative = 2.58, number of steps used = 66, number of rules used = 11, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.275$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{B^2d^3i\text{PolyLog}\left(2, -\frac{d(a+bx)}{bc-ad}\right)}{3b^2g^4(bc-ad)^2} + \frac{B^2d^3i\text{PolyLog}\left(2, \frac{b(c+dx)}{bc-ad}\right)}{3b^2g^4(bc-ad)^2} + \frac{Bd^3i\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{3b^2g^4(bc-ad)^2} - \frac{Bd^3i\log(c+dx)}{3b^2g^4(bc-ad)^2}$$

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2)/(a*g + b*g*x)^4, x]

[Out] $\frac{(-2B^2(b^2c - a^2d)i)/(27b^2g^4(a + b^2x)^3) + (B^2d^3i)/(36b^2g^4(a + b^2x)^2) + (5B^2d^2i)/(18b^2(b^2c - a^2d)g^4(a + b^2x)) + (5B^2d^3i\text{Log}[a + b^2x])/(18b^2(b^2c - a^2d)^2g^4) - (B^2d^3i\text{Log}[a + b^2x]^2)/(6b^2(b^2c - a^2d)^2g^4) - (2B^2(b^2c - a^2d)i(A + B\text{Log}[(e(a + b^2x))/(c + d^2x])])/(9b^2g^4(a + b^2x)^3) - (B^2d^3i(A + B\text{Log}[(e(a + b^2x))/(c + d^2x])])/(6b^2g^4(a + b^2x)^2) + (B^2d^2i(A + B\text{Log}[(e(a + b^2x))/(c + d^2x])])/(3b^2(b^2c - a^2d)g^4(a + b^2x)) + (B^2d^3i\text{Log}[a + b^2x](A + B\text{Log}[(e(a + b^2x))/(c + d^2x])])/(3b^2(b^2c - a^2d)^2g^4) - ((b^2c - a^2d)i(A + B\text{Log}[(e(a + b^2x))/(c + d^2x])^2)/(3b^2g^4(a + b^2x)^3) - (d^3i(A + B\text{Log}[(e(a + b^2x))/(c + d^2x])^2)/(2b^2g^4(a + b^2x)^2) - (5B^2d^3i\text{Log}[c + d^2x])/(18b^2(b^2c - a^2d)^2g^4) + (B^2d^3i\text{Log}[-((d(a + b^2x))/(b^2c - a^2d))]\text{Log}[c + d^2x])/(3b^2(b^2c - a^2d)^2g^4) - (B^2d^3i(A + B\text{Log}[(e(a + b^2x))/(c + d^2x])]\text{Log}[c + d^2x])/(3b^2(b^2c - a^2d)^2g^4) - (B^2d^3i\text{Log}[c + d^2x]^2)/(6b^2(b^2c - a^2d)^2g^4) + (B^2d^3i\text{Log}[a + b^2x]\text{Log}[(b^2(c + d^2x))/(b^2c - a^2d)])/(3b^2(b^2c - a^2d)^2g^4) + (B^2d^3i\text{PolyLog}[2, -((d(a + b^2x))/(b^2c - a^2d))])}{3b^2g^4(bc-ad)^2}$

$$\frac{+ b*x)}{(b*c - a*d))]/(3*b^2*(b*c - a*d)^2*g^4) + (B^2*d^3*i*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]/(3*b^2*(b*c - a*d)^2*g^4)$$

Rule 12

$$\text{Int}[(a_*)(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \ \&\& \ !\text{Match} \\ \text{Q}[u, (b_)*(v_)] /; \text{FreeQ}[b, x]$$

Rule 44

$$\text{Int}[(a_*) + (b_)*(x_)]^{(m_)*((c_*) + (d_)*(x_)]^{(n_)}, x_Symbol] \rightarrow \text{Int}[\text{ExpandIntegrand}[(a + b*x)^m*(c + d*x)^n, x], x] /; \text{FreeQ}\{a, b, c, d\}, x] \ \&\& \\ \&\& \ \text{NeQ}[b*c - a*d, 0] \ \&\& \ \text{ILtQ}[m, 0] \ \&\& \ \text{IntegerQ}[n] \ \&\& \ !(\text{IGtQ}[n, 0] \ \&\& \ \text{LtQ}[m + n + 2, 0])$$

Rule 2301

$$\text{Int}[(a_*) + \text{Log}[(c_)*(x_)]^{(n_)}*(b_)]/(x_), x_Symbol] \rightarrow \text{Simp}[(a + b*\text{Log}[c*x^n])^2/(2*b*n), x] /; \text{FreeQ}\{a, b, c, n\}, x]$$

Rule 2390

$$\text{Int}[(a_*) + \text{Log}[(c_)*((d_*) + (e_)*(x_)]^{(n_)}*(b_)]^{(p_)*((f_*) + (g_*) \\ *(x_)]^{(q_)}, x_Symbol] \rightarrow \text{Dist}[1/e, \text{Subst}[\text{Int}[(f*x)/d]^q*(a + b*\text{Log}[c*x^n])^p, x], x, d + e*x], x] /; \text{FreeQ}\{a, b, c, d, e, f, g, n, p, q\}, x] \ \&\& \ \text{EqQ}[e*f - d*g, 0]$$

Rule 2391

$$\text{Int}[\text{Log}[(c_)*((d_*) + (e_)*(x_)]^{(n_)})]/(x_), x_Symbol] \rightarrow -\text{Simp}[\text{PolyLog}[2, -(c*e*x^n)]/n, x] /; \text{FreeQ}\{c, d, e, n\}, x] \ \&\& \ \text{EqQ}[c*d, 1]$$

Rule 2393

$$\text{Int}[(a_*) + \text{Log}[(c_)*((d_*) + (e_)*(x_))]*(b_)]/((f_*) + (g_)*(x_)), x_ \\ \text{Symbol}] \rightarrow \text{Dist}[1/g, \text{Subst}[\text{Int}[(a + b*\text{Log}[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; \text{FreeQ}\{a, b, c, d, e, f, g\}, x] \ \&\& \ \text{NeQ}[e*f - d*g, 0] \ \&\& \ \text{EqQ}[g + c*(e*f - d*g), 0]$$

Rule 2394

$$\text{Int}[(a_*) + \text{Log}[(c_)*((d_*) + (e_)*(x_)]^{(n_)}*(b_)]/((f_*) + (g_)*(x_ \\)), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[(e*(f + g*x))/(e*f - d*g)]*(a + b*\text{Log}[c*(d + e*x)^n]))/g, x] - \text{Dist}[(b*e^n)/g, \text{Int}[\text{Log}[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; \text{FreeQ}\{a, b, c, d, e, f, g, n\}, x] \ \&\& \ \text{NeQ}[e*f - d*g, 0]$$

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol]
:= With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n]^p, RFx, x]},
Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol]
:= Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e,
Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.),
x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)),
x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d,
e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]]
/; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[
RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(62c + 62dx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{(ag + bgx)^4} dx &= \int \left(\frac{62(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{bg^4(a + bx)^4} + \frac{62d \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{bg^4(a + bx)^3} \right) dx \\
&= \frac{(62d) \int \frac{\left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{(a+bx)^3} dx}{bg^4} + \frac{(62(bc - ad)) \int \frac{\left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{(a+bx)^4} dx}{bg^4} \\
&= -\frac{62(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{3b^2g^4(a + bx)^3} - \frac{31d \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^2g^4(a + bx)^2} + \dots \\
&= -\frac{62(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{3b^2g^4(a + bx)^3} - \frac{31d \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^2g^4(a + bx)^2} + \dots \\
&= -\frac{62(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{3b^2g^4(a + bx)^3} - \frac{31d \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^2g^4(a + bx)^2} + \dots \\
&= -\frac{62(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{3b^2g^4(a + bx)^3} - \frac{31d \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^2g^4(a + bx)^2} + \dots \\
&= -\frac{124B(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{9b^2g^4(a + bx)^3} - \frac{31Bd \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{3b^2g^4(a + bx)^2} + \dots \\
&= -\frac{124B(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{9b^2g^4(a + bx)^3} - \frac{31Bd \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{3b^2g^4(a + bx)^2} + \dots \\
&= -\frac{124B(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{9b^2g^4(a + bx)^3} - \frac{31Bd \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{3b^2g^4(a + bx)^2} + \dots \\
&= -\frac{124B^2(bc - ad)}{27b^2g^4(a + bx)^3} + \frac{31B^2d}{18b^2g^4(a + bx)^2} + \frac{155B^2d^2}{9b^2(bc - ad)g^4(a + bx)} + \dots \\
&= -\frac{124B^2(bc - ad)}{27b^2g^4(a + bx)^3} + \frac{31B^2d}{18b^2g^4(a + bx)^2} + \frac{155B^2d^2}{9b^2(bc - ad)g^4(a + bx)} + \dots \\
&= -\frac{124B^2(bc - ad)}{27b^2g^4(a + bx)^3} + \frac{31B^2d}{18b^2g^4(a + bx)^2} + \frac{155B^2d^2}{9b^2(bc - ad)g^4(a + bx)} + \dots \\
&= -\frac{124B^2(bc - ad)}{27b^2g^4(a + bx)^3} + \frac{31B^2d}{18b^2g^4(a + bx)^2} + \frac{155B^2d^2}{9b^2(bc - ad)g^4(a + bx)} + \dots
\end{aligned}$$

Mathematica [C] time = 1.04, size = 1035, normalized size = 3.61

$$i \left(36 \left(A + B \log \left(\frac{e^{(a+bx)}}{c+dx} \right) \right)^2 (bc - ad)^3 + 54d(a + bx) \left(A + B \log \left(\frac{e^{(a+bx)}}{c+dx} \right) \right)^2 (bc - ad)^2 + 27Bd(a + bx) \left(2 \left(A + B \log \left(\frac{e^{(a+bx)}}{c+dx} \right) \right)^2 (bc - ad) + 27Bd(a + bx) \right) \right)$$

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b*g*x)^4,x]

[Out] -1/108*(i*(36*(b*c - a*d)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 + 54*d*(b*c - a*d)^2*(a + b*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 + 27*B*d*(a + b*x)*(2*(b*c - a*d)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 4*d*(-(b*c) + a*d)*(a + b*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 4*d^2*(a + b*x)^2*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 4*d^2*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x] - 4*B*d*(a + b*x)*(b*c - a*d + d*(a + b*x)*Log[a + b*x] - d*(a + b*x)*Log[c + d*x]) + B*((b*c - a*d)^2 + 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d^2*(a + b*x)^2*Log[a + b*x] + 2*d^2*(a + b*x)^2*Log[c + d*x]) + 2*B*d^2*(a + b*x)^2*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]) + 2*B*(12*(b*c - a*d)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 18*d*(b*c - a*d)^2*(a + b*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 36*d^2*(b*c - a*d)*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 36*d^3*(a + b*x)^3*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 36*d^3*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x] + 36*B*d^2*(a + b*x)^2*(b*c - a*d + d*(a + b*x)*Log[a + b*x] - d*(a + b*x)*Log[c + d*x]) - 9*B*d*(a + b*x)*((b*c - a*d)^2 + 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d^2*(a + b*x)^2*Log[a + b*x] + 2*d^2*(a + b*x)^2*Log[c + d*x]) + 2*B*(2*(b*c - a*d)^3 - 3*d*(b*c - a*d)^2*(a + b*x) + 6*d^2*(b*c - a*d)*(a + b*x)^2 + 6*d^3*(a + b*x)^3*Log[a + b*x] - 6*d^3*(a + b*x)^3*Log[c + d*x]) - 18*B*d^3*(a + b*x)^3*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + 18*B*d^3*(a + b*x)^3*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(b^2*(b*c - a*d)^2*g^4*(a + b*x)^3)

fricas [B] time = 0.84, size = 601, normalized size = 2.09

$$6 \left((6AB + 5B^2)b^3cd^2 - (6AB + 5B^2)ab^2d^3 \right) ix^2 - 3 \left((18A^2 + 6AB - B^2)b^3c^2d - 18(2A^2 + 2AB + B^2)ab^2cd^2 - \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^4,x, algorithm="fricas")

[Out] 1/108*(6*((6*A*B + 5*B^2)*b^3*c*d^2 - (6*A*B + 5*B^2)*a*b^2*d^3)*i*x^2 - 3*((18*A^2 + 6*A*B - B^2)*b^3*c^2*d - 18*(2*A^2 + 2*A*B + B^2)*a*b^2*c*d^2 + (18*A^2 + 30*A*B + 19*B^2)*a^2*b*d^3)*i*x + 18*(B^2*b^3*d^3*i*x^3 + 3*B^2*a*b^2*d^3*i*x^2 - 3*(B^2*b^3*c^2*d - 2*B^2*a*b^2*c*d^2)*i*x - (2*B^2*b^3*c^3 - 3*B^2*a*b^2*c^2*d)*i)*log((b*e*x + a*e)/(d*x + c))^2 - (4*(9*A^2 + 6*A*B + 2*B^2)*b^3*c^3 - 27*(2*A^2 + 2*A*B + B^2)*a*b^2*c^2*d + (18*A^2 + 30*A*B + 19*B^2)*a^3*d^3)*i + 6*((6*A*B + 5*B^2)*b^3*d^3*i*x^3 + 3*(2*B^2*b^3*c*d^2 + 3*(2*A*B + B^2)*a*b^2*d^3)*i*x^2 - 3*((6*A*B + B^2)*b^3*c^2*d - 6*(2*A*B + B^2)*a*b^2*c*d^2)*i*x - (4*(3*A*B + B^2)*b^3*c^3 - 9*(2*A*B + B^2)*a*b^2*c^2*d)*i)*log((b*e*x + a*e)/(d*x + c)))/((b^7*c^2 - 2*a*b^6*c*d + a^2*b^5*d^2)*g^4*x^3 + 3*(a*b^6*c^2 - 2*a^2*b^5*c*d + a^3*b^4*d^2)*g^4*x^2 + 3*(a^2*b^5*c^2 - 2*a^3*b^4*c*d + a^4*b^3*d^2)*g^4*x + (a^3*b^4*c^2 - 2*a^4*b^3*c*d + a^5*b^2*d^2)*g^4)

giac [A] time = 1.32, size = 437, normalized size = 1.52

$$\left(36 B^2 b i e^4 \log\left(\frac{b x e+a e}{d x+c}\right)^2 - \frac{54 (b x e+a e) B^2 d i e^3 \log\left(\frac{b x e+a e}{d x+c}\right)^2}{d x+c} + 72 A B b i e^4 \log\left(\frac{b x e+a e}{d x+c}\right) + 24 B^2 b i e^4 \log\left(\frac{b x e+a e}{d x+c}\right) - \frac{108 (b x e+a e) A B d i e^3 \log\left(\frac{b x e+a e}{d x+c}\right)}{d x+c} - 54 (b x e+a e) B^2 d i e^3 \log\left(\frac{b x e+a e}{d x+c}\right) + 36 A^2 b i e^4 + 24 A B b i e^4 + 8 B^2 b i e^4 - 54 (b x e+a e) A^2 d i e^3 / (d x+c) - 54 (b x e+a e) A B d i e^3 / (d x+c) - 27 (b x e+a e) B^2 d i e^3 / (d x+c) \right) / ((b x e+a e)^3 b c g^4 / (d x+c)^3 - (b x e+a e)^3 a d g^4 / (d x+c)^3)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^4,x, algorithm="giac")

[Out] -1/108*(36*B^2*b*i*e^4*log((b*x*e + a*e)/(d*x + c))^2 - 54*(b*x*e + a*e)*B^2*d*i*e^3*log((b*x*e + a*e)/(d*x + c))^2/(d*x + c) + 72*A*B*b*i*e^4*log((b*x*e + a*e)/(d*x + c)) + 24*B^2*b*i*e^4*log((b*x*e + a*e)/(d*x + c)) - 108*(b*x*e + a*e)*A*B*d*i*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c) - 54*(b*x*e + a*e)*B^2*d*i*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c) + 36*A^2*b*i*e^4 + 24*A*B*b*i*e^4 + 8*B^2*b*i*e^4 - 54*(b*x*e + a*e)*A^2*d*i*e^3/(d*x + c) - 54*(b*x*e + a*e)*A*B*d*i*e^3/(d*x + c) - 27*(b*x*e + a*e)*B^2*d*i*e^3/(d*x + c))*(b*c/((b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))/((b*x*e + a*e)^3*b*c*g^4/(d*x + c)^3 - (b*x*e + a*e)^3*a*d*g^4/(d*x + c)^3)

maple [B] time = 0.05, size = 1765, normalized size = 6.15

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((d*i*x+c*i)*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^4,x)`

[Out]
$$\frac{1}{2}d^2e^{2i}/(a*d-b*c)^3/g^4A^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2$$

$$*a-1/2*d*e^2*i/(a*d-b*c)^3/g^4A^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2$$

$$*b*c-1/3*d*e^3*i/(a*d-b*c)^3/g^4A^2*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d$$

$$*e)^3*a+1/3*e^3*i/(a*d-b*c)^3/g^4A^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e$$

$$+b/d*e)^3*c+d^2*e^2*i/(a*d-b*c)^3/g^4A*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+$$

$$b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-d*e^2*i/(a*d-b*c)^3/g^4A*B/(1/($$

$$d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*c+1$$

$$/2*d^2*e^2*i/(a*d-b*c)^3/g^4A*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*$$

$$a-1/2*d*e^2*i/(a*d-b*c)^3/g^4A*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2$$

$$*b*c-2/3*d*e^3*i/(a*d-b*c)^3/g^4A*B*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d$$

$$*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+2/3*e^3*i/(a*d-b*c)^3/g^4A*B*b^2/($$

$$1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-$$

$$2/9*d*e^3*i/(a*d-b*c)^3/g^4A*B*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3$$

$$*a+2/9*e^3*i/(a*d-b*c)^3/g^4A*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e$$

$$)^3*c+1/2*d^2*e^2*i/(a*d-b*c)^3/g^4B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d$$

$$*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a-1/2*d*e^2*i/(a*d-b*c)^3/g^4B^2/($$

$$1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2$$

$$*b*c+1/2*d^2*e^2*i/(a*d-b*c)^3/g^4B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d$$

$$*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-1/2*d*e^2*i/(a*d-b*c)^3/g^4B^2/(1/$$

$$(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*c+$$

$$1/4*d^2*e^2*i/(a*d-b*c)^3/g^4B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2$$

$$*a-1/4*d*e^2*i/(a*d-b*c)^3/g^4B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2$$

$$*b*c-1/3*d*e^3*i/(a*d-b*c)^3/g^4B^2*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d$$

$$*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a+1/3*e^3*i/(a*d-b*c)^3/g^4B^2*b^$$

$$2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)$$

$$^2*c-2/9*d*e^3*i/(a*d-b*c)^3/g^4B^2*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d$$

$$*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+2/9*e^3*i/(a*d-b*c)^3/g^4B^2*b^2/($$

$$1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-$$

$$2/27*d*e^3*i/(a*d-b*c)^3/g^4B^2*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^$$

$$3*a+2/27*e^3*i/(a*d-b*c)^3/g^4B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d$$

$$*e)^3*c$$

maxima [B] time = 3.46, size = 3282, normalized size = 11.44

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^4,x, algorithm="maxima")`

[Out]
$$-1/6*(3*b*x + a)*B^2*d*i*log(b*e*x/(d*x + c) + a*e/(d*x + c))^2/(b^5*g^4*x^3 + 3*a*b^4*g^4*x^2 + 3*a^2*b^3*g^4*x + a^3*b^2*g^4) - 1/54*(6*((6*b^2*d^2*x^2 + 2*b^2*c^2 - 7*a*b*c*d + 11*a^2*d^2 - 3*(b^2*c*d - 5*a*b*d^2)*x)/((b^6$$

$$\begin{aligned}
& *c^2 - 2*a*b^5*c*d + a^2*b^4*d^2)*g^4*x^3 + 3*(a*b^5*c^2 - 2*a^2*b^4*c*d + \\
& a^3*b^3*d^2)*g^4*x^2 + 3*(a^2*b^4*c^2 - 2*a^3*b^3*c*d + a^4*b^2*d^2)*g^4*x \\
& + (a^3*b^3*c^2 - 2*a^4*b^2*c*d + a^5*b*d^2)*g^4) + 6*d^3*log(b*x + a)/((b^4 \\
& *c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^3)*g^4) - 6*d^3*log(d*x + \\
& c)/((b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^3)*g^4))*log(b*e*x \\
& /(d*x + c) + a*e/(d*x + c)) + (4*b^3*c^3 - 27*a*b^2*c^2*d + 108*a^2*b*c*d^2 \\
& - 85*a^3*d^3 + 66*(b^3*c*d^2 - a*b^2*d^3)*x^2 - 18*(b^3*d^3*x^3 + 3*a*b^2* \\
& d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*log(b*x + a)^2 - 18*(b^3*d^3*x^3 + 3*a*b \\
& ^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*log(d*x + c)^2 - 3*(5*b^3*c^2*d - 54* \\
& a*b^2*c*d^2 + 49*a^2*b*d^3)*x + 66*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b \\
& *d^3*x + a^3*d^3)*log(b*x + a) - 6*(11*b^3*d^3*x^3 + 33*a*b^2*d^3*x^2 + 33* \\
& a^2*b*d^3*x + 11*a^3*d^3 - 6*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x \\
& + a^3*d^3)*log(b*x + a))*log(d*x + c))/(a^3*b^4*c^3*g^4 - 3*a^4*b^3*c^2*d* \\
& g^4 + 3*a^5*b^2*c*d^2*g^4 - a^6*b*d^3*g^4 + (b^7*c^3*g^4 - 3*a*b^6*c^2*d*g^ \\
& 4 + 3*a^2*b^5*c*d^2*g^4 - a^3*b^4*d^3*g^4)*x^3 + 3*(a*b^6*c^3*g^4 - 3*a^2*b \\
& ^5*c^2*d*g^4 + 3*a^3*b^4*c*d^2*g^4 - a^4*b^3*d^3*g^4)*x^2 + 3*(a^2*b^5*c^3* \\
& g^4 - 3*a^3*b^4*c^2*d*g^4 + 3*a^4*b^3*c*d^2*g^4 - a^5*b^2*d^3*g^4)*x))*B^2* \\
& c*i - 1/108*(6*((5*a*b^2*c^2 - 22*a^2*b*c*d + 5*a^3*d^2 - 6*(3*b^3*c*d - a* \\
& b^2*d^2)*x^2 + 3*(3*b^3*c^2 - 16*a*b^2*c*d + 5*a^2*b*d^2)*x)/((b^7*c^2 - 2* \\
& a*b^6*c*d + a^2*b^5*d^2)*g^4*x^3 + 3*(a*b^6*c^2 - 2*a^2*b^5*c*d + a^3*b^4*d \\
& ^2)*g^4*x^2 + 3*(a^2*b^5*c^2 - 2*a^3*b^4*c*d + a^4*b^3*d^2)*g^4*x + (a^3*b^ \\
& 4*c^2 - 2*a^4*b^3*c*d + a^5*b^2*d^2)*g^4) - 6*(3*b*c*d^2 - a*d^3)*log(b*x + \\
& a)/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*g^4) + 6*(3* \\
& b*c*d^2 - a*d^3)*log(d*x + c)/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - \\
& a^3*b^2*d^3)*g^4))*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + (19*a*b^3*c^3 - \\
& 189*a^2*b^2*c^2*d + 189*a^3*b*c*d^2 - 19*a^4*d^3 - 6*(27*b^4*c^2*d - 32*a*b \\
& ^3*c*d^2 + 5*a^2*b^2*d^3)*x^2 + 18*(3*a^3*b*c*d^2 - a^4*d^3 + (3*b^4*c*d^2 \\
& - a*b^3*d^3)*x^3 + 3*(3*a*b^3*c*d^2 - a^2*b^2*d^3)*x^2 + 3*(3*a^2*b^2*c*d^2 \\
& - a^3*b*d^3)*x)*log(b*x + a)^2 + 18*(3*a^3*b*c*d^2 - a^4*d^3 + (3*b^4*c*d^ \\
& 2 - a*b^3*d^3)*x^3 + 3*(3*a*b^3*c*d^2 - a^2*b^2*d^3)*x^2 + 3*(3*a^2*b^2*c*d \\
& ^2 - a^3*b*d^3)*x)*log(d*x + c)^2 + 3*(9*b^4*c^3 - 125*a*b^3*c^2*d + 135*a^ \\
& 2*b^2*c*d^2 - 19*a^3*b*d^3)*x - 6*(27*a^3*b*c*d^2 - 5*a^4*d^3 + (27*b^4*c*d \\
& ^2 - 5*a*b^3*d^3)*x^3 + 3*(27*a*b^3*c*d^2 - 5*a^2*b^2*d^3)*x^2 + 3*(27*a^2* \\
& b^2*c*d^2 - 5*a^3*b*d^3)*x)*log(b*x + a) + 6*(27*a^3*b*c*d^2 - 5*a^4*d^3 + \\
& (27*b^4*c*d^2 - 5*a*b^3*d^3)*x^3 + 3*(27*a*b^3*c*d^2 - 5*a^2*b^2*d^3)*x^2 + \\
& 3*(27*a^2*b^2*c*d^2 - 5*a^3*b*d^3)*x - 6*(3*a^3*b*c*d^2 - a^4*d^3 + (3*b^4 \\
& *c*d^2 - a*b^3*d^3)*x^3 + 3*(3*a*b^3*c*d^2 - a^2*b^2*d^3)*x^2 + 3*(3*a^2*b^ \\
& 2*c*d^2 - a^3*b*d^3)*x)*log(b*x + a))*log(d*x + c))/(a^3*b^5*c^3*g^4 - 3*a^ \\
& 4*b^4*c^2*d*g^4 + 3*a^5*b^3*c*d^2*g^4 - a^6*b^2*d^3*g^4 + (b^8*c^3*g^4 - 3* \\
& a*b^7*c^2*d*g^4 + 3*a^2*b^6*c*d^2*g^4 - a^3*b^5*d^3*g^4)*x^3 + 3*(a*b^7*c^3 \\
& *g^4 - 3*a^2*b^6*c^2*d*g^4 + 3*a^3*b^5*c*d^2*g^4 - a^4*b^4*d^3*g^4)*x^2 + 3 \\
& *(a^2*b^6*c^3*g^4 - 3*a^3*b^5*c^2*d*g^4 + 3*a^4*b^4*c*d^2*g^4 - a^5*b^3*d^3 \\
& *g^4)*x))*B^2*d*i - 1/18*A*B*d*i*(6*(3*b*x + a)*log(b*e*x/(d*x + c) + a*e/(\\
& d*x + c))/(b^5*g^4*x^3 + 3*a*b^4*g^4*x^2 + 3*a^2*b^3*g^4*x + a^3*b^2*g^4) + \\
& (5*a*b^2*c^2 - 22*a^2*b*c*d + 5*a^3*d^2 - 6*(3*b^3*c*d - a*b^2*d^2)*x^2 +
\end{aligned}$$

$$\begin{aligned}
& 3*(3*b^3*c^2 - 16*a*b^2*c*d + 5*a^2*b*d^2)*x)/((b^7*c^2 - 2*a*b^6*c*d + a^2* \\
& *b^5*d^2)*g^4*x^3 + 3*(a*b^6*c^2 - 2*a^2*b^5*c*d + a^3*b^4*d^2)*g^4*x^2 + 3 \\
& *(a^2*b^5*c^2 - 2*a^3*b^4*c*d + a^4*b^3*d^2)*g^4*x + (a^3*b^4*c^2 - 2*a^4*b^3*c*d + a^5*b^2*d^2)*g^4) - 6*(3*b*c*d^2 - a*d^3)*\log(b*x + a)/((b^5*c^3 - \\
& 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*g^4) + 6*(3*b*c*d^2 - a*d^3) \\
&)*\log(d*x + c)/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*g \\
& ^4)) - 1/9*A*B*c*i*((6*b^2*d^2*x^2 + 2*b^2*c^2 - 7*a*b*c*d + 11*a^2*d^2 - 3 \\
& *(b^2*c*d - 5*a*b*d^2)*x)/((b^6*c^2 - 2*a*b^5*c*d + a^2*b^4*d^2)*g^4*x^3 + \\
& 3*(a*b^5*c^2 - 2*a^2*b^4*c*d + a^3*b^3*d^2)*g^4*x^2 + 3*(a^2*b^4*c^2 - 2*a^ \\
& 3*b^3*c*d + a^4*b^2*d^2)*g^4*x + (a^3*b^3*c^2 - 2*a^4*b^2*c*d + a^5*b*d^2)* \\
& g^4) + 6*\log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^4*g^4*x^3 + 3*a*b^3*g^4*x^ \\
& 2 + 3*a^2*b^2*g^4*x + a^3*b*g^4) + 6*d^3*\log(b*x + a)/((b^4*c^3 - 3*a*b^3*c \\
& ^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^3)*g^4) - 6*d^3*\log(d*x + c)/((b^4*c^3 - 3 \\
& *a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^3)*g^4)) - 1/3*B^2*c*i*\log(b*e*x/(\\
& d*x + c) + a*e/(d*x + c))^2/(b^4*g^4*x^3 + 3*a*b^3*g^4*x^2 + 3*a^2*b^2*g^4* \\
& x + a^3*b*g^4) - 1/6*(3*b*x + a)*A^2*d*i/(b^5*g^4*x^3 + 3*a*b^4*g^4*x^2 + 3 \\
& *a^2*b^3*g^4*x + a^3*b^2*g^4) - 1/3*A^2*c*i/(b^4*g^4*x^3 + 3*a*b^3*g^4*x^2 \\
& + 3*a^2*b^2*g^4*x + a^3*b*g^4)
\end{aligned}$$

mupad [B] time = 7.70, size = 955, normalized size = 3.33

$$-\ln\left(\frac{e(a+bx)}{c+dx}\right)^2 \left(\frac{\frac{B^2 ci}{3b^2 g^4} + \frac{B^2 adi}{6b^3 g^4} + \frac{B^2 dix}{2b^2 g^4}}{3a^2 x + \frac{a^3}{b} + b^2 x^3 + 3abx^2} - \frac{B^2 d^3 i}{6b^2 g^4 (a^2 d^2 - 2abcd + b^2 c^2)} \right) - \frac{18iA^2 a^2 d^2 + 18iA^2 abcd - 36iA^2}{\dots}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x)^4, x)

[Out] - log((e*(a + b*x))/(c + d*x))^2*((B^2*c*i)/(3*b^2*g^4) + (B^2*a*d*i)/(6*b^3*g^4) + (B^2*d*i*x)/(2*b^2*g^4))/(3*a^2*x + a^3/b + b^2*x^3 + 3*a*b*x^2) - (B^2*d^3*i)/(6*b^2*g^4*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) - ((18*A^2*a^2*d^2*i - 36*A^2*b^2*c^2*i + 19*B^2*a^2*d^2*i - 8*B^2*b^2*c^2*i + 30*A*B*a^2*d^2*i - 24*A*B*b^2*c^2*i + 18*A^2*a*b*c*d*i + 19*B^2*a*b*c*d*i + 30*A*B*a*b*c*d*i)/(6*(a*d - b*c)) + (x^2*(5*B^2*b^2*d^2*i + 6*A*B*b^2*d^2*i))/(a*d - b*c) + (x*(18*A^2*a*b*d^2*i + 19*B^2*a*b*d^2*i - 18*A^2*b^2*c*d*i + B^2*b^2*c*d*i + 30*A*B*a*b*d^2*i - 6*A*B*b^2*c*d*i))/(2*(a*d - b*c)))/(18*a^3*b^2*g^4 + 18*b^5*g^4*x^3 + 54*a^2*b^3*g^4*x + 54*a*b^4*g^4*x^2) - (log((e*(a + b*x))/(c + d*x))*(x*((A*B*i)/(b^2*g^4) + (B^2*d^3*i*(b*((3*a^2*d^2 + b^2*c^2 - 4*a*b*c*d)/(6*b*d^3) + (a*(a*d - b*c))/(3*b*d^2)) + (3*a^2*d^2 + b^2*c^2 - 4*a*b*c*d)/(3*d^3) + (2*a*(a*d - b*c))/(3*d^2)))/(3*b^2*g^4*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (A*B*a*i)/(3*b^3*g^4) + (B*i*(2*A*b*c - B*a*d + B*b*c))/(3*b^3*d*g^4) + (B^2*d^3*i*(a*((3*a^2*d^2 + b^2*c^2 - 4*a*b*c*d)/(6*b

$$d^3) + (a*(a*d - b*c))/(3*b*d^2)) + (3*a^3*d^3 - b^3*c^3 + 4*a*b^2*c^2*d - 6*a^2*b*c*d^2)/(3*b*d^4)))/(3*b^2*g^4*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) - (B^2*d^3*i*x^2*((b^2*c - a*b*d)/(3*d^2) - (2*b*(a*d - b*c))/(3*d^2)))/(3*b^2*g^4*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)))/((3*a^2*x)/d + a^3/(b*d) + (b^2*x^3)/d + (3*a*b*x^2)/d) - (B*d^3*i*atan(((2*b*d*x - (18*b^4*c^2*g^4 - 18*a^2*b^2*d^2*g^4)/(18*b^2*g^4*(a*d - b*c))))*1i)/(a*d - b*c))*(6*A + 5*B)*1i)/(9*b^2*g^4*(a*d - b*c)^2)$$

sympy [B] time = 29.46, size = 1387, normalized size = 4.83

$$Bd^3i(6A + 5B) \log \left(x + \frac{6ABad^4i + 6ABbcd^3i + 5B^2ad^4i + 5B^2bcd^3i - \frac{Ba^3d^6i(6A+5B)}{(ad-bc)^2} + \frac{3Ba^2bcd^5i(6A+5B)}{(ad-bc)^2} - \frac{3Bab^2c^2d^4i(6A+5B)}{(ad-bc)^2} + \frac{Bb^3c^3d^3i(6A+5B)}{(ad-bc)^2}}{12ABbd^4i + 10B^2bd^4i} \right)$$

$$18b^2g^4(ad - bc)^2$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*ln(e*(b*x+a)/(d*x+c)))*2/(b*g*x+a*g)**4,x)

[Out] $-B*d**3*i*(6*A + 5*B)*\log(x + (6*A*B*a*d**4*i + 6*A*B*b*c*d**3*i + 5*B**2*a*d**4*i + 5*B**2*b*c*d**3*i - B*a**3*d**6*i*(6*A + 5*B)/(a*d - b*c)**2 + 3*B*a**2*b*c*d**5*i*(6*A + 5*B)/(a*d - b*c)**2 - 3*B*a*b**2*c**2*d**4*i*(6*A + 5*B)/(a*d - b*c)**2 + B*b**3*c**3*d**3*i*(6*A + 5*B)/(a*d - b*c)**2)/(12*A*B*b*d**4*i + 10*B**2*b*d**4*i))/(18*b**2*g**4*(a*d - b*c)**2) + B*d**3*i*(6*A + 5*B)*\log(x + (6*A*B*a*d**4*i + 6*A*B*b*c*d**3*i + 5*B**2*a*d**4*i + 5*B**2*b*c*d**3*i + B*a**3*d**6*i*(6*A + 5*B)/(a*d - b*c)**2 - 3*B*a**2*b*c*d**5*i*(6*A + 5*B)/(a*d - b*c)**2 + 3*B*a*b**2*c**2*d**4*i*(6*A + 5*B)/(a*d - b*c)**2 - B*b**3*c**3*d**3*i*(6*A + 5*B)/(a*d - b*c)**2)/(12*A*B*b*d**4*i + 10*B**2*b*d**4*i))/(18*b**2*g**4*(a*d - b*c)**2) + (3*B**2*a*c**2*d*i + 6*B**2*a*c*d**2*i*x + 3*B**2*a*d**3*i*x**2 - 2*B**2*b*c**3*i - 3*B**2*b*c**2*d*i*x + B**2*b*d**3*i*x**3)*\log(e*(a + b*x)/(c + d*x))**2/(6*a**5*d**2*g**4 - 12*a**4*b*c*d*g**4 + 18*a**4*b*d**2*g**4*x + 6*a**3*b**2*c**2*g**4 - 36*a**3*b**2*c*d*g**4*x + 18*a**3*b**2*d**2*g**4*x**2 + 18*a**2*b**3*c**2*g**4*x - 36*a**2*b**3*c*d*g**4*x**2 + 6*a**2*b**3*d**2*g**4*x**3 + 18*a*b**4*c**2*g**4*x**2 - 12*a*b**4*c*d*g**4*x**3 + 6*b**5*c**2*g**4*x**3) + (-6*A*B*a**2*d**2*i - 6*A*B*a*b*c*d*i - 18*A*B*a*b*d**2*i*x + 12*A*B*b**2*c**2*i + 18*A*B*b**2*c*d*i*x - 5*B**2*a**2*d**2*i - 5*B**2*a*b*c*d*i - 15*B**2*a*b*d**2*i*x + 4*B**2*b**2*c**2*i + 3*B**2*b**2*c*d*i*x - 6*B**2*b**2*d**2*i*x**2)*\log(e*(a + b*x)/(c + d*x))/(18*a**4*b**2*d*g**4 - 18*a**3*b**3*c*g**4 + 54*a**3*b**3*d*g**4*x - 54*a**2*b**4*c*g**4*x + 54*a**2*b**4*d*g**4*x**2 - 54*a*b**5*c*g**4*x**2 + 18*a*b**5*d*g**4*x**3 - 18*b**6*c*g**4*x**3) + (-18*A**2*a**2*d**2*i - 18*A**2*a*b*c*d*i + 36*A**2*b**2*c**2*i - 30*A*B*a**2*d**2*i - 30*A*B*a*b*c*d*i + 24*A*B*b**2*c**2*i - 19*B**2*a**2*d**2*i - 19*B**2*a*b*c*d*i + 8*B**2*b**2*c**2*i + x**2*(-36*A*B*b**2*d**2*i - 30*B**2*b**2*d**2*i) + x*(-54*A**2*a*b*d**2*i + 54*A**2*b**2*c*d*i - 90*A*B*a*b*d**2$

$$\frac{2i + 18ABb^2cdi - 57B^2abd^2i - 3B^2b^2cdi}{(108a^4b^2d^4g^4 - 108a^3b^3c^4g^4 + x^3(108ab^5d^4g^4 - 108b^6c^4g^4) + x^2(324a^2b^4d^4g^4 - 324ab^5c^4g^4) + x(324a^3b^3d^4g^4 - 324a^2b^4c^4g^4))}$$

$$3.63 \quad \int \frac{(ci+dx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^5} dx$$

Optimal. Leaf size=445

$$\frac{b^2i(c+dx)^4\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{4g^5(a+bx)^4(bc-ad)^3} - \frac{b^2Bi(c+dx)^4\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{8g^5(a+bx)^4(bc-ad)^3} - \frac{d^2i(c+dx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{2g^5(a+bx)^2(bc-ad)^3}$$

[Out] $-1/4*B^2*d^2*i*(d*x+c)^2/(-a*d+b*c)^3/g^5/(b*x+a)^2+4/27*b*B^2*d*i*(d*x+c)^3/(-a*d+b*c)^3/g^5/(b*x+a)^3-1/32*b^2*B^2*i*(d*x+c)^4/(-a*d+b*c)^3/g^5/(b*x+a)^4-1/2*B*d^2*i*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^3/g^5/(b*x+a)^2+4/9*b*B*d*i*(d*x+c)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^3/g^5/(b*x+a)^3-1/8*b^2*B*i*(d*x+c)^4*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^3/g^5/(b*x+a)^4-1/2*d^2*i*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/(-a*d+b*c)^3/g^5/(b*x+a)^2+2/3*b*d*i*(d*x+c)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/(-a*d+b*c)^3/g^5/(b*x+a)^3-1/4*b^2*i*(d*x+c)^4*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/(-a*d+b*c)^3/g^5/(b*x+a)^4$

Rubi [C] time = 2.61, antiderivative size = 826, normalized size of antiderivative = 1.86, number of steps used = 74, number of rules used = 11, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.275$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{B^2i\log^2(a+bx)d^4}{12b^2(bc-ad)^3g^5} + \frac{B^2i\log^2(c+dx)d^4}{12b^2(bc-ad)^3g^5} - \frac{13B^2i\log(a+bx)d^4}{72b^2(bc-ad)^3g^5} - \frac{Bi\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)d^4}{6b^2(bc-ad)^3g^5} + \frac{13B^2i\log(a+bx)d^4}{72b^2(bc-ad)^3g^5}$$

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2)/(a*g + b*g*x)^5, x]

[Out] $-(B^2*(b*c - a*d)*i)/(32*b^2*g^5*(a + b*x)^4) + (5*B^2*d*i)/(216*b^2*g^5*(a + b*x)^3) + (B^2*d^2*i)/(144*b^2*(b*c - a*d)*g^5*(a + b*x)^2) - (13*B^2*d^3*i)/(72*b^2*(b*c - a*d)^2*g^5*(a + b*x)) - (13*B^2*d^4*i*Log[a + b*x])/(72*b^2*(b*c - a*d)^3*g^5) + (B^2*d^4*i*Log[a + b*x]^2)/(12*b^2*(b*c - a*d)^3*g^5) - (B*(b*c - a*d)*i*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(8*b^2*g^5*(a + b*x)^4) - (B*d*i*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(18*b^2*g^5*(a + b*x)^3) + (B*d^2*i*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(12*b^2*(b*c - a*d)*g^5*(a + b*x)^2) - (B*d^3*i*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(6*b^2*(b*c - a*d)^2*g^5*(a + b*x)) - (B*d^4*i*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(6*b^2*(b*c - a*d)^3*g^5) - ((b*c - a*d)*i*(A + B*Log[(e*(a + b*x))/(c + d*x]]^2)/(4*b^2*g^5*(a + b*x)^4) - (d*i*(A + B*Log[(e*(a + b*x))/(c + d*x]]^2)/(3*b^2*g^5*(a + b*x)^3) + (13*B^2*d^4*i*Log[c + d*x])/($

$$72*b^2*(b*c - a*d)^3*g^5) - (B^2*d^4*i*Log[-((d*(a + b*x))/(b*c - a*d))] * Log[c + d*x]) / (6*b^2*(b*c - a*d)^3*g^5) + (B*d^4*i*(A + B*Log[(e*(a + b*x))/(c + d*x)]) * Log[c + d*x]) / (6*b^2*(b*c - a*d)^3*g^5) + (B^2*d^4*i*Log[c + d*x]^2) / (12*b^2*(b*c - a*d)^3*g^5) - (B^2*d^4*i*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)]) / (6*b^2*(b*c - a*d)^3*g^5) - (B^2*d^4*i*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))]) / (6*b^2*(b*c - a*d)^3*g^5) - (B^2*d^4*i*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]) / (6*b^2*(b*c - a*d)^3*g^5)$$

Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(63c + 63dx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{(ag + bgx)^5} dx &= \int \left(\frac{63(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{bg^5(a + bx)^5} + \frac{63d \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{bg^5(a + bx)^4} \right) dx \\
&= \frac{(63d) \int \frac{\left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{(a+bx)^4} dx}{bg^5} + \frac{(63(bc - ad)) \int \frac{\left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{(a+bx)^5} dx}{bg^5} \\
&= -\frac{63(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{4b^2g^5(a + bx)^4} - \frac{21d \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^2g^5(a + bx)^3} + \\
&= -\frac{63(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{4b^2g^5(a + bx)^4} - \frac{21d \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^2g^5(a + bx)^3} + \\
&= -\frac{63(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{4b^2g^5(a + bx)^4} - \frac{21d \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^2g^5(a + bx)^3} + \\
&= -\frac{63(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{4b^2g^5(a + bx)^4} - \frac{21d \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^2g^5(a + bx)^3} - \\
&= -\frac{63B(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{8b^2g^5(a + bx)^4} - \frac{7Bd \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{2b^2g^5(a + bx)^3} + \\
&= -\frac{63B(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{8b^2g^5(a + bx)^4} - \frac{7Bd \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{2b^2g^5(a + bx)^3} + \\
&= -\frac{63B(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{8b^2g^5(a + bx)^4} - \frac{7Bd \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{2b^2g^5(a + bx)^3} + \\
&= -\frac{63B^2(bc - ad)}{32b^2g^5(a + bx)^4} + \frac{35B^2d}{24b^2g^5(a + bx)^3} + \frac{7B^2d^2}{16b^2(bc - ad)g^5(a + bx)^2} - \\
&= -\frac{63B^2(bc - ad)}{32b^2g^5(a + bx)^4} + \frac{35B^2d}{24b^2g^5(a + bx)^3} + \frac{7B^2d^2}{16b^2(bc - ad)g^5(a + bx)^2} - \\
&= -\frac{63B^2(bc - ad)}{32b^2g^5(a + bx)^4} + \frac{35B^2d}{24b^2g^5(a + bx)^3} + \frac{7B^2d^2}{16b^2(bc - ad)g^5(a + bx)^2} - \\
&= -\frac{63B^2(bc - ad)}{32b^2g^5(a + bx)^4} + \frac{35B^2d}{24b^2g^5(a + bx)^3} + \frac{7B^2d^2}{16b^2(bc - ad)g^5(a + bx)^2} -
\end{aligned}$$

Mathematica [C] time = 1.63, size = 1340, normalized size = 3.01

$$i \left(216 \left(A + B \log \left(\frac{e^{(a+bx)}}{c+dx} \right) \right)^2 (bc - ad)^4 - 288d(ad - bc)^3(a + bx) \left(A + B \log \left(\frac{e^{(a+bx)}}{c+dx} \right) \right)^2 + 16Bd(a + bx) \left(12 \left(A + B \log \left(\frac{e^{(a+bx)}}{c+dx} \right) \right)^2 (bc - ad)^4 - 288d(ad - bc)^3(a + bx) \left(A + B \log \left(\frac{e^{(a+bx)}}{c+dx} \right) \right)^2 + 16Bd(a + bx) \right) \right)$$

Antiderivative was successfully verified.

[In] Integrate[(((c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]))^2)/(a*g + b*g*x)^5,x]

[Out] -1/864*(i*(216*(b*c - a*d)^4*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2 - 288*d*(-(b*c) + a*d)^3*(a + b*x)*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2 + 16*B*d*(a + b*x)*(12*(b*c - a*d)^3*(A + B*Log[(e*(a + b*x))/(c + d*x])) - 18*d*(b*c - a*d)^2*(a + b*x)*(A + B*Log[(e*(a + b*x))/(c + d*x])) + 36*d^2*(b*c - a*d)*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x])) + 36*d^3*(a + b*x)^3*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x])) - 36*d^3*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x]))*Log[c + d*x] + 36*B*d^2*(a + b*x)^2*(b*c - a*d + d*(a + b*x)*Log[a + b*x] - d*(a + b*x)*Log[c + d*x]) - 9*B*d*(a + b*x)*((b*c - a*d)^2 + 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d^2*(a + b*x)^2*Log[a + b*x] + 2*d^2*(a + b*x)^2*Log[c + d*x]) + 2*B*(2*(b*c - a*d)^3 - 3*d*(b*c - a*d)^2*(a + b*x) + 6*d^2*(b*c - a*d)*(a + b*x)^2 + 6*d^3*(a + b*x)^3*Log[a + b*x] - 6*d^3*(a + b*x)^3*Log[c + d*x]) - 18*B*d^3*(a + b*x)^3*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + 18*B*d^3*(a + b*x)^3*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]) + 3*B*(36*(b*c - a*d)^4*(A + B*Log[(e*(a + b*x))/(c + d*x])) + 48*d*(-(b*c) + a*d)^3*(a + b*x)*(A + B*Log[(e*(a + b*x))/(c + d*x])) + 72*d^2*(b*c - a*d)^2*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x])) + 144*d^3*(-(b*c) + a*d)*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x])) - 144*d^4*(a + b*x)^4*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x])) + 144*d^4*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x]))*Log[c + d*x] - 144*B*d^3*(a + b*x)^3*(b*c - a*d + d*(a + b*x)*Log[a + b*x] - d*(a + b*x)*Log[c + d*x]) + 36*B*d^2*(a + b*x)^2*((b*c - a*d)^2 + 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d^2*(a + b*x)^2*Log[a + b*x] + 2*d^2*(a + b*x)^2*Log[c + d*x]) - 8*B*d*(a + b*x)*(2*(b*c - a*d)^3 - 3*d*(b*c - a*d)^2*(a + b*x) + 6*d^2*(b*c - a*d)*(a + b*x)^2 + 6*d^3*(a + b*x)^3*Log[a + b*x] - 6*d^3*(a + b*x)^3*Log[c + d*x]) + 3*B*(3*(b*c - a*d)^4 + 4*d*(-(b*c) + a*d)^3*(a + b*x) + 6*d^2*(b*c - a*d)^2*(a + b*x)^2 + 12*d^3*(-(b*c) + a*d)*(a + b*x)^3 - 12*d^4*(a + b*x)^4*Log[a + b*x] + 12*d^4*(a + b*x)^4*Log[c + d*x]) + 72*B*d^4*(a + b*x)^4*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) - 72*B*d^4*(a + b*x)^4*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(b^2*(b*c - a*d)^3*g^5*(a + b*x)^4)

fricas [B] time = 1.00, size = 985, normalized size = 2.21

$$12 \left((12 AB + 13 B^2) b^4 c d^3 - (12 AB + 13 B^2) a b^3 d^4 \right) i x^3 - 6 \left((12 AB + B^2) b^4 c^2 d^2 - 16 (6 AB + 5 B^2) a b^3 c d^3 + (84$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^5,x, algorithm="fricas")

[Out]
$$-1/864*(12*((12*A*B + 13*B^2)*b^4*c*d^3 - (12*A*B + 13*B^2)*a*b^3*d^4)*i*x^3 - 6*((12*A*B + B^2)*b^4*c^2*d^2 - 16*(6*A*B + 5*B^2)*a*b^3*c*d^3 + (84*A*B + 79*B^2)*a^2*b^2*d^4)*i*x^2 + 4*((72*A^2 + 12*A*B - 5*B^2)*b^4*c^3*d - 12*(18*A^2 + 6*A*B - B^2)*a*b^3*c^2*d^2 + 108*(2*A^2 + 2*A*B + B^2)*a^2*b^2*c*d^3 - (72*A^2 + 156*A*B + 115*B^2)*a^3*b*d^4)*i*x + 72*(B^2*b^4*d^4*i*x^4 + 4*B^2*a*b^3*d^4*i*x^3 + 6*B^2*a^2*b^2*d^4*i*x^2 + 4*(B^2*b^4*c^3*d - 3*B^2*a*b^3*c^2*d^2 + 3*B^2*a^2*b^2*c*d^3)*i*x + (3*B^2*b^4*c^4 - 8*B^2*a*b^3*c^3*d + 6*B^2*a^2*b^2*c^2*d^2)*i)*log((b*e*x + a*e)/(d*x + c))^2 + (27*(8*A^2 + 4*A*B + B^2)*b^4*c^4 - 64*(9*A^2 + 6*A*B + 2*B^2)*a*b^3*c^3*d + 216*(2*A^2 + 2*A*B + B^2)*a^2*b^2*c^2*d^2 - (72*A^2 + 156*A*B + 115*B^2)*a^4*d^4)*i + 12*((12*A*B + 13*B^2)*b^4*d^4*i*x^4 + 4*(3*B^2*b^4*c*d^3 + 2*(6*A*B + 5*B^2)*a*b^3*d^4)*i*x^3 - 6*(B^2*b^4*c^2*d^2 - 8*B^2*a*b^3*c*d^3 - 6*(2*A*B + B^2)*a^2*b^2*d^4)*i*x^2 + 4*((12*A*B + B^2)*b^4*c^3*d - 6*(6*A*B + B^2)*a*b^3*c^2*d^2 + 18*(2*A*B + B^2)*a^2*b^2*c*d^3)*i*x + (9*(4*A*B + B^2)*b^4*c^4 - 32*(3*A*B + B^2)*a*b^3*c^3*d + 36*(2*A*B + B^2)*a^2*b^2*c^2*d^2)*i)*log((b*e*x + a*e)/(d*x + c))/((b^9*c^3 - 3*a*b^8*c^2*d + 3*a^2*b^7*c*d^2 - a^3*b^6*d^3)*g^5*x^4 + 4*(a*b^8*c^3 - 3*a^2*b^7*c^2*d + 3*a^3*b^6*c*d^2 - a^4*b^5*d^3)*g^5*x^3 + 6*(a^2*b^7*c^3 - 3*a^3*b^6*c^2*d + 3*a^4*b^5*c*d^2 - a^5*b^4*d^3)*g^5*x^2 + 4*(a^3*b^6*c^3 - 3*a^4*b^5*c^2*d + 3*a^5*b^4*c*d^2 - a^6*b^3*d^3)*g^5*x + (a^4*b^5*c^3 - 3*a^5*b^4*c^2*d + 3*a^6*b^3*c*d^2 - a^7*b^2*d^3)*g^5)$$

giac [A] time = 1.67, size = 727, normalized size = 1.63

$$\left(216 B^2 b^2 i e^5 \log\left(\frac{bxe+ae}{dx+c}\right)^2 - \frac{576 (bxe+ae) B^2 b d i e^4 \log\left(\frac{bxe+ae}{dx+c}\right)^2}{dx+c} + \frac{432 (bxe+ae)^2 B^2 d^2 i e^3 \log\left(\frac{bxe+ae}{dx+c}\right)^2}{(dx+c)^2} + 432 A B b^2 i e^5 \log\left(\frac{bxe+ae}{dx+c}\right) \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^5,x, algorithm="giac")

```
[Out] -1/864*(216*B^2*b^2*i*e^5*log((b*x*e + a*e)/(d*x + c))^2 - 576*(b*x*e + a*e)
)*B^2*b*d*i*e^4*log((b*x*e + a*e)/(d*x + c))^2/(d*x + c) + 432*(b*x*e + a*e)
)^2*B^2*d^2*i*e^3*log((b*x*e + a*e)/(d*x + c))^2/(d*x + c)^2 + 432*A*B*b^2*
i*e^5*log((b*x*e + a*e)/(d*x + c)) + 108*B^2*b^2*i*e^5*log((b*x*e + a*e)/(d
*x + c)) - 1152*(b*x*e + a*e)*A*B*b*d*i*e^4*log((b*x*e + a*e)/(d*x + c))/(d
*x + c) - 384*(b*x*e + a*e)*B^2*b*d*i*e^4*log((b*x*e + a*e)/(d*x + c))/(d*x
+ c) + 864*(b*x*e + a*e)^2*A*B*d^2*i*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x
+ c)^2 + 432*(b*x*e + a*e)^2*B^2*d^2*i*e^3*log((b*x*e + a*e)/(d*x + c))/(d
*x + c)^2 + 216*A^2*b^2*i*e^5 + 108*A*B*b^2*i*e^5 + 27*B^2*b^2*i*e^5 - 576*
(b*x*e + a*e)*A^2*b*d*i*e^4/(d*x + c) - 384*(b*x*e + a*e)*A*B*b*d*i*e^4/(d*
x + c) - 128*(b*x*e + a*e)*B^2*b*d*i*e^4/(d*x + c) + 432*(b*x*e + a*e)^2*A^
2*d^2*i*e^3/(d*x + c)^2 + 432*(b*x*e + a*e)^2*A*B*d^2*i*e^3/(d*x + c)^2 + 2
16*(b*x*e + a*e)^2*B^2*d^2*i*e^3/(d*x + c)^2*(b*c/((b*c*e - a*d*e)*(b*c -
a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))/((b*x*e + a*e)^4*b^2*c^2*g^5/(d*
x + c)^4 - 2*(b*x*e + a*e)^4*a*b*c*d*g^5/(d*x + c)^4 + (b*x*e + a*e)^4*a^2*
d^2*g^5/(d*x + c)^4)
```

maple [B] time = 0.05, size = 2689, normalized size = 6.04

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^5,x)
```

```
[Out] -1/2*d^2*e^2*i/(a*d-b*c)^4/g^5*A*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^
2*b*c-1/2*d^2*e^2*i/(a*d-b*c)^4/g^5*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/
d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*c+1/2*d^2*e^4*i/(a*d-b*c)^4/g^5*A*B*
b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*
e)*a-d^2*e^2*i/(a*d-b*c)^4/g^5*A*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^
2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*c-4/3*d^2*e^3*i/(a*d-b*c)^4/g^5*A*B*b/(
1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-
2/3*d^2*e^3*i/(a*d-b*c)^4/g^5*B^2*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)
^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a+2/3*d^2*e^3*i/(a*d-b*c)^4/g^5*B^2*b^2/
(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2
*c-4/9*d^2*e^3*i/(a*d-b*c)^4/g^5*B^2*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d
*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+4/9*d^2*e^3*i/(a*d-b*c)^4/g^5*B^2*b^2
/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*
c+d^3*e^2*i/(a*d-b*c)^4/g^5*A*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*ln
(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+1/4*d^3*e^2*i/(a*d-b*c)^4/g^5*B^2/(1/(d*x+
c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a+1/2*d^3*e^2*i/(a*d-b*c)^4/g^5*A^2/(1/(d
*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a-1/32*e^4*i/(a*d-b*c)^4/g^5*B^2*b^3/(
1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*c-1/4*e^4*i/(a*d-b*c)^4/g^5*A^2*b^
3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*c-1/4*d^2*e^2*i/(a*d-b*c)^4/g^5
*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*b*c+4/27*d^2*e^3*i/(a*d-b*c)^4
/g^5*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*c-4/27*d^2*e^3*i/(a*
```

$$\begin{aligned} & d-b*c)^4/g^5*B^2*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*a+1/2*d^3*e^2* \\ & i/(a*d-b*c)^4/g^5*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*\ln(b/d*e+(a \\ & *d-b*c)/(d*x+c)/d*e)*a+1/32*d*e^4*i/(a*d-b*c)^4/g^5*B^2*b^2/(1/(d*x+c)*a*e- \\ & 1/(d*x+c)*b*c/d*e+b/d*e)^4*a+4/9*d*e^3*i/(a*d-b*c)^4/g^5*A*B*b^2/(1/(d*x+c) \\ & *a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*c+1/8*d*e^4*i/(a*d-b*c)^4/g^5*A*B*b^2/(1/(d \\ & *x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*a-1/2*e^4*i/(a*d-b*c)^4/g^5*A*B*b^3/(1 \\ & /((d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+1 \\ & /4*d*e^4*i/(a*d-b*c)^4/g^5*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^ \\ & 4*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a-1/2*d^2*e^2*i/(a*d-b*c)^4/g^5*B^2/(1/ \\ & (d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b* \\ & c+1/8*d*e^4*i/(a*d-b*c)^4/g^5*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d* \\ & e)^4*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-4/9*d^2*e^3*i/(a*d-b*c)^4/g^5*A*B*b/ \\ & (1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*a+1/2*d^3*e^2*i/(a*d-b*c)^4/g^5*B \\ & ^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e \\ &)^2*a-1/4*e^4*i/(a*d-b*c)^4/g^5*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/ \\ & d*e)^4*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c-1/8*e^4*i/(a*d-b*c)^4/g^5*B^2*b^ \\ & 3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e) \\ & *c-2/3*d^2*e^3*i/(a*d-b*c)^4/g^5*A^2*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d \\ & *e)^3*a+4/3*d*e^3*i/(a*d-b*c)^4/g^5*A*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d* \\ & e+b/d*e)^3*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+1/2*d^3*e^2*i/(a*d-b*c)^4/g^5* \\ & A*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a-1/2*d^2*e^2*i/(a*d-b*c)^4/g \\ & ^5*A^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*b*c+2/3*d*e^3*i/(a*d-b*c)^ \\ & 4/g^5*A^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*c+1/4*d*e^4*i/(a*d- \\ & b*c)^4/g^5*A^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*a-1/8*e^4*i/(a \\ & *d-b*c)^4/g^5*A*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*c \end{aligned}$$

maxima [B] time = 5.05, size = 4808, normalized size = 10.80

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^5,x, algor
ithm="maxima")

[Out]
$$\begin{aligned} & -1/12*(4*b*x + a)*B^2*d*i*\log(b*e*x/(d*x + c) + a*e/(d*x + c))^2/(b^6*g^5*x \\ & ^4 + 4*a*b^5*g^5*x^3 + 6*a^2*b^4*g^5*x^2 + 4*a^3*b^3*g^5*x + a^4*b^2*g^5) + \\ & 1/288*(12*((12*b^3*d^3*x^3 - 3*b^3*c^3 + 13*a*b^2*c^2*d - 23*a^2*b*c*d^2 + \\ & 25*a^3*d^3 - 6*(b^3*c*d^2 - 7*a*b^2*d^3)*x^2 + 4*(b^3*c^2*d - 5*a*b^2*c*d^ \\ & 2 + 13*a^2*b*d^3)*x)/((b^8*c^3 - 3*a*b^7*c^2*d + 3*a^2*b^6*c*d^2 - a^3*b^5* \\ & d^3)*g^5*x^4 + 4*(a*b^7*c^3 - 3*a^2*b^6*c^2*d + 3*a^3*b^5*c*d^2 - a^4*b^4*d \\ & ^3)*g^5*x^3 + 6*(a^2*b^6*c^3 - 3*a^3*b^5*c^2*d + 3*a^4*b^4*c*d^2 - a^5*b^3* \\ & d^3)*g^5*x^2 + 4*(a^3*b^5*c^3 - 3*a^4*b^4*c^2*d + 3*a^5*b^3*c*d^2 - a^6*b^2 \\ & *d^3)*g^5*x + (a^4*b^4*c^3 - 3*a^5*b^3*c^2*d + 3*a^6*b^2*c*d^2 - a^7*b*d^3) \\ & *g^5) + 12*d^4*log(b*x + a)/((b^5*c^4 - 4*a*b^4*c^3*d + 6*a^2*b^3*c^2*d^2 - \\ & 4*a^3*b^2*c*d^3 + a^4*b*d^4)*g^5) - 12*d^4*log(d*x + c)/((b^5*c^4 - 4*a*b^ \end{aligned}$$

$$\begin{aligned}
& 4*c^3*d + 6*a^2*b^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)*g^5))*\log(b*e*x/ \\
& (d*x + c) + a*e/(d*x + c)) - (9*b^4*c^4 - 64*a*b^3*c^3*d + 216*a^2*b^2*c^2* \\
& d^2 - 576*a^3*b*c*d^3 + 415*a^4*d^4 - 300*(b^4*c*d^3 - a*b^3*d^4)*x^3 + 6*(\\
& 13*b^4*c^2*d^2 - 176*a*b^3*c*d^3 + 163*a^2*b^2*d^4)*x^2 + 72*(b^4*d^4*x^4 + \\
& 4*a*b^3*d^4*x^3 + 6*a^2*b^2*d^4*x^2 + 4*a^3*b*d^4*x + a^4*d^4)*\log(b*x + a \\
&)^2 + 72*(b^4*d^4*x^4 + 4*a*b^3*d^4*x^3 + 6*a^2*b^2*d^4*x^2 + 4*a^3*b*d^4*x \\
& + a^4*d^4)*\log(d*x + c)^2 - 4*(7*b^4*c^3*d - 60*a*b^3*c^2*d^2 + 324*a^2*b^ \\
& 2*c*d^3 - 271*a^3*b*d^4)*x - 300*(b^4*d^4*x^4 + 4*a*b^3*d^4*x^3 + 6*a^2*b^2 \\
& *d^4*x^2 + 4*a^3*b*d^4*x + a^4*d^4)*\log(b*x + a) + 12*(25*b^4*d^4*x^4 + 100 \\
& *a*b^3*d^4*x^3 + 150*a^2*b^2*d^4*x^2 + 100*a^3*b*d^4*x + 25*a^4*d^4 - 12*(b \\
& ^4*d^4*x^4 + 4*a*b^3*d^4*x^3 + 6*a^2*b^2*d^4*x^2 + 4*a^3*b*d^4*x + a^4*d^4) \\
&)*\log(b*x + a))*\log(d*x + c))/(a^4*b^5*c^4*g^5 - 4*a^5*b^4*c^3*d*g^5 + 6*a^6 \\
& *b^3*c^2*d^2*g^5 - 4*a^7*b^2*c*d^3*g^5 + a^8*b*d^4*g^5 + (b^9*c^4*g^5 - 4*a \\
& *b^8*c^3*d*g^5 + 6*a^2*b^7*c^2*d^2*g^5 - 4*a^3*b^6*c*d^3*g^5 + a^4*b^5*d^4* \\
& g^5)*x^4 + 4*(a*b^8*c^4*g^5 - 4*a^2*b^7*c^3*d*g^5 + 6*a^3*b^6*c^2*d^2*g^5 - \\
& 4*a^4*b^5*c*d^3*g^5 + a^5*b^4*d^4*g^5)*x^3 + 6*(a^2*b^7*c^4*g^5 - 4*a^3*b^ \\
& 6*c^3*d*g^5 + 6*a^4*b^5*c^2*d^2*g^5 - 4*a^5*b^4*c*d^3*g^5 + a^6*b^3*d^4*g^5 \\
&)*x^2 + 4*(a^3*b^6*c^4*g^5 - 4*a^4*b^5*c^3*d*g^5 + 6*a^5*b^4*c^2*d^2*g^5 - \\
& 4*a^6*b^3*c*d^3*g^5 + a^7*b^2*d^4*g^5)*x))*B^2*c*i - 1/864*(12*((7*a*b^3*c^ \\
& 3 - 33*a^2*b^2*c^2*d + 75*a^3*b*c*d^2 - 13*a^4*d^3 + 12*(4*b^4*c*d^2 - a*b^ \\
& 3*d^3)*x^3 - 6*(4*b^4*c^2*d - 29*a*b^3*c*d^2 + 7*a^2*b^2*d^3)*x^2 + 4*(4*b^ \\
& 4*c^3 - 21*a*b^3*c^2*d + 57*a^2*b^2*c*d^2 - 13*a^3*b*d^3)*x)/((b^9*c^3 - 3* \\
& a*b^8*c^2*d + 3*a^2*b^7*c*d^2 - a^3*b^6*d^3)*g^5*x^4 + 4*(a*b^8*c^3 - 3*a^2 \\
& *b^7*c^2*d + 3*a^3*b^6*c*d^2 - a^4*b^5*d^3)*g^5*x^3 + 6*(a^2*b^7*c^3 - 3*a^ \\
& 3*b^6*c^2*d + 3*a^4*b^5*c*d^2 - a^5*b^4*d^3)*g^5*x^2 + 4*(a^3*b^6*c^3 - 3*a \\
& ^4*b^5*c^2*d + 3*a^5*b^4*c*d^2 - a^6*b^3*d^3)*g^5*x + (a^4*b^5*c^3 - 3*a^5* \\
& b^4*c^2*d + 3*a^6*b^3*c*d^2 - a^7*b^2*d^3)*g^5) + 12*(4*b*c*d^3 - a*d^4)*lo \\
& g(b*x + a)/((b^6*c^4 - 4*a*b^5*c^3*d + 6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 \\
& + a^4*b^2*d^4)*g^5) - 12*(4*b*c*d^3 - a*d^4)*\log(d*x + c)/((b^6*c^4 - 4*a*b \\
& ^5*c^3*d + 6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*g^5))*\log(b*e \\
& *x/(d*x + c) + a*e/(d*x + c)) + (37*a*b^4*c^4 - 304*a^2*b^3*c^3*d + 1512*a^ \\
& 3*b^2*c^2*d^2 - 1360*a^4*b*c*d^3 + 115*a^5*d^4 + 12*(88*b^5*c^2*d^2 - 101*a \\
& *b^4*c*d^3 + 13*a^2*b^3*d^4)*x^3 - 6*(40*b^5*c^3*d - 609*a*b^4*c^2*d^2 + 64 \\
& 8*a^2*b^3*c*d^3 - 79*a^3*b^2*d^4)*x^2 - 72*(4*a^4*b*c*d^3 - a^5*d^4 + (4*b^ \\
& 5*c*d^3 - a*b^4*d^4)*x^4 + 4*(4*a*b^4*c*d^3 - a^2*b^3*d^4)*x^3 + 6*(4*a^2*b \\
& ^3*c*d^3 - a^3*b^2*d^4)*x^2 + 4*(4*a^3*b^2*c*d^3 - a^4*b*d^4)*x)*\log(b*x + \\
& a)^2 - 72*(4*a^4*b*c*d^3 - a^5*d^4 + (4*b^5*c*d^3 - a*b^4*d^4)*x^4 + 4*(4*a \\
& *b^4*c*d^3 - a^2*b^3*d^4)*x^3 + 6*(4*a^2*b^3*c*d^3 - a^3*b^2*d^4)*x^2 + 4*(\\
& 4*a^3*b^2*c*d^3 - a^4*b*d^4)*x)*\log(d*x + c)^2 + 4*(16*b^5*c^4 - 163*a*b^4* \\
& c^3*d + 1068*a^2*b^3*c^2*d^2 - 1036*a^3*b^2*c*d^3 + 115*a^4*b*d^4)*x + 12*(\\
& 88*a^4*b*c*d^3 - 13*a^5*d^4 + (88*b^5*c*d^3 - 13*a*b^4*d^4)*x^4 + 4*(88*a*b \\
& ^4*c*d^3 - 13*a^2*b^3*d^4)*x^3 + 6*(88*a^2*b^3*c*d^3 - 13*a^3*b^2*d^4)*x^2 \\
& + 4*(88*a^3*b^2*c*d^3 - 13*a^4*b*d^4)*x)*\log(b*x + a) - 12*(88*a^4*b*c*d^3 \\
& - 13*a^5*d^4 + (88*b^5*c*d^3 - 13*a*b^4*d^4)*x^4 + 4*(88*a*b^4*c*d^3 - 13*a \\
& ^2*b^3*d^4)*x^3 + 6*(88*a^2*b^3*c*d^3 - 13*a^3*b^2*d^4)*x^2 + 4*(88*a^3*b^2
\end{aligned}$$

$$\begin{aligned}
& *c*d^3 - 13*a^4*b*d^4)*x - 12*(4*a^4*b*c*d^3 - a^5*d^4 + (4*b^5*c*d^3 - a*b \\
& ^4*d^4)*x^4 + 4*(4*a*b^4*c*d^3 - a^2*b^3*d^4)*x^3 + 6*(4*a^2*b^3*c*d^3 - a^ \\
& 3*b^2*d^4)*x^2 + 4*(4*a^3*b^2*c*d^3 - a^4*b*d^4)*x)*\log(b*x + a))*\log(d*x + \\
& c))/(a^4*b^6*c^4*g^5 - 4*a^5*b^5*c^3*d*g^5 + 6*a^6*b^4*c^2*d^2*g^5 - 4*a^7 \\
& *b^3*c*d^3*g^5 + a^8*b^2*d^4*g^5 + (b^10*c^4*g^5 - 4*a*b^9*c^3*d*g^5 + 6*a^ \\
& 2*b^8*c^2*d^2*g^5 - 4*a^3*b^7*c*d^3*g^5 + a^4*b^6*d^4*g^5)*x^4 + 4*(a*b^9*c \\
& ^4*g^5 - 4*a^2*b^8*c^3*d*g^5 + 6*a^3*b^7*c^2*d^2*g^5 - 4*a^4*b^6*c*d^3*g^5 \\
& + a^5*b^5*d^4*g^5)*x^3 + 6*(a^2*b^8*c^4*g^5 - 4*a^3*b^7*c^3*d*g^5 + 6*a^4*b \\
& ^6*c^2*d^2*g^5 - 4*a^5*b^5*c*d^3*g^5 + a^6*b^4*d^4*g^5)*x^2 + 4*(a^3*b^7*c^ \\
& 4*g^5 - 4*a^4*b^6*c^3*d*g^5 + 6*a^5*b^5*c^2*d^2*g^5 - 4*a^6*b^4*c*d^3*g^5 + \\
& a^7*b^3*d^4*g^5)*x))*B^2*d*i - 1/72*A*B*d*i*(12*(4*b*x + a)*\log(b*e*x/(d*x \\
& + c) + a*e/(d*x + c))/(b^6*g^5*x^4 + 4*a*b^5*g^5*x^3 + 6*a^2*b^4*g^5*x^2 + \\
& 4*a^3*b^3*g^5*x + a^4*b^2*g^5) + (7*a*b^3*c^3 - 33*a^2*b^2*c^2*d + 75*a^3* \\
& b*c*d^2 - 13*a^4*d^3 + 12*(4*b^4*c*d^2 - a*b^3*d^3)*x^3 - 6*(4*b^4*c^2*d - \\
& 29*a*b^3*c*d^2 + 7*a^2*b^2*d^3)*x^2 + 4*(4*b^4*c^3 - 21*a*b^3*c^2*d + 57*a^ \\
& 2*b^2*c*d^2 - 13*a^3*b*d^3)*x)/((b^9*c^3 - 3*a*b^8*c^2*d + 3*a^2*b^7*c*d^2 \\
& - a^3*b^6*d^3)*g^5*x^4 + 4*(a*b^8*c^3 - 3*a^2*b^7*c^2*d + 3*a^3*b^6*c*d^2 - \\
& a^4*b^5*d^3)*g^5*x^3 + 6*(a^2*b^7*c^3 - 3*a^3*b^6*c^2*d + 3*a^4*b^5*c*d^2 \\
& - a^5*b^4*d^3)*g^5*x^2 + 4*(a^3*b^6*c^3 - 3*a^4*b^5*c^2*d + 3*a^5*b^4*c*d^2 \\
& - a^6*b^3*d^3)*g^5*x + (a^4*b^5*c^3 - 3*a^5*b^4*c^2*d + 3*a^6*b^3*c*d^2 - \\
& a^7*b^2*d^3)*g^5) + 12*(4*b*c*d^3 - a*d^4)*\log(b*x + a)/((b^6*c^4 - 4*a*b^5 \\
& *c^3*d + 6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*g^5) - 12*(4*b* \\
& c*d^3 - a*d^4)*\log(d*x + c)/((b^6*c^4 - 4*a*b^5*c^3*d + 6*a^2*b^4*c^2*d^2 - \\
& 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*g^5) + 1/24*A*B*c*i*((12*b^3*d^3*x^3 - 3*b \\
& ^3*c^3 + 13*a*b^2*c^2*d - 23*a^2*b*c*d^2 + 25*a^3*d^3 - 6*(b^3*c*d^2 - 7*a* \\
& b^2*d^3)*x^2 + 4*(b^3*c^2*d - 5*a*b^2*c*d^2 + 13*a^2*b*d^3)*x)/((b^8*c^3 - \\
& 3*a*b^7*c^2*d + 3*a^2*b^6*c*d^2 - a^3*b^5*d^3)*g^5*x^4 + 4*(a*b^7*c^3 - 3*a \\
& ^2*b^6*c^2*d + 3*a^3*b^5*c*d^2 - a^4*b^4*d^3)*g^5*x^3 + 6*(a^2*b^6*c^3 - 3* \\
& a^3*b^5*c^2*d + 3*a^4*b^4*c*d^2 - a^5*b^3*d^3)*g^5*x^2 + 4*(a^3*b^5*c^3 - 3 \\
& *a^4*b^4*c^2*d + 3*a^5*b^3*c*d^2 - a^6*b^2*d^3)*g^5*x + (a^4*b^4*c^3 - 3*a^ \\
& 5*b^3*c^2*d + 3*a^6*b^2*c*d^2 - a^7*b*d^3)*g^5) - 12*\log(b*e*x/(d*x + c) + \\
& a*e/(d*x + c))/(b^5*g^5*x^4 + 4*a*b^4*g^5*x^3 + 6*a^2*b^3*g^5*x^2 + 4*a^3*b \\
& ^2*g^5*x + a^4*b*g^5) + 12*d^4*\log(b*x + a)/((b^5*c^4 - 4*a*b^4*c^3*d + 6*a \\
& ^2*b^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)*g^5) - 12*d^4*\log(d*x + c)/((\\
& b^5*c^4 - 4*a*b^4*c^3*d + 6*a^2*b^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)* \\
& g^5) - 1/4*B^2*c*i*\log(b*e*x/(d*x + c) + a*e/(d*x + c))^2/(b^5*g^5*x^4 + 4 \\
& *a*b^4*g^5*x^3 + 6*a^2*b^3*g^5*x^2 + 4*a^3*b^2*g^5*x + a^4*b*g^5) - 1/12*(4 \\
& *b*x + a)*A^2*d*i/(b^6*g^5*x^4 + 4*a*b^5*g^5*x^3 + 6*a^2*b^4*g^5*x^2 + 4*a^ \\
& 3*b^3*g^5*x + a^4*b^2*g^5) - 1/4*A^2*c*i/(b^5*g^5*x^4 + 4*a*b^4*g^5*x^3 + 6 \\
& *a^2*b^3*g^5*x^2 + 4*a^3*b^2*g^5*x + a^4*b*g^5)
\end{aligned}$$

mupad [B] time = 10.82, size = 1870, normalized size = 4.20

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x)^5, x)

[Out] ((72*A^2*a^3*d^3*i + 216*A^2*b^3*c^3*i + 115*B^2*a^3*d^3*i + 27*B^2*b^3*c^3*i + 156*A*B*a^3*d^3*i + 108*A*B*b^3*c^3*i - 360*A^2*a*b^2*c^2*d*i + 72*A^2*a^2*b*c*d^2*i - 101*B^2*a*b^2*c^2*d*i + 115*B^2*a^2*b*c*d^2*i - 276*A*B*a*b^2*c^2*d*i + 156*A*B*a^2*b*c*d^2*i)/(12*(a*d - b*c)) + (x^2*(79*B^2*a*b^2*d^3*i - B^2*b^3*c*d^2*i + 84*A*B*a*b^2*d^3*i - 12*A*B*b^3*c*d^2*i))/(2*(a*d - b*c)) + (x*(72*A^2*a^2*b*d^3*i + 115*B^2*a^2*b*d^3*i + 72*A^2*b^3*c^2*d*i - 5*B^2*b^3*c^2*d*i + 156*A*B*a^2*b*d^3*i + 12*A*B*b^3*c^2*d*i - 144*A^2*a*b^2*c*d^2*i + 7*B^2*a*b^2*c*d^2*i - 60*A*B*a*b^2*c*d^2*i))/(3*(a*d - b*c)) + (d*x^3*(13*B^2*b^3*d^2*i + 12*A*B*b^3*d^2*i))/(a*d - b*c)/(x*(288*a^3*b^4*c*g^5 - 288*a^4*b^3*d*g^5) - x^3*(288*a^2*b^5*d*g^5 - 288*a*b^6*c*g^5) + x^4*(72*b^7*c*g^5 - 72*a*b^6*d*g^5) + x^2*(432*a^2*b^5*c*g^5 - 432*a^3*b^4*d*g^5) + 72*a^4*b^3*c*g^5 - 72*a^5*b^2*d*g^5) - log((e*(a + b*x))/(c + d*x))^2*((B^2*c*i)/(4*b^2*g^5) + (B^2*a*d*i)/(12*b^3*g^5) + (B^2*d*i*x)/(3*b^2*g^5))/(4*a^3*x + a^4/b + b^3*x^4 + 6*a^2*b*x^2 + 4*a*b^2*x^3) - (B^2*d^4*i)/(12*b^2*g^5*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2)) - (log((e*(a + b*x))/(c + d*x))*(x*((2*A*B*i)/(3*b^2*g^5) + (B^2*d^4*i*(b*(a*((4*a^2*d^2 + b^2*c^2 - 5*a*b*c*d)/(12*b*d^3) + (a*(a*d - b*c))/(4*b*d^2)) + (6*a^3*d^3 - b^3*c^3 + 5*a*b^2*c^2*d - 10*a^2*b*c*d^2)/(12*b*d^4)) + a*(b*((4*a^2*d^2 + b^2*c^2 - 5*a*b*c*d)/(12*b*d^3) + (a*(a*d - b*c))/(4*b*d^2)) + (4*a^2*d^2 + b^2*c^2 - 5*a*b*c*d)/(6*d^3) + (a*(a*d - b*c))/(2*d^2)) + (6*a^3*d^3 - b^3*c^3 + 5*a*b^2*c^2*d - 10*a^2*b*c*d^2)/(4*d^4)))/(6*b^2*g^5*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2))) + (A*B*a*i)/(6*b^3*g^5) + (B*i*(3*A*b*c - B*a*d + B*b*c))/(6*b^3*d*g^5) + (B^2*d^4*i*(a*(a*((4*a^2*d^2 + b^2*c^2 - 5*a*b*c*d)/(12*b*d^3) + (a*(a*d - b*c))/(4*b*d^2)) + (6*a^3*d^3 - b^3*c^3 + 5*a*b^2*c^2*d - 10*a^2*b*c*d^2)/(12*b*d^4)) + (4*a^4*d^4 + b^4*c^4 + 10*a^2*b^2*c^2*d^2 - 5*a*b^3*c^3*d - 10*a^3*b*c*d^3)/(4*b*d^5)))/(6*b^2*g^5*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2)) + (B^2*d^4*i*x^2*(b*(b*((4*a^2*d^2 + b^2*c^2 - 5*a*b*c*d)/(12*b*d^3) + (a*(a*d - b*c))/(4*b*d^2)) + (4*a^2*d^2 + b^2*c^2 - 5*a*b*c*d)/(6*d^3) + (a*(a*d - b*c))/(2*d^2)) - a*((b^2*c - a*b*d)/(4*d^2) - (b*(a*d - b*c))/(2*d^2)) + (b^3*c^2 + 4*a^2*b*d^2 - 5*a*b^2*c*d)/(4*d^3)))/(6*b^2*g^5*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2)) - (B^2*d^4*i*x^3*(b*((b^2*c - a*b*d)/(4*d^2) - (b*(a*d - b*c))/(2*d^2)) + (b^3*c - a*b^2*d)/(4*d^2)))/(6*b^2*g^5*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2)))/((4*a^3*x)/d + a^4/(b*d) + (b^3*x^4)/d + (6*a^2*b*x^2)/d + (4*a*b^2*x^3)/d) - (B*d^4*i*atan((B*d^4*i*(12*A + 13*B)*(72*b^5*c^3*g^5 + 72*a^3*b^2*d^3*g^5 - 72*a*b^4*c^2*d*g^5 - 72*a^2*b^3*c*d^2*g^5)*1i)/(72*b^2*g^5*(13*B^2*d^4*i + 12*A*B*d^4*i)*(a*d - b*c)^3) + (B*d^5*i*x*(12*A + 13*B)*(b^4*c^2*g^5 + a^2*b^2*d^2*g^5 - 2*a*b^3*c*d*g^5)*2i)/(b*g^5*(13*B^2*d^4*i + 12*A*B*d^4*i)*(a*d - b*c)^3))*(12*A + 13*B)*1i)/(36*b^2*g^5*(a*d - b*c)^3)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)**5,x)

[Out] Timed out

$$3.64 \quad \int (ag+bgx)^3 (ci+dix)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 dx$$

Optimal. Leaf size=711

$$\frac{Bg^3i^2(bc-ad)^6 \log\left(\frac{bc-ad}{b(c+dx)}\right) \left(6B \log\left(\frac{e(a+bx)}{c+dx}\right) + 6A + 11B\right)}{180b^3d^4} - \frac{Bg^3i^2(a+bx)(bc-ad)^5 \left(6B \log\left(\frac{e(a+bx)}{c+dx}\right) + 6A + 11B\right)}{180b^3d^3}$$

[Out] $3/20*B^2*(-a*d+b*c)^5*g^3*i^2*x/b^2/d^3+1/60*B^2*(-a*d+b*c)^2*g^3*i^2*(b*x+a)^4/b^3-3/40*B^2*(-a*d+b*c)^4*g^3*i^2*(d*x+c)^2/b/d^4+1/60*B^2*(-a*d+b*c)^3*g^3*i^2*(d*x+c)^3/d^4-1/90*B*(-a*d+b*c)^3*g^3*i^2*(b*x+a)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^3/d-1/20*B*(-a*d+b*c)^2*g^3*i^2*(b*x+a)^4*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^3-1/15*B*(-a*d+b*c)*g^3*i^2*(b*x+a)^4*(d*x+c)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^2+1/60*(-a*d+b*c)^2*g^3*i^2*(b*x+a)^4*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/b^3+1/15*(-a*d+b*c)*g^3*i^2*(b*x+a)^4*(d*x+c)*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/b^2+1/6*g^3*i^2*(b*x+a)^4*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/b+1/180*B*(-a*d+b*c)^4*g^3*i^2*(b*x+a)^2*(3*A+B+3*B*\ln(e*(b*x+a)/(d*x+c)))/b^3/d^2-1/180*B*(-a*d+b*c)^5*g^3*i^2*(b*x+a)*(6*A+5*B+6*B*\ln(e*(b*x+a)/(d*x+c)))/b^3/d^3-1/180*B*(-a*d+b*c)^6*g^3*i^2*\ln((-a*d+b*c)/b/(d*x+c))*(6*A+11*B+6*B*\ln(e*(b*x+a)/(d*x+c)))/b^3/d^4-1/20*B^2*(-a*d+b*c)^6*g^3*i^2*\ln(d*x+c)/b^3/d^4-1/30*B^2*(-a*d+b*c)^6*g^3*i^2*polylog(2,d*(b*x+a)/b/(d*x+c))/b^3/d^4$

Rubi [A] time = 3.01, antiderivative size = 790, normalized size of antiderivative = 1.11, number of steps used = 86, number of rules used = 13, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}} = 0.310$, Rules used = {2528, 2525, 12, 2486, 31, 43, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$\frac{B^2g^3i^2(bc-ad)^6 \text{PolyLog}\left(2, \frac{b(c+dx)}{bc-ad}\right)}{30b^3d^4} + \frac{Bg^3i^2(bc-ad)^6 \log(c+dx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{30b^3d^4} + \frac{Bg^3i^2(a+bx)^2(bc-ad)^5}{30b^3d^4}$$

Antiderivative was successfully verified.

[In] Int[(a*g + b*g*x)^3*(c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2, x]

[Out] $-(A*B*(b*c - a*d)^5*g^3*i^2*x)/(30*b^2*d^3) + (B^2*(b*c - a*d)^5*g^3*i^2*x)/(45*b^2*d^3) - (7*B^2*(b*c - a*d)^4*g^3*i^2*(a + b*x)^2)/(360*b^3*d^2) + (B^2*(b*c - a*d)^3*g^3*i^2*(a + b*x)^3)/(60*b^3*d) + (B^2*(b*c - a*d)^2*g^3*i^2*(a + b*x)^4)/(60*b^3) - (B^2*(b*c - a*d)^5*g^3*i^2*(a + b*x)*\text{Log}[(e*(a + b*x))/(c + d*x)])/(30*b^3*d^3) + (B*(b*c - a*d)^4*g^3*i^2*(a + b*x)^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(60*b^3*d^2) - (B*(b*c - a*d)^3*g^3*i^2*(a + b*x)^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(90*b^3*d) - (7*B*(b*c - a*d)^2*g^3*i^2*(a + b*x)^4*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(360*b^3*d) + (7*B*(b*c - a*d)*g^3*i^2*(a + b*x)^5*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(360*b^3*d) + (7*B*g^3*i^2*(a + b*x)^6*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(360*b^3*d) + (7*B^2*g^3*i^2*(a + b*x)^7*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(360*b^3*d) + (7*B^3*g^3*i^2*(a + b*x)^8*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(360*b^3*d) + (7*B^4*g^3*i^2*(a + b*x)^9*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(360*b^3*d) + (7*B^5*g^3*i^2*(a + b*x)^10*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(360*b^3*d) + (7*B^6*g^3*i^2*(a + b*x)^11*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(360*b^3*d) + (7*B^7*g^3*i^2*(a + b*x)^12*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(360*b^3*d) + (7*B^8*g^3*i^2*(a + b*x)^13*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(360*b^3*d) + (7*B^9*g^3*i^2*(a + b*x)^14*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(360*b^3*d) + (7*B^10*g^3*i^2*(a + b*x)^15*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(360*b^3*d) + (7*B^11*g^3*i^2*(a + b*x)^16*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(360*b^3*d) + (7*B^12*g^3*i^2*(a + b*x)^17*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(360*b^3*d) + (7*B^13*g^3*i^2*(a + b*x)^18*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(360*b^3*d) + (7*B^14*g^3*i^2*(a + b*x)^19*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(360*b^3*d) + (7*B^15*g^3*i^2*(a + b*x)^20*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(360*b^3*d) + (7*B^16*g^3*i^2*(a + b*x)^21*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(360*b^3*d) + (7*B^17*g^3*i^2*(a + b*x)^22*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(360*b^3*d) + (7*B^18*g^3*i^2*(a + b*x)^23*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(360*b^3*d) + (7*B^19*g^3*i^2*(a + b*x)^24*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(360*b^3*d) + (7*B^20*g^3*i^2*(a + b*x)^25*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(360*b^3*d) + (7*B^21*g^3*i^2*(a + b*x)^26*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(360*b^3*d) + (7*B^22*g^3*i^2*(a + b*x)^27*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(360*b^3*d) + (7*B^23*g^3*i^2*(a + b*x)^28*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(360*b^3*d) + (7*B^24*g^3*i^2*(a + b*x)^29*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(360*b^3*d) + (7*B^25*g^3*i^2*(a + b*x)^30*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(360*b^3*d)$

$$\begin{aligned}
& a*d)^2*g^3*i^2*(a + b*x)^4*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)])))/(60*b^3) - \\
& (B*d*(b*c - a*d)*g^3*i^2*(a + b*x)^5*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)])) \\
& /((15*b^3) + ((b*c - a*d)^2*g^3*i^2*(a + b*x)^4*(A + B*\text{Log}[(e*(a + b*x))/(c \\
& + d*x]))^2)/(4*b^3) + (2*d*(b*c - a*d)*g^3*i^2*(a + b*x)^5*(A + B*\text{Log}[(e*(a \\
& + b*x))/(c + d*x]))^2)/(5*b^3) + (d^2*g^3*i^2*(a + b*x)^6*(A + B*\text{Log}[(e*(a \\
& + b*x))/(c + d*x]))^2)/(6*b^3) + (B^2*(b*c - a*d)^6*g^3*i^2*\text{Log}[c + d*x])/ \\
& (90*b^3*d^4) - (B^2*(b*c - a*d)^6*g^3*i^2*\text{Log}[-((d*(a + b*x))/(b*c - a*d))] \\
& *\text{Log}[c + d*x])/(30*b^3*d^4) + (B*(b*c - a*d)^6*g^3*i^2*(A + B*\text{Log}[(e*(a + b \\
& *x))/(c + d*x]))*\text{Log}[c + d*x])/(30*b^3*d^4) + (B^2*(b*c - a*d)^6*g^3*i^2*\text{Lo} \\
& g[c + d*x]^2)/(60*b^3*d^4) - (B^2*(b*c - a*d)^6*g^3*i^2*\text{PolyLog}[2, (b*(c + \\
& d*x))/(b*c - a*d)])/(30*b^3*d^4)
\end{aligned}$$

Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(n_), x_Symbol] := Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && (!IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)]^(n_.))*((b_.))/(x_), x_Symbol] := Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.))*((b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]/(x_), x_Symbol] := -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e^n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_)^(p_.))*((c_.) + (d_.)*(x_)^(q_.))
^(r_.)]^(s_.), x_Symbol] := Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q]^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_)^(m_.
)), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int (64c + 64dx)^2(ag + bgx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 dx &= \int \left(\frac{4096(bc - ad)^2(ag + bgx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^2} \right) dx \\
&= \frac{(4096(bc - ad)^2) \int (ag + bgx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^2} \\
&= \frac{1024(bc - ad)^2 g^3 (a + bx)^4 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^3} + \\
&= \frac{1024(bc - ad)^2 g^3 (a + bx)^4 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^3} + \\
&= \frac{1024(bc - ad)^2 g^3 (a + bx)^4 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^3} + \\
&= \frac{1024(bc - ad)^2 g^3 (a + bx)^4 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^3} + \\
&= -\frac{2048AB(bc - ad)^5 g^3 x}{15b^2 d^3} + \frac{1024B(bc - ad)^4 g^3 (a + bx)}{15b} \\
&= -\frac{2048AB(bc - ad)^5 g^3 x}{15b^2 d^3} - \frac{2048B^2(bc - ad)^5 g^3 (a + bx)}{15b^3 d^3} \\
&= -\frac{2048AB(bc - ad)^5 g^3 x}{15b^2 d^3} - \frac{2048B^2(bc - ad)^5 g^3 (a + bx)}{15b^3 d^3} \\
&= -\frac{2048AB(bc - ad)^5 g^3 x}{15b^2 d^3} + \frac{4096B^2(bc - ad)^5 g^3 x}{45b^2 d^3} - \frac{2048B^2(bc - ad)^5 g^3 (a + bx)}{15b^3 d^3} \\
&= -\frac{2048AB(bc - ad)^5 g^3 x}{15b^2 d^3} + \frac{4096B^2(bc - ad)^5 g^3 x}{45b^2 d^3} - \frac{2048B^2(bc - ad)^5 g^3 (a + bx)}{15b^3 d^3} \\
&= -\frac{2048AB(bc - ad)^5 g^3 x}{15b^2 d^3} + \frac{4096B^2(bc - ad)^5 g^3 x}{45b^2 d^3} - \frac{2048B^2(bc - ad)^5 g^3 (a + bx)}{15b^3 d^3} \\
&= -\frac{2048AB(bc - ad)^5 g^3 x}{15b^2 d^3} + \frac{4096B^2(bc - ad)^5 g^3 x}{45b^2 d^3} - \frac{2048B^2(bc - ad)^5 g^3 (a + bx)}{15b^3 d^3}
\end{aligned}$$

Mathematica [B] time = 1.37, size = 1559, normalized size = 2.19

result too large to display

Antiderivative was successfully verified.

[In] Integrate[(a*g + b*g*x)^3*(c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2,x]

[Out] (g^3*i^2*(15*(b*c - a*d)^2*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 + 24*d*(b*c - a*d)*(a + b*x)^5*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 + 10*d^2*(a + b*x)^6*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 - (5*B*(b*c - a*d)^3*(6*A*b*d*(b*c - a*d)^2*x + 6*B*d*(b*c - a*d)^2*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)] + 3*d^2*(-(b*c) + a*d)*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 2*d^3*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 6*B*(b*c - a*d)^3*Log[c + d*x] - 6*(b*c - a*d)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x] + B*(b*c - a*d)*(2*b*d*(b*c - a*d)*x - d^2*(a + b*x)^2 - 2*(b*c - a*d)^2*Log[c + d*x]) + 3*B*(b*c - a*d)^2*(b*d*x + (-(b*c) + a*d)*Log[c + d*x]) + 3*B*(b*c - a*d)^3*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))/d^4 + (2*B*(b*c - a*d)^2*(24*A*b*d*(b*c - a*d)^3*x + 24*B*d*(b*c - a*d)^3*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)] - 12*d^2*(b*c - a*d)^2*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 8*d^3*(b*c - a*d)*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 6*d^4*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 24*B*(b*c - a*d)^4*Log[c + d*x] - 24*(b*c - a*d)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x] + 4*B*(b*c - a*d)^2*(2*b*d*(b*c - a*d)*x - d^2*(a + b*x)^2 - 2*(b*c - a*d)^2*Log[c + d*x]) + B*(b*c - a*d)*(6*b*d*(b*c - a*d)^2*x + 3*d^2*(-(b*c) + a*d)*(a + b*x)^2 + 2*d^3*(a + b*x)^3 - 6*(b*c - a*d)^3*Log[c + d*x]) + 12*B*(b*c - a*d)^3*(b*d*x + (-(b*c) + a*d)*Log[c + d*x]) + 12*B*(b*c - a*d)^4*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))/d^4 - (B*(b*c - a*d)*(24*b^2*B*c*d*(b*c - a*d)^3*x + 120*A*b*d*(b*c - a*d)^4*x + 130*b*B*d*(b*c - a*d)^4*x + 24*a*b*B*d^2*(-(b*c) + a*d)^3*x - 12*b*B*c*d^2*(b*c - a*d)^2*(a + b*x)^2 + 12*a*B*d^3*(b*c - a*d)^2*(a + b*x)^2 + 35*B*d^2*(-(b*c) + a*d)^3*(a + b*x)^2 + 8*b*B*c*d^3*(b*c - a*d)*(a + b*x)^3 + 10*B*d^3*(b*c - a*d)^2*(a + b*x)^3 + 8*a*B*d^4*(-(b*c) + a*d)*(a + b*x)^3 - 6*b*B*c*d^4*(a + b*x)^4 + 6*a*B*d^5*(a + b*x)^4 + 120*B*d*(b*c - a*d)^4*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)] + 60*d^2*(-(b*c) + a*d)^3*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 40*d^3*(b*c - a*d)^2*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 30*d^4*(-(b*c) + a*d)*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 24*d^5*(a + b*x)^5*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 24*b*B*c*(b*c - a*d)^4*Log[c + d*x] + 24*a*B*d*(b*c - a*d)^4*Log[c + d*x] - 250*B*(b*c - a*d)^5*Log[c + d*x] - 120*(b*c - a*d)^5*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x] + 60*B*(b*c - a*d)^5*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))/d^4)/(6*d^4))/(60*b^3)

fricas [F] time = 0.97, size = 0, normalized size = 0.00

$$\text{integral} \left(A^2 b^3 d^2 g^3 i^2 x^5 + A^2 a^3 c^2 g^3 i^2 + (2 A^2 b^3 c d + 3 A^2 a b^2 d^2) g^3 i^2 x^4 + (A^2 b^3 c^2 + 6 A^2 a b^2 c d + 3 A^2 a^2 b d^2) g^3 i^2 x^3 + \dots \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorithm="fricas")

[Out] integral(A^2*b^3*d^2*g^3*i^2*x^5 + A^2*a^3*c^2*g^3*i^2 + (2*A^2*b^3*c*d + 3*A^2*a*b^2*d^2)*g^3*i^2*x^4 + (A^2*b^3*c^2 + 6*A^2*a*b^2*c*d + 3*A^2*a^2*b*d^2)*g^3*i^2*x^3 + (3*A^2*a*b^2*c^2 + 6*A^2*a^2*b*c*d + A^2*a^3*d^2)*g^3*i^2*x^2 + (3*A^2*a^2*b*c^2 + 2*A^2*a^3*c*d)*g^3*i^2*x + (B^2*b^3*d^2*g^3*i^2*x^5 + B^2*a^3*c^2*g^3*i^2 + (2*B^2*b^3*c*d + 3*B^2*a*b^2*d^2)*g^3*i^2*x^4 + (B^2*b^3*c^2 + 6*B^2*a*b^2*c*d + 3*B^2*a^2*b*d^2)*g^3*i^2*x^3 + (3*B^2*a*b^2*c^2 + 6*B^2*a^2*b*c*d + B^2*a^3*d^2)*g^3*i^2*x^2 + (3*B^2*a^2*b*c^2 + 2*B^2*a^3*c*d)*g^3*i^2*x)*log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*B*b^3*d^2*g^3*i^2*x^5 + A*B*a^3*c^2*g^3*i^2 + (2*A*B*b^3*c*d + 3*A*B*a*b^2*d^2)*g^3*i^2*x^4 + (A*B*b^3*c^2 + 6*A*B*a*b^2*c*d + 3*A*B*a^2*b*d^2)*g^3*i^2*x^3 + (3*A*B*a*b^2*c^2 + 6*A*B*a^2*b*c*d + A*B*a^3*d^2)*g^3*i^2*x^2 + (3*A*B*a^2*b*c^2 + 2*A*B*a^3*c*d)*g^3*i^2*x)*log((b*e*x + a*e)/(d*x + c)), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorithm="giac")

[Out] Timed out

maple [F] time = 2.86, size = 0, normalized size = 0.00

$$\int (bgx + ag)^3 (dix + ci)^2 \left(B \ln \left(\frac{(bx + a)e}{dx + c} \right) + A \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)^3*(d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)^2,x)

[Out] int((b*g*x+a*g)^3*(d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)^2,x)

maxima [B] time = 2.99, size = 5178, normalized size = 7.28

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorithm="maxima")

[Out]
$$\begin{aligned} & 1/6*A^2*b^3*d^2*g^3*i^2*x^6 + 2/5*A^2*b^3*c*d*g^3*i^2*x^5 + 3/5*A^2*a*b^2*d \\ & ^2*g^3*i^2*x^5 + 1/4*A^2*b^3*c^2*g^3*i^2*x^4 + 3/2*A^2*a*b^2*c*d*g^3*i^2*x^4 \\ & + 3/4*A^2*a^2*b*d^2*g^3*i^2*x^4 + A^2*a*b^2*c^2*g^3*i^2*x^3 + 2*A^2*a^2*b \\ & *c*d*g^3*i^2*x^3 + 1/3*A^2*a^3*d^2*g^3*i^2*x^3 + 3/2*A^2*a^2*b*c^2*g^3*i^2* \\ & x^2 + A^2*a^3*c*d*g^3*i^2*x^2 + 2*(x*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + \\ & a*log(b*x + a)/b - c*log(d*x + c)/d)*A*B*a^3*c^2*g^3*i^2 + 3*(x^2*log(b*e \\ & x/(d*x + c) + a*e/(d*x + c)) - a^2*log(b*x + a)/b^2 + c^2*log(d*x + c)/d^2 \\ & - (b*c - a*d)*x/(b*d))*A*B*a^2*b*c^2*g^3*i^2 + (2*x^3*log(b*e*x/(d*x + c) + \\ & a*e/(d*x + c)) + 2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c \\ & *d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*A*B*a*b^2*c^2*g^3*i \\ & ^2 + 1/12*(6*x^4*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 6*a^4*log(b*x + a)/ \\ & b^4 + 6*c^4*log(d*x + c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d \\ & - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*A*B*b^3*c^2*g^3*i^ \\ & 2 + 2*(x^2*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - a^2*log(b*x + a)/b^2 + c^ \\ & 2*log(d*x + c)/d^2 - (b*c - a*d)*x/(b*d))*A*B*a^3*c*d*g^3*i^2 + 2*(2*x^3*lo \\ & g(b*e*x/(d*x + c) + a*e/(d*x + c)) + 2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x \\ & + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))* \\ & A*B*a^2*b*c*d*g^3*i^2 + 1/2*(6*x^4*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 6 \\ & *a^4*log(b*x + a)/b^4 + 6*c^4*log(d*x + c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3) \\ & *x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))* \\ & A*B*a*b^2*c*d*g^3*i^2 + 1/15*(12*x^5*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + \\ & 12*a^5*log(b*x + a)/b^5 - 12*c^5*log(d*x + c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d \\ & ^4)*x^4 - 4*(b^4*c^2*d^2 - a^2*b^2*d^4)*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 \\ & - 12*(b^4*c^4 - a^4*d^4)*x)/(b^4*d^4))*A*B*b^3*c*d*g^3*i^2 + 1/3*(2*x^3*1 \\ & og(b*e*x/(d*x + c) + a*e/(d*x + c)) + 2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d* \\ & x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) \\ & *A*B*a^3*d^2*g^3*i^2 + 1/4*(6*x^4*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 6* \\ & a^4*log(b*x + a)/b^4 + 6*c^4*log(d*x + c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)* \\ & x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*A \\ & *B*a^2*b*d^2*g^3*i^2 + 1/10*(12*x^5*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + \\ & 12*a^5*log(b*x + a)/b^5 - 12*c^5*log(d*x + c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d \\ & ^4)*x^4 - 4*(b^4*c^2*d^2 - a^2*b^2*d^4)*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 \\ & - 12*(b^4*c^4 - a^4*d^4)*x)/(b^4*d^4))*A*B*a*b^2*d^2*g^3*i^2 + 1/180*(60*x \\ & ^6*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 60*a^6*log(b*x + a)/b^6 + 60*c^6* \\ & log(d*x + c)/d^6 - (12*(b^5*c*d^4 - a*b^4*d^5)*x^5 - 15*(b^5*c^2*d^3 - a^2* \\ & b^3*d^5)*x^4 + 20*(b^5*c^3*d^2 - a^3*b^2*d^5)*x^3 - 30*(b^5*c^4*d - a^4*b*d \\ & ^5)*x^2 + 60*(b^5*c^5 - a^5*d^5)*x)/(b^5*d^5))*A*B*b^3*d^2*g^3*i^2 + A^2*a^ \\ & 3*c^2*g^3*i^2*x - 1/180*(33*a^4*b*c^2*d^4*g^3*i^2 - 6*a^5*c*d^5*g^3*i^2 - 2 \\ & *(3*g^3*i^2*log(e) + g^3*i^2)*b^5*c^6 + 6*(6*g^3*i^2*log(e) + g^3*i^2)*a*b^ \\ & 4*c^5*d - 3*(30*g^3*i^2*log(e) - g^3*i^2)*a^2*b^3*c^4*d^2 + 2*(60*g^3*i^2*1 \end{aligned}$$

$$\begin{aligned}
& \log(e) - 17g^3i^2)a^3b^2c^3d^3)B^2\log(dx + c)/(b^2d^4) + 1/30*(b^6 \\
& *c^6g^3i^2 - 6*a*b^5*c^5*d*g^3i^2 + 15*a^2*b^4*c^4*d^2*g^3i^2 - 20*a^3* \\
& b^3*c^3*d^3*g^3i^2 + 15*a^4*b^2*c^2*d^4*g^3i^2 - 6*a^5*b*c*d^5*g^3i^2 + \\
& a^6*d^6*g^3i^2)*(\log(b*x + a)*\log((b*d*x + a*d)/(b*c - a*d) + 1) + \operatorname{dilog}(- \\
& (b*d*x + a*d)/(b*c - a*d)))*B^2/(b^3*d^4) + 1/360*(60*B^2*b^6*d^6*g^3i^2*x \\
& ^6*\log(e)^2 + 24*((6*g^3i^2*\log(e)^2 - g^3i^2*\log(e))*b^6*c*d^5 + (9*g^3i \\
& ^2*\log(e)^2 + g^3i^2*\log(e))*a*b^5*d^6)*B^2*x^5 + 6*((15*g^3i^2*\log(e)^2 \\
& - 7*g^3i^2*\log(e) + g^3i^2)*b^6*c^2*d^4 + 2*(45*g^3i^2*\log(e)^2 - 3*g^3 \\
& *i^2*\log(e) - g^3i^2)*a*b^5*c*d^5 + (45*g^3i^2*\log(e)^2 + 13*g^3i^2*\log(\\
& e) + g^3i^2)*a^2*b^4*d^6)*B^2*x^4 - 2*((2*g^3i^2*\log(e) - 3*g^3i^2)*b^6* \\
& c^3*d^3 - 3*(60*g^3i^2*\log(e)^2 - 26*g^3i^2*\log(e) + g^3i^2)*a*b^5*c^2*d \\
& ^4 - 3*(120*g^3i^2*\log(e)^2 + 14*g^3i^2*\log(e) - 5*g^3i^2)*a^2*b^4*c*d^5 \\
& - (60*g^3i^2*\log(e)^2 + 38*g^3i^2*\log(e) + 9*g^3i^2)*a^3*b^3*d^6)*B^2*x \\
& ^3 + ((6*g^3i^2*\log(e) - 7*g^3i^2)*b^6*c^4*d^2 - 2*(18*g^3i^2*\log(e) - 2 \\
& 3*g^3i^2)*a*b^5*c^3*d^3 + 60*(9*g^3i^2*\log(e)^2 - 3*g^3i^2*\log(e) - g^3i \\
& ^2)*a^2*b^4*c^2*d^4 + 2*(180*g^3i^2*\log(e)^2 + 102*g^3i^2*\log(e) + 5*g^3 \\
& *i^2)*a^3*b^3*c*d^5 + (6*g^3i^2*\log(e) + 11*g^3i^2)*a^4*b^2*d^6)*B^2*x^2 \\
& - 2*(2*(3*g^3i^2*\log(e) - 2*g^3i^2)*b^6*c^5*d - 9*(4*g^3i^2*\log(e) - 3*g \\
& ^3i^2)*a*b^5*c^4*d^2 + (90*g^3i^2*\log(e) - 77*g^3i^2)*a^2*b^4*c^3*d^3 - \\
& (180*g^3i^2*\log(e)^2 + 30*g^3i^2*\log(e) - 97*g^3i^2)*a^3*b^3*c^2*d^4 - 3 \\
& *(12*g^3i^2*\log(e) + 17*g^3i^2)*a^4*b^2*c*d^5 + 2*(3*g^3i^2*\log(e) + 4*g \\
& ^3i^2)*a^5*b*d^6)*B^2*x + 6*(10*B^2*b^6*d^6*g^3i^2*x^6 + 60*B^2*a^3*b^3*c \\
& ^2*d^4*g^3i^2*x + 12*(2*b^6*c*d^5*g^3i^2 + 3*a*b^5*d^6*g^3i^2)*B^2*x^5 + \\
& 15*(b^6*c^2*d^4*g^3i^2 + 6*a*b^5*c*d^5*g^3i^2 + 3*a^2*b^4*d^6*g^3i^2)*B \\
& ^2*x^4 + 20*(3*a*b^5*c^2*d^4*g^3i^2 + 6*a^2*b^4*c*d^5*g^3i^2 + a^3*b^3*d^ \\
& 6*g^3i^2)*B^2*x^3 + 30*(3*a^2*b^4*c^2*d^4*g^3i^2 + 2*a^3*b^3*c*d^5*g^3i^ \\
& 2)*B^2*x^2 + (15*a^4*b^2*c^2*d^4*g^3i^2 - 6*a^5*b*c*d^5*g^3i^2 + a^6*d^6* \\
& g^3i^2)*B^2)*\log(b*x + a)^2 + 6*(10*B^2*b^6*d^6*g^3i^2*x^6 + 60*B^2*a^3*b \\
& ^3*c^2*d^4*g^3i^2*x + 12*(2*b^6*c*d^5*g^3i^2 + 3*a*b^5*d^6*g^3i^2)*B^2*x \\
& ^5 + 15*(b^6*c^2*d^4*g^3i^2 + 6*a*b^5*c*d^5*g^3i^2 + 3*a^2*b^4*d^6*g^3i^ \\
& 2)*B^2*x^4 + 20*(3*a*b^5*c^2*d^4*g^3i^2 + 6*a^2*b^4*c*d^5*g^3i^2 + a^3*b^ \\
& 3*d^6*g^3i^2)*B^2*x^3 + 30*(3*a^2*b^4*c^2*d^4*g^3i^2 + 2*a^3*b^3*c*d^5*g^ \\
& 3i^2)*B^2*x^2 - (b^6*c^6*g^3i^2 - 6*a*b^5*c^5*d*g^3i^2 + 15*a^2*b^4*c^4* \\
& d^2*g^3i^2 - 20*a^3*b^3*c^3*d^3*g^3i^2)*B^2)*\log(dx + c)^2 + 2*(60*B^2*b \\
& ^6*d^6*g^3i^2*x^6*\log(e) + 12*((12*g^3i^2*\log(e) - g^3i^2)*b^6*c*d^5 + (\\
& 18*g^3i^2*\log(e) + g^3i^2)*a*b^5*d^6)*B^2*x^5 + 3*((30*g^3i^2*\log(e) - 7 \\
& *g^3i^2)*b^6*c^2*d^4 + 6*(30*g^3i^2*\log(e) - g^3i^2)*a*b^5*c*d^5 + (90*g \\
& ^3i^2*\log(e) + 13*g^3i^2)*a^2*b^4*d^6)*B^2*x^4 - 2*(b^6*c^3*d^3*g^3i^2 - \\
& 3*(60*g^3i^2*\log(e) - 13*g^3i^2)*a*b^5*c^2*d^4 - 3*(120*g^3i^2*\log(e) + \\
& 7*g^3i^2)*a^2*b^4*c*d^5 - (60*g^3i^2*\log(e) + 19*g^3i^2)*a^3*b^3*d^6)*B \\
& ^2*x^3 + 3*(b^6*c^4*d^2*g^3i^2 - 6*a*b^5*c^3*d^3*g^3i^2 + a^4*b^2*d^6*g^3 \\
& *i^2 + 30*(6*g^3i^2*\log(e) - g^3i^2)*a^2*b^4*c^2*d^4 + 2*(60*g^3i^2*\log(\\
& e) + 17*g^3i^2)*a^3*b^3*c*d^5)*B^2*x^2 - 6*(b^6*c^5*d*g^3i^2 - 6*a*b^5*c^ \\
& 4*d^2*g^3i^2 + 15*a^2*b^4*c^3*d^3*g^3i^2 - 6*a^4*b^2*c*d^5*g^3i^2 + a^5* \\
& b*d^6*g^3i^2 - 5*(12*g^3i^2*\log(e) + g^3i^2)*a^3*b^3*c^2*d^4)*B^2*x - (6
\end{aligned}$$

```

*a*b^5*c^5*d*g^3*i^2 - 33*a^2*b^4*c^4*d^2*g^3*i^2 + 74*a^3*b^3*c^3*d^3*g^3*
i^2 - 9*(10*g^3*i^2*log(e) + 7*g^3*i^2)*a^4*b^2*c^2*d^4 + 18*(2*g^3*i^2*log
(e) + g^3*i^2)*a^5*b*c*d^5 - 2*(3*g^3*i^2*log(e) + g^3*i^2)*a^6*d^6)*B^2)*l
og(b*x + a) - 2*(60*B^2*b^6*d^6*g^3*i^2*x^6*log(e) + 12*((12*g^3*i^2*log(e)
- g^3*i^2)*b^6*c*d^5 + (18*g^3*i^2*log(e) + g^3*i^2)*a*b^5*d^6)*B^2*x^5 +
3*((30*g^3*i^2*log(e) - 7*g^3*i^2)*b^6*c^2*d^4 + 6*(30*g^3*i^2*log(e) - g^3
*i^2)*a*b^5*c*d^5 + (90*g^3*i^2*log(e) + 13*g^3*i^2)*a^2*b^4*d^6)*B^2*x^4 -
2*(b^6*c^3*d^3*g^3*i^2 - 3*(60*g^3*i^2*log(e) - 13*g^3*i^2)*a*b^5*c^2*d^4
- 3*(120*g^3*i^2*log(e) + 7*g^3*i^2)*a^2*b^4*c*d^5 - (60*g^3*i^2*log(e) + 1
9*g^3*i^2)*a^3*b^3*d^6)*B^2*x^3 + 3*(b^6*c^4*d^2*g^3*i^2 - 6*a*b^5*c^3*d^3*
g^3*i^2 + a^4*b^2*d^6*g^3*i^2 + 30*(6*g^3*i^2*log(e) - g^3*i^2)*a^2*b^4*c^2
*d^4 + 2*(60*g^3*i^2*log(e) + 17*g^3*i^2)*a^3*b^3*c*d^5)*B^2*x^2 - 6*(b^6*c
^5*d*g^3*i^2 - 6*a*b^5*c^4*d^2*g^3*i^2 + 15*a^2*b^4*c^3*d^3*g^3*i^2 - 6*a^4
*b^2*c*d^5*g^3*i^2 + a^5*b*d^6*g^3*i^2 - 5*(12*g^3*i^2*log(e) + g^3*i^2)*a^
3*b^3*c^2*d^4)*B^2*x + 6*(10*B^2*b^6*d^6*g^3*i^2*x^6 + 60*B^2*a^3*b^3*c^2*d
^4*g^3*i^2*x + 12*(2*b^6*c*d^5*g^3*i^2 + 3*a*b^5*d^6*g^3*i^2)*B^2*x^5 + 15*
(b^6*c^2*d^4*g^3*i^2 + 6*a*b^5*c*d^5*g^3*i^2 + 3*a^2*b^4*d^6*g^3*i^2)*B^2*x
^4 + 20*(3*a*b^5*c^2*d^4*g^3*i^2 + 6*a^2*b^4*c*d^5*g^3*i^2 + a^3*b^3*d^6*g^
3*i^2)*B^2*x^3 + 30*(3*a^2*b^4*c^2*d^4*g^3*i^2 + 2*a^3*b^3*c*d^5*g^3*i^2)*B
^2*x^2 + (15*a^4*b^2*c^2*d^4*g^3*i^2 - 6*a^5*b*c*d^5*g^3*i^2 + a^6*d^6*g^3*
i^2)*B^2)*log(b*x + a))*log(d*x + c))/(b^3*d^4)

```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (ag + bgx)^3 (ci + dix)^2 \left(A + B \ln \left(\frac{e(a + bx)}{c + dx} \right) \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)^3*(c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x)))^2,
x)
```

```
[Out] int((a*g + b*g*x)^3*(c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x)))^2,
x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**3*(d*i*x+c*i)**2*(A+B*ln(e*(b*x+a)/(d*x+c)))**2,x)
```

```
[Out] Timed out
```

$$3.65 \quad \int (ag+bgx)^2(ci+dix)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 dx$$

Optimal. Leaf size=761

$$\frac{Bg^2i^2(bc-ad)^5 \log\left(\frac{bc-ad}{b(c+dx)}\right) \left(2B \log\left(\frac{e(a+bx)}{c+dx}\right) + 2A + 3B\right)}{30b^3d^3} + \frac{Bg^2i^2(a+bx)(bc-ad)^4 \left(2B \log\left(\frac{e(a+bx)}{c+dx}\right) + 2A + B\right)}{30b^3d^2}$$

[Out] $-1/10*B^2*(-a*d+b*c)^4*g^2*i^2*x/b^2/d^2-1/20*B^2*(-a*d+b*c)^3*g^2*i^2*(d*x+c)^2/b/d^3+1/30*B^2*(-a*d+b*c)^2*g^2*i^2*(d*x+c)^3/d^3+1/30*B^2*(-a*d+b*c)^5*g^2*i^2*\ln((b*x+a)/(d*x+c))/b^3/d^3-1/30*B*(-a*d+b*c)^3*g^2*i^2*(b*x+a)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^3/d-1/15*B*(-a*d+b*c)^2*g^2*i^2*(b*x+a)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^3-1/5*B*(-a*d+b*c)^3*g^2*i^2*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b/d^3+4/15*B*(-a*d+b*c)^2*g^2*i^2*(d*x+c)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))/d^3-1/10*b*B*(-a*d+b*c)*g^2*i^2*(d*x+c)^4*(A+B*\ln(e*(b*x+a)/(d*x+c)))/d^3+1/30*(-a*d+b*c)^2*g^2*i^2*(b*x+a)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/b^3+1/10*(-a*d+b*c)*g^2*i^2*(b*x+a)^3*(d*x+c)*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/b^2+1/5*g^2*i^2*(b*x+a)^3*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/b+1/30*B*(-a*d+b*c)^4*g^2*i^2*(b*x+a)*(2*A+B+2*B*\ln(e*(b*x+a)/(d*x+c)))/b^3/d^2+1/30*B*(-a*d+b*c)^5*g^2*i^2*\ln((-a*d+b*c)/b/(d*x+c))*(2*A+3*B+2*B*\ln(e*(b*x+a)/(d*x+c)))/b^3/d^3+1/10*B^2*(-a*d+b*c)^5*g^2*i^2*\ln(d*x+c)/b^3/d^3+1/15*B^2*(-a*d+b*c)^5*g^2*i^2*polylog(2,d*(b*x+a)/b/(d*x+c))/b^3/d^3$

Rubi [A] time = 2.40, antiderivative size = 666, normalized size of antiderivative = 0.88, number of steps used = 74, number of rules used = 13, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}} = 0.310$, Rules used = {2528, 2525, 12, 2486, 31, 43, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$\frac{B^2g^2i^2(bc-ad)^5 \text{PolyLog}\left(2, \frac{b(c+dx)}{bc-ad}\right)}{15b^3d^3} - \frac{Bg^2i^2(bc-ad)^5 \log(c+dx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{15b^3d^3} + \frac{d^2g^2i^2(a+bx)^5 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{5b^3}$$

Antiderivative was successfully verified.

[In] Int[(a*g + b*g*x)^2*(c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2, x]

[Out] $(A*B*(b*c - a*d)^4*g^2*i^2*x)/(15*b^2*d^2) - (B^2*(b*c - a*d)^4*g^2*i^2*x)/(15*b^2*d^2) + (B^2*(b*c - a*d)^3*g^2*i^2*(a + b*x)^2)/(20*b^3*d) + (B^2*(b*c - a*d)^2*g^2*i^2*(a + b*x)^3)/(30*b^3) + (B^2*(b*c - a*d)^4*g^2*i^2*(a + b*x)*\text{Log}[(e*(a + b*x))/(c + d*x)])/(15*b^3*d^2) - (B*(b*c - a*d)^3*g^2*i^2*(a + b*x)^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(30*b^3*d) - (B*(b*c - a*d)^2*g^2*i^2*(a + b*x)^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(5*b^3) - (B*d*(b*c - a*d)*g^2*i^2*(a + b*x)^4*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(15*b^3*d^2)$

$$10*b^3) + ((b*c - a*d)^2*g^2*i^2*(a + b*x)^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]))^2)/(3*b^3) + (d*(b*c - a*d)*g^2*i^2*(a + b*x)^4*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]))^2)/(2*b^3) + (d^2*g^2*i^2*(a + b*x)^5*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]))^2)/(5*b^3) + (B^2*(b*c - a*d)^5*g^2*i^2*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c + d*x])/(15*b^3*d^3) - (B*(b*c - a*d)^5*g^2*i^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]))*\text{Log}[c + d*x])/(15*b^3*d^3) - (B^2*(b*c - a*d)^5*g^2*i^2*\text{Log}[c + d*x]^2)/(30*b^3*d^3) + (B^2*(b*c - a*d)^5*g^2*i^2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/(15*b^3*d^3)$$
Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^-1, x_Symbol] := Simp[Log[RemoveContent[a + b*x, x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && (!IntegerQ[n] || (EqQ[c, 0] && LeQ[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393


```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] := Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q]^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.))/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int (65c + 65dx)^2 (ag + bgx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 dx &= \int \left(\frac{(-bc + ad)^2 g^2 (65c + 65dx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{d^2} \right) dx \\
&= \frac{(b^2 g^2) \int (65c + 65dx)^4 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 dx}{4225 d^2} \\
&= \frac{4225 (bc - ad)^2 g^2 (c + dx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{3d^3} \\
&= \frac{4225 (bc - ad)^2 g^2 (c + dx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{3d^3} \\
&= \frac{4225 (bc - ad)^2 g^2 (c + dx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{3d^3} \\
&= \frac{4225 (bc - ad)^2 g^2 (c + dx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{3d^3} \\
&= \frac{4225 (bc - ad)^2 g^2 (c + dx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{3d^3} \\
&= -\frac{845AB(bc - ad)^4 g^2 x}{3b^2 d^2} - \frac{845B(bc - ad)^3 g^2 (c + dx)^2}{6bd^2} \\
&= -\frac{845AB(bc - ad)^4 g^2 x}{3b^2 d^2} - \frac{845B^2(bc - ad)^4 g^2 (a + bx)}{3b^3 d^2} \\
&= -\frac{845AB(bc - ad)^4 g^2 x}{3b^2 d^2} - \frac{845B^2(bc - ad)^4 g^2 (a + bx)}{3b^3 d^2} \\
&= -\frac{845AB(bc - ad)^4 g^2 x}{3b^2 d^2} - \frac{845B^2(bc - ad)^4 g^2 x}{3b^2 d^2} - \frac{845B^2(bc - ad)^4 g^2 (a + bx)}{3b^3 d^2} \\
&= -\frac{845AB(bc - ad)^4 g^2 x}{3b^2 d^2} - \frac{845B^2(bc - ad)^4 g^2 x}{3b^2 d^2} - \frac{845B^2(bc - ad)^4 g^2 (a + bx)}{3b^3 d^2} \\
&= -\frac{845AB(bc - ad)^4 g^2 x}{3b^2 d^2} - \frac{845B^2(bc - ad)^4 g^2 x}{3b^2 d^2} - \frac{845B^2(bc - ad)^4 g^2 (a + bx)}{3b^3 d^2}
\end{aligned}$$

Mathematica [A] time = 0.95, size = 1194, normalized size = 1.57

$$g^2 i^2 \left(12d^5 \left(A + B \log \left(\frac{e^{(a+bx)}}{c+dx} \right) \right)^2 (a+bx)^5 + 30d^4(bc-ad) \left(A + B \log \left(\frac{e^{(a+bx)}}{c+dx} \right) \right)^2 (a+bx)^4 + 20d^3(bc-ad)^2 \left(A + \right.$$

Antiderivative was successfully verified.

[In] Integrate[(a*g + b*g*x)^2*(c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2,x]

[Out] (g^2*i^2*(20*d^3*(b*c - a*d)^2*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 + 30*d^4*(b*c - a*d)*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 + 12*d^5*(a + b*x)^5*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 + 20*B*(b*c - a*d)^3*(2*A*b*d*(b*c - a*d)*x + 2*B*d*(b*c - a*d)*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)] - d^2*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 2*B*(b*c - a*d)^2*Log[c + d*x] - 2*(b*c - a*d)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x] + B*(b*c - a*d)*(b*d*x + (-b*c) + a*d)*Log[c + d*x] + B*(b*c - a*d)^2*((2*Log[(d*(a + b*x))/(-b*c) + a*d]) - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]) - 10*B*(b*c - a*d)^2*(6*A*b*d*(b*c - a*d)^2*x + 6*B*d*(b*c - a*d)^2*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)] + 3*d^2*(-b*c) + a*d)*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 2*d^3*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 6*B*(b*c - a*d)^3*Log[c + d*x] - 6*(b*c - a*d)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x] + B*(b*c - a*d)*(2*b*d*(b*c - a*d)*x - d^2*(a + b*x)^2 - 2*(b*c - a*d)^2*Log[c + d*x]) + 3*B*(b*c - a*d)^2*(b*d*x + (-b*c) + a*d)*Log[c + d*x] + 3*B*(b*c - a*d)^3*((2*Log[(d*(a + b*x))/(-b*c) + a*d]) - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]) + B*(b*c - a*d)*(24*A*b*d*(b*c - a*d)^3*x + 24*B*d*(b*c - a*d)^3*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)] - 12*d^2*(b*c - a*d)^2*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 8*d^3*(b*c - a*d)*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 6*d^4*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 24*B*(b*c - a*d)^4*Log[c + d*x] - 24*(b*c - a*d)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x] + 4*B*(b*c - a*d)^2*(2*b*d*(b*c - a*d)*x - d^2*(a + b*x)^2 - 2*(b*c - a*d)^2*Log[c + d*x]) + B*(b*c - a*d)*(6*b*d*(b*c - a*d)^2*x + 3*d^2*(-b*c) + a*d)*(a + b*x)^2 + 2*d^3*(a + b*x)^3 - 6*(b*c - a*d)^3*Log[c + d*x]) + 12*B*(b*c - a*d)^3*(b*d*x + (-b*c) + a*d)*Log[c + d*x] + 12*B*(b*c - a*d)^4*((2*Log[(d*(a + b*x))/(-b*c) + a*d]) - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(60*b^3*d^3)

fricas [F] time = 0.77, size = 0, normalized size = 0.00

$$\text{integral} \left(A^2 b^2 d^2 g^2 i^2 x^4 + A^2 a^2 c^2 g^2 i^2 + 2 \left(A^2 b^2 c d + A^2 a b d^2 \right) g^2 i^2 x^3 + \left(A^2 b^2 c^2 + 4 A^2 a b c d + A^2 a^2 d^2 \right) g^2 i^2 x^2 + 2 \left(A^2 a b c^2 + 2 A^2 a^2 c d + A^2 a^2 d^2 \right) g^2 i^2 x + \left(A^2 a^2 b^2 + 2 A^2 a b c d + A^2 a^2 d^2 \right) g^2 i^2 \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorithm="fricas")

[Out] integral(A^2*b^2*d^2*g^2*i^2*x^4 + A^2*a^2*c^2*g^2*i^2 + 2*(A^2*b^2*c*d + A^2*a*b*d^2)*g^2*i^2*x^3 + (A^2*b^2*c^2 + 4*A^2*a*b*c*d + A^2*a^2*d^2)*g^2*i^2*x^2 + 2*(A^2*a*b*c^2 + A^2*a^2*c*d)*g^2*i^2*x + (B^2*b^2*d^2*g^2*i^2*x^4 + B^2*a^2*c^2*g^2*i^2 + 2*(B^2*b^2*c*d + B^2*a*b*d^2)*g^2*i^2*x^3 + (B^2*b^2*c^2 + 4*B^2*a*b*c*d + B^2*a^2*d^2)*g^2*i^2*x^2 + 2*(B^2*a*b*c^2 + B^2*a^2*c*d)*g^2*i^2*x)*log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*B*b^2*d^2*g^2*i^2*x^4 + A*B*a^2*c^2*g^2*i^2 + 2*(A*B*b^2*c*d + A*B*a*b*d^2)*g^2*i^2*x^3 + (A*B*b^2*c^2 + 4*A*B*a*b*c*d + A*B*a^2*d^2)*g^2*i^2*x^2 + 2*(A*B*a*b*c^2 + A*B*a^2*c*d)*g^2*i^2*x)*log((b*e*x + a*e)/(d*x + c)), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorithm="giac")

[Out] Timed out

maple [F] time = 2.56, size = 0, normalized size = 0.00

$$\int (bgx + ag)^2 (dix + ci)^2 \left(B \ln \left(\frac{(bx + a)e}{dx + c} \right) + A \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)^2*(d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)^2,x)

[Out] int((b*g*x+a*g)^2*(d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)^2,x)

maxima [B] time = 2.63, size = 3656, normalized size = 4.80

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorithm="maxima")

[Out] 1/5*A^2*b^2*d^2*g^2*i^2*x^5 + 1/2*A^2*b^2*c*d*g^2*i^2*x^4 + 1/2*A^2*a*b*d^2*g^2*i^2*x^4 + 1/3*A^2*b^2*c^2*g^2*i^2*x^3 + 4/3*A^2*a*b*c*d*g^2*i^2*x^3 + 1/3*A^2*a^2*d^2*g^2*i^2*x^3 + A^2*a*b*c^2*g^2*i^2*x^2 + A^2*a^2*c*d*g^2*i^2

$$\begin{aligned}
& x^2 + 2*(x*\log(b*e*x/(d*x + c)) + a*e/(d*x + c)) + a*\log(b*x + a)/b - c*\log \\
& (d*x + c)/d)*A*B*a^2*c^2*g^2*i^2 + 2*(x^2*\log(b*e*x/(d*x + c)) + a*e/(d*x + \\
& c)) - a^2*\log(b*x + a)/b^2 + c^2*\log(d*x + c)/d^2 - (b*c - a*d)*x/(b*d))*A* \\
& B*a*b*c^2*g^2*i^2 + 1/3*(2*x^3*\log(b*e*x/(d*x + c)) + a*e/(d*x + c)) + 2*a^3 \\
& * \log(b*x + a)/b^3 - 2*c^3*\log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(\\
& b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*A*B*b^2*c^2*g^2*i^2 + 2*(x^2*\log(b*e*x/(d* \\
& x + c)) + a*e/(d*x + c)) - a^2*\log(b*x + a)/b^2 + c^2*\log(d*x + c)/d^2 - (b* \\
& c - a*d)*x/(b*d))*A*B*a^2*c*d*g^2*i^2 + 4/3*(2*x^3*\log(b*e*x/(d*x + c)) + a* \\
& e/(d*x + c)) + 2*a^3*\log(b*x + a)/b^3 - 2*c^3*\log(d*x + c)/d^3 - ((b^2*c*d \\
& - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*A*B*a*b*c*d*g^2*i^2 + \\
& 1/6*(6*x^4*\log(b*e*x/(d*x + c)) + a*e/(d*x + c)) - 6*a^4*\log(b*x + a)/b^4 + \\
& 6*c^4*\log(d*x + c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^ \\
& 2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*A*B*b^2*c*d*g^2*i^2 + 1/ \\
& 3*(2*x^3*\log(b*e*x/(d*x + c)) + a*e/(d*x + c)) + 2*a^3*\log(b*x + a)/b^3 - 2* \\
& c^3*\log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/ \\
& (b^2*d^2))*A*B*a^2*d^2*g^2*i^2 + 1/6*(6*x^4*\log(b*e*x/(d*x + c)) + a*e/(d*x \\
& + c)) - 6*a^4*\log(b*x + a)/b^4 + 6*c^4*\log(d*x + c)/d^4 - (2*(b^3*c*d^2 - a \\
& *b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b \\
& ^3*d^3))*A*B*a*b*d^2*g^2*i^2 + 1/30*(12*x^5*\log(b*e*x/(d*x + c)) + a*e/(d*x \\
& + c)) + 12*a^5*\log(b*x + a)/b^5 - 12*c^5*\log(d*x + c)/d^5 - (3*(b^4*c*d^3 - \\
& a*b^3*d^4)*x^4 - 4*(b^4*c^2*d^2 - a^2*b^2*d^4)*x^3 + 6*(b^4*c^3*d - a^3*b* \\
& d^4)*x^2 - 12*(b^4*c^4 - a^4*d^4)*x)/(b^4*d^4))*A*B*b^2*d^2*g^2*i^2 + A^2*a \\
& ^2*c^2*g^2*i^2*x - 1/30*(2*b^4*c^5*g^2*i^2*\log(e) + 9*a^3*b*c^2*d^3*g^2*i^2 \\
& - 2*a^4*c*d^4*g^2*i^2 - 2*(5*g^2*i^2*\log(e) - g^2*i^2)*a*b^3*c^4*d + (20*g \\
& ^2*i^2*\log(e) - 9*g^2*i^2)*a^2*b^2*c^3*d^2)*B^2*\log(d*x + c)/(b^2*d^3) - 1/ \\
& 15*(b^5*c^5*g^2*i^2 - 5*a*b^4*c^4*d*g^2*i^2 + 10*a^2*b^3*c^3*d^2*g^2*i^2 - \\
& 10*a^3*b^2*c^2*d^3*g^2*i^2 + 5*a^4*b*c*d^4*g^2*i^2 - a^5*d^5*g^2*i^2)*(\log(\\
& b*x + a)*\log((b*d*x + a*d)/(b*c - a*d) + 1) + \operatorname{dilog}(-(b*d*x + a*d)/(b*c - a \\
& *d)))*B^2/(b^3*d^3) + 1/60*(12*B^2*b^5*d^5*g^2*i^2*x^5*\log(e)^2 + 6*((5*g^2 \\
& *i^2*\log(e))^2 - g^2*i^2*\log(e))*b^5*c*d^4 + (5*g^2*i^2*\log(e))^2 + g^2*i^2*1 \\
& \log(e))*a*b^4*d^5)*B^2*x^4 + 2*((10*g^2*i^2*\log(e))^2 - 6*g^2*i^2*\log(e) + g^ \\
& 2*i^2)*b^5*c^2*d^3 + 2*(20*g^2*i^2*\log(e))^2 - g^2*i^2)*a*b^4*c*d^4 + (10*g^ \\
& 2*i^2*\log(e))^2 + 6*g^2*i^2*\log(e) + g^2*i^2)*a^2*b^3*d^5)*B^2*x^3 - ((2*g^2 \\
& *i^2*\log(e) - 3*g^2*i^2)*b^5*c^3*d^2 - 3*(20*g^2*i^2*\log(e))^2 - 10*g^2*i^2* \\
& \log(e) - g^2*i^2)*a*b^4*c^2*d^3 - 3*(20*g^2*i^2*\log(e))^2 + 10*g^2*i^2*\log(e) \\
& - g^2*i^2)*a^2*b^3*c*d^4 - (2*g^2*i^2*\log(e) + 3*g^2*i^2)*a^3*b^2*d^5)*B^ \\
& 2*x^2 + 2*(2*(g^2*i^2*\log(e) - g^2*i^2)*b^5*c^4*d - (10*g^2*i^2*\log(e) - 11 \\
& *g^2*i^2)*a*b^4*c^3*d^2 + 6*(5*g^2*i^2*\log(e))^2 - 3*g^2*i^2)*a^2*b^3*c^2*d^ \\
& 3 + (10*g^2*i^2*\log(e) + 11*g^2*i^2)*a^3*b^2*c*d^4 - 2*(g^2*i^2*\log(e) + g^ \\
& 2*i^2)*a^4*b*d^5)*B^2*x + 2*(6*B^2*b^5*d^5*g^2*i^2*x^5 + 30*B^2*a^2*b^3*c^2 \\
& *d^3*g^2*i^2*x + 15*(b^5*c*d^4*g^2*i^2 + a*b^4*d^5*g^2*i^2)*B^2*x^4 + 10*(b \\
& ^5*c^2*d^3*g^2*i^2 + 4*a*b^4*c*d^4*g^2*i^2 + a^2*b^3*d^5*g^2*i^2)*B^2*x^3 + \\
& 30*(a*b^4*c^2*d^3*g^2*i^2 + a^2*b^3*c*d^4*g^2*i^2)*B^2*x^2 + (10*a^3*b^2*c \\
& ^2*d^3*g^2*i^2 - 5*a^4*b*c*d^4*g^2*i^2 + a^5*d^5*g^2*i^2)*B^2*\log(b*x + a) \\
& ^2 + 2*(6*B^2*b^5*d^5*g^2*i^2*x^5 + 30*B^2*a^2*b^3*c^2*d^3*g^2*i^2*x + 15*(
\end{aligned}$$

$$\begin{aligned}
& b^5*c*d^4*g^2*i^2 + a*b^4*d^5*g^2*i^2)*B^2*x^4 + 10*(b^5*c^2*d^3*g^2*i^2 + \\
& 4*a*b^4*c*d^4*g^2*i^2 + a^2*b^3*d^5*g^2*i^2)*B^2*x^3 + 30*(a*b^4*c^2*d^3*g^2*i^2 + a^2*b^3*c*d^4*g^2*i^2)*B^2*x^2 + (b^5*c^5*g^2*i^2 - 5*a*b^4*c^4*d*g^2*i^2 + 10*a^2*b^3*c^3*d^2*g^2*i^2)*B^2)*\log(dx + c)^2 + 2*(12*B^2*b^5*d^5*g^2*i^2*x^5*\log(e) + 3*((10*g^2*i^2*\log(e) - g^2*i^2)*b^5*c*d^4 + (10*g^2*i^2*\log(e) + g^2*i^2)*a*b^4*d^5)*B^2*x^4 + 2*(40*a*b^4*c*d^4*g^2*i^2*\log(e) + (10*g^2*i^2*\log(e) - 3*g^2*i^2)*b^5*c^2*d^3 + (10*g^2*i^2*\log(e) + 3*g^2*i^2)*a^2*b^3*d^5)*B^2*x^3 - (b^5*c^3*d^2*g^2*i^2 - a^3*b^2*d^5*g^2*i^2 - 15*(4*g^2*i^2*\log(e) - g^2*i^2)*a*b^4*c^2*d^3 - 15*(4*g^2*i^2*\log(e) + g^2*i^2)*a^2*b^3*c*d^4)*B^2*x^2 + 2*(30*a^2*b^3*c^2*d^3*g^2*i^2*\log(e) + b^5*c^4*d*g^2*i^2 - 5*a*b^4*c^3*d^2*g^2*i^2 + 5*a^3*b^2*c*d^4*g^2*i^2 - a^4*b*d^5*g^2*i^2)*B^2*x + (2*a^5*d^5*g^2*i^2*\log(e) + 2*a*b^4*c^4*d*g^2*i^2 - 9*a^2*b^3*c^3*d^2*g^2*i^2 + (20*g^2*i^2*\log(e) + 9*g^2*i^2)*a^3*b^2*c^2*d^3 - 2*(5*g^2*i^2*\log(e) + g^2*i^2)*a^4*b*c*d^4)*B^2)*\log(b*x + a) - 2*(12*B^2*b^5*d^5*g^2*i^2*x^5*\log(e) + 3*((10*g^2*i^2*\log(e) - g^2*i^2)*b^5*c*d^4 + (10*g^2*i^2*\log(e) + g^2*i^2)*a*b^4*d^5)*B^2*x^4 + 2*(40*a*b^4*c*d^4*g^2*i^2*\log(e) + (10*g^2*i^2*\log(e) - 3*g^2*i^2)*b^5*c^2*d^3 + (10*g^2*i^2*\log(e) + 3*g^2*i^2)*a^2*b^3*d^5)*B^2*x^3 - (b^5*c^3*d^2*g^2*i^2 - a^3*b^2*d^5*g^2*i^2 - 15*(4*g^2*i^2*\log(e) - g^2*i^2)*a*b^4*c^2*d^3 - 15*(4*g^2*i^2*\log(e) + g^2*i^2)*a^2*b^3*c*d^4)*B^2*x^2 + 2*(30*a^2*b^3*c^2*d^3*g^2*i^2*\log(e) + b^5*c^4*d*g^2*i^2 - 5*a*b^4*c^3*d^2*g^2*i^2 + 5*a^3*b^2*c*d^4*g^2*i^2 - a^4*b*d^5*g^2*i^2)*B^2*x + 2*(6*B^2*b^5*d^5*g^2*i^2*x^5 + 30*B^2*a^2*b^3*c^2*d^3*g^2*i^2*x + 15*(b^5*c*d^4*g^2*i^2 + a*b^4*d^5*g^2*i^2)*B^2*x^4 + 10*(b^5*c^2*d^3*g^2*i^2 + 4*a*b^4*c*d^4*g^2*i^2 + a^2*b^3*d^5*g^2*i^2)*B^2*x^3 + 30*(a*b^4*c^2*d^3*g^2*i^2 + a^2*b^3*c*d^4*g^2*i^2)*B^2*x^2 + (10*a^3*b^2*c^2*d^3*g^2*i^2 - 5*a^4*b*c*d^4*g^2*i^2 + a^5*d^5*g^2*i^2)*B^2)*\log(b*x + a))*\log(dx + c)/(b^3*d^3)
\end{aligned}$$

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (ag + bgx)^2 (ci + dix)^2 \left(A + B \ln \left(\frac{e(a + bx)}{c + dx} \right) \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a*g + b*g*x)^2*(c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x)))^2, x)

[Out] int((a*g + b*g*x)^2*(c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x)))^2, x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**2*(d*i*x+c*i)**2*(A+B*ln(e*(b*x+a)/(d*x+c)))**2,x)
```

```
[Out] Timed out
```


$$3.66 \quad \int (ag + bgx)(ci + dix)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 dx$$

Optimal. Leaf size=589

$$\frac{Bgi^2(bc - ad)^4 \log \left(\frac{bc-ad}{b(c+dx)} \right) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A + B \right)}{6b^3d^2} - \frac{Bgi^2(a + bx)(bc - ad)^3 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{6b^3d} + \frac{gi^2(a + bx)}{6b^3d}$$

[Out] $\frac{1}{12}B^2(-a*d+b*c)^3*g*i^2*x/b^2/d + \frac{1}{12}B^2(-a*d+b*c)^2*g*i^2*(d*x+c)^2/b/d^2 - \frac{1}{12}B^2(-a*d+b*c)^4*g*i^2*\ln((b*x+a)/(d*x+c))/b^3/d^2 - \frac{1}{6}B*(-a*d+b*c)^3*g*i^2*(b*x+a)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^3/d - \frac{1}{6}B*(-a*d+b*c)^2*g*i^2*(b*x+a)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^3 + \frac{1}{4}B*(-a*d+b*c)^2*g*i^2*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b/d^2 - \frac{1}{6}B*(-a*d+b*c)*g*i^2*(d*x+c)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))/d^2 + \frac{1}{12}(-a*d+b*c)^2*g*i^2*(b*x+a)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^3 + \frac{1}{6}(-a*d+b*c)*g*i^2*(b*x+a)^2*(d*x+c)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^2 + \frac{1}{4}g*i^2*(b*x+a)^2*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b - \frac{1}{6}B*(-a*d+b*c)^4*g*i^2*\ln((-a*d+b*c)/b/(d*x+c))*(A+B*B*\ln(e*(b*x+a)/(d*x+c)))/b^3/d^2 - \frac{1}{4}B^2(-a*d+b*c)^4*g*i^2*\ln(d*x+c)/b^3/d^2 - \frac{1}{6}B^2(-a*d+b*c)^4*g*i^2*\text{polylog}(2, d*(b*x+a)/b/(d*x+c))/b^3/d^2$

Rubi [A] time = 1.59, antiderivative size = 570, normalized size of antiderivative = 0.97, number of steps used = 46, number of rules used = 13, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.325$, Rules used = {2528, 2525, 12, 2486, 31, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 43}

$$\frac{B^2gi^2(bc - ad)^4 \text{PolyLog} \left(2, -\frac{d(a+bx)}{bc-ad} \right)}{6b^3d^2} + \frac{Bgi^2(bc - ad)^4 \log(a + bx) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{6b^3d^2} + \frac{ABgi^2x(bc - ad)^3}{6b^2d} + \frac{Bgi^2(a + bx)}{6b^3d}$$

Antiderivative was successfully verified.

[In] Int[(a*g + b*g*x)*(c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2,x]

[Out] $(A*B*(b*c - a*d)^3*g*i^2*x)/(6*b^2*d) + (B^2*(b*c - a*d)^3*g*i^2*x)/(12*b^2*d) + (B^2*(b*c - a*d)^2*g*i^2*(c + d*x)^2)/(12*b*d^2) + (B^2*(b*c - a*d)^4*g*i^2*\text{Log}[a + b*x])/(12*b^3*d^2) - (B^2*(b*c - a*d)^4*g*i^2*\text{Log}[a + b*x]^2)/(12*b^3*d^2) + (B^2*(b*c - a*d)^3*g*i^2*(a + b*x)*\text{Log}[(e*(a + b*x))/(c + d*x)])/(6*b^3*d) + (B*(b*c - a*d)^2*g*i^2*(c + d*x)^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(12*b*d^2) - (B*(b*c - a*d)*g*i^2*(c + d*x)^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(6*d^2) + (B*(b*c - a*d)^4*g*i^2*\text{Log}[a + b*x]*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(6*b^3*d^2) - ((b*c - a*d)*g*i^2*(c + d*x)^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]^2)/(3*d^2) + (b*g*i^2*(c + d*x)^4*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]^2)/(4*d^2) - (B^2*(b*c - a*d)^4*g*i^2*\text{Log}[c + d*x])/(6*b^3*d^2) + (B^2*(b*c - a*d)^4*g*i^2*\text{Log}[a + b*x]*\text{Log}[(b*($

$(c + dx)/(b^3c - a^3d) + (B^2(b^3c - a^3d)^4 g^2 i^2 \text{PolyLog}[2, -((d(a + bx))/(b^3c - a^3d))])/(6b^3d^2)$

Rule 12

$\text{Int}[(a_*)(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \ \&\& \ !\text{MatchQ}[u, (b_*)(v_)] /; \text{FreeQ}[b, x]$

Rule 31

$\text{Int}[(a_*) + (b_*)(x_)^{-1}, x_Symbol] \rightarrow \text{Simp}[\text{Log}[\text{RemoveContent}[a + bx, x]]/b, x] /; \text{FreeQ}[\{a, b\}, x]$

Rule 43

$\text{Int}[(a_*) + (b_*)(x_)^{(m_*)} * ((c_*) + (d_*)(x_)^{(n_*)}), x_Symbol] \rightarrow \text{Int}[\text{ExpandIntegrand}[(a + bx)^m (c + dx)^n, x], x] /; \text{FreeQ}[\{a, b, c, d, n\}, x] \ \&\& \ \text{NeQ}[b^m c - a^m d, 0] \ \&\& \ \text{IGtQ}[m, 0] \ \&\& \ (\ !\text{IntegerQ}[n] \ || \ (\text{EqQ}[c, 0] \ \&\& \ \text{LeQ}[7m + 4n + 4, 0]) \ || \ \text{LtQ}[9m + 5(n + 1), 0] \ || \ \text{GtQ}[m + n + 2, 0])$

Rule 2301

$\text{Int}[(a_*) + \text{Log}[(c_*)(x_)^{(n_*)}] * (b_*) / (x_), x_Symbol] \rightarrow \text{Simp}[(a + b \text{Log}[c x^n])^2 / (2 b n), x] /; \text{FreeQ}[\{a, b, c, n\}, x]$

Rule 2390

$\text{Int}[(a_*) + \text{Log}[(c_*) * ((d_*) + (e_*)(x_)^{(n_*)})] * (b_*)^{(p_*)} * ((f_*) + (g_*)(x_)^{(q_*)}), x_Symbol] \rightarrow \text{Dist}[1/e, \text{Subst}[\text{Int}[(f x)/d]^q (a + b \text{Log}[c x^n])^p, x], x, d + e x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g, n, p, q\}, x] \ \&\& \ \text{EqQ}[e f - d g, 0]$

Rule 2391

$\text{Int}[\text{Log}[(c_*) * ((d_*) + (e_*)(x_)^{(n_*)})] / (x_), x_Symbol] \rightarrow -\text{Simp}[\text{PolyLog}[2, -(c e x^n)]/n, x] /; \text{FreeQ}[\{c, d, e, n\}, x] \ \&\& \ \text{EqQ}[c d, 1]$

Rule 2393

$\text{Int}[(a_*) + \text{Log}[(c_*) * ((d_*) + (e_*)(x_))] * (b_*) / ((f_*) + (g_*)(x_)), x_Symbol] \rightarrow \text{Dist}[1/g, \text{Subst}[\text{Int}[(a + b \text{Log}[1 + (c e x)/g]]/x, x], x, f + g x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g\}, x] \ \&\& \ \text{NeQ}[e f - d g, 0] \ \&\& \ \text{EqQ}[g + c(e f - d g), 0]$

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFX_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFX, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFX, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)]^(r_.)]^(s_.), x_Symbol] := Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.))/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFX^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFX^p])^(n - 1)*D[RFX, x])/RFX, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFX, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.))*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFX^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFX^p])^(n - 1)*D[RFX, x])/RFX, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFX, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFX^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFX, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int (66c + 66dx)^2(ag + bgx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 dx &= \int \left(\frac{(-bc + ad)g(66c + 66dx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{d} \right. \\
&= \frac{(bg) \int (66c + 66dx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 dx}{66d} + \frac{((-b} \\
&= -\frac{1452(bc - ad)g(c + dx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{d^2} + \frac{10} \\
&= -\frac{1452(bc - ad)g(c + dx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{d^2} + \frac{10} \\
&= -\frac{1452(bc - ad)g(c + dx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{d^2} + \frac{10} \\
&= -\frac{1452(bc - ad)g(c + dx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{d^2} + \frac{10} \\
&= \frac{726AB(bc - ad)^3gx}{b^2d} + \frac{363B(bc - ad)^2g(c + dx)^2 \left(A + \right. \\
&= \frac{726AB(bc - ad)^3gx}{b^2d} + \frac{726B^2(bc - ad)^3g(a + bx) \log \left(\right. \\
&= \frac{726AB(bc - ad)^3gx}{b^2d} + \frac{726B^2(bc - ad)^3g(a + bx) \log \left(\right. \\
&= \frac{726AB(bc - ad)^3gx}{b^2d} + \frac{363B^2(bc - ad)^3gx}{b^2d} + \frac{363B^2(bc} \\
&= \frac{726AB(bc - ad)^3gx}{b^2d} + \frac{363B^2(bc - ad)^3gx}{b^2d} + \frac{363B^2(bc} \\
&= \frac{726AB(bc - ad)^3gx}{b^2d} + \frac{363B^2(bc - ad)^3gx}{b^2d} + \frac{363B^2(bc} \\
&= \frac{726AB(bc - ad)^3gx}{b^2d} + \frac{363B^2(bc - ad)^3gx}{b^2d} + \frac{363B^2(bc}
\end{aligned}$$

Mathematica [A] time = 0.59, size = 677, normalized size = 1.15

$$gi^2 \left(\frac{4B(bc-ad)^2 \left(b^2(c+dx)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right) + 2(bc-ad)^2 \log(a+bx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right) + 2Abdx(bc-ad) + 2Bd(a+bx)(bc-ad) \log\left(\frac{e(a+bx)}{c+dx}\right) - B(bc-ad) \right)}{b^3} \right)$$

Antiderivative was successfully verified.

[In] Integrate[(a*g + b*g*x)*(c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2,x]

[Out] (g*i^2*(-4*(b*c - a*d)*(c + d*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2 + 3*b*(c + d*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2 + (4*B*(b*c - a*d)^2*(2*A*b*d*(b*c - a*d)*x - B*(b*c - a*d)*(b*d*x + (b*c - a*d)*Log[a + b*x]) + 2*B*d*(b*c - a*d)*(a + b*x)*Log[(e*(a + b*x))/(c + d*x]) + b^2*(c + d*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x])) + 2*(b*c - a*d)^2*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x])) - 2*B*(b*c - a*d)^2*Log[c + d*x] - B*(b*c - a*d)^2*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d])) - 2*PolyLog[2, (d*(a + b*x))/(-b*c + a*d)]))/b^3 - (B*(b*c - a*d)*(6*A*b*d*(b*c - a*d)^2*x - 3*B*(b*c - a*d)^2*(b*d*x + (b*c - a*d)*Log[a + b*x]) - B*(b*c - a*d)*(2*b*d*(b*c - a*d)*x + b^2*(c + d*x)^2 + 2*(b*c - a*d)^2*Log[a + b*x]) + 6*B*d*(b*c - a*d)^2*(a + b*x)*Log[(e*(a + b*x))/(c + d*x]) + 3*b^2*(b*c - a*d)*(c + d*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x])) + 2*b^3*(c + d*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x])) + 6*(b*c - a*d)^3*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x])) - 6*B*(b*c - a*d)^3*Log[c + d*x] - 3*B*(b*c - a*d)^3*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d])) - 2*PolyLog[2, (d*(a + b*x))/(-b*c + a*d)]))/b^3)/(12*d^2)

fricas [F] time = 0.92, size = 0, normalized size = 0.00

$$\text{integral} \left(A^2 b d^2 g i^2 x^3 + A^2 a c^2 g i^2 + (2 A^2 b c d + A^2 a d^2) g i^2 x^2 + (A^2 b c^2 + 2 A^2 a c d) g i^2 x + (B^2 b d^2 g i^2 x^3 + B^2 a c^2 g i^2) \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorithm="fricas")

[Out] integral(A^2*b*d^2*g*i^2*x^3 + A^2*a*c^2*g*i^2 + (2*A^2*b*c*d + A^2*a*d^2)*g*i^2*x^2 + (A^2*b*c^2 + 2*A^2*a*c*d)*g*i^2*x + (B^2*b*d^2*g*i^2*x^3 + B^2*a*c^2*g*i^2 + (2*B^2*b*c*d + B^2*a*d^2)*g*i^2*x^2 + (B^2*b*c^2 + 2*B^2*a*c*d)*g*i^2*x)*log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*B*b*d^2*g*i^2*x^3 + A*B*a*c^2*g*i^2 + (2*A*B*b*c*d + A*B*a*d^2)*g*i^2*x^2 + (A*B*b*c^2 + 2*A*B*a*c*d)*g*i^2*x)*log((b*e*x + a*e)/(d*x + c)), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorithm="giac")

[Out] Timed out

maple [F] time = 2.18, size = 0, normalized size = 0.00

$$\int (bgx + ag)(dix + ci)^2 \left(B \ln \left(\frac{(bx + a)e}{dx + c} \right) + A \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)*(d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)^2,x)

[Out] int((b*g*x+a*g)*(d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)^2,x)

maxima [B] time = 2.34, size = 2259, normalized size = 3.84

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorithm="maxima")

[Out] 1/4*A^2*b*d^2*g*i^2*x^4 + 2/3*A^2*b*c*d*g*i^2*x^3 + 1/3*A^2*a*d^2*g*i^2*x^3 + 1/2*A^2*b*c^2*g*i^2*x^2 + A^2*a*c*d*g*i^2*x^2 + 2*(x*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + a*log(b*x + a)/b - c*log(d*x + c)/d)*A*B*a*c^2*g*i^2 + (x^2*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - a^2*log(b*x + a)/b^2 + c^2*log(d*x + c)/d^2 - (b*c - a*d)*x/(b*d))*A*B*b*c^2*g*i^2 + 2*(x^2*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - a^2*log(b*x + a)/b^2 + c^2*log(d*x + c)/d^2 - (b*c - a*d)*x/(b*d))*A*B*a*c*d*g*i^2 + 2/3*(2*x^3*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*A*B*b*c*d*g*i^2 + 1/3*(2*x^3*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*A*B*a*d^2*g*i^2 + 1/12*(6*x^4*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 6*a^4*log(b*x + a)/b^4 + 6*c^4*log(d*x + c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*A*B*b*d^2*g*i^2 + A^2*a*c^2*g*i^2*x - 1/12*(7*a^2*b*c^2*d^2*g*i^2 - 2*a^3*c*

```

d^3*g*i^2 - (2*g*i^2*log(e) - g*i^2)*b^3*c^4 + 2*(4*g*i^2*log(e) - 3*g*i^2)
*a*b^2*c^3*d)*B^2*log(d*x + c)/(b^2*d^2) + 1/6*(b^4*c^4*g*i^2 - 4*a*b^3*c^3
*d*g*i^2 + 6*a^2*b^2*c^2*d^2*g*i^2 - 4*a^3*b*c*d^3*g*i^2 + a^4*d^4*g*i^2)*(
log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c
- a*d)))*B^2/(b^3*d^2) + 1/12*(3*B^2*b^4*d^4*g*i^2*x^4*log(e)^2 + 2*((4*g*
i^2*log(e)^2 - g*i^2*log(e))*b^4*c*d^3 + (2*g*i^2*log(e)^2 + g*i^2*log(e))*
a*b^3*d^4)*B^2*x^3 + ((6*g*i^2*log(e)^2 - 5*g*i^2*log(e) + g*i^2)*b^4*c^2*d
^2 + 2*(6*g*i^2*log(e)^2 + 2*g*i^2*log(e) - g*i^2)*a*b^3*c*d^3 + (g*i^2*log
(e) + g*i^2)*a^2*b^2*d^4)*B^2*x^2 - ((2*g*i^2*log(e) - 3*g*i^2)*b^4*c^3*d -
(12*g*i^2*log(e)^2 - 4*g*i^2*log(e) - 7*g*i^2)*a*b^3*c^2*d^2 - (8*g*i^2*lo
g(e) + 5*g*i^2)*a^2*b^2*c*d^3 + (2*g*i^2*log(e) + g*i^2)*a^3*b*d^4)*B^2*x +
(3*B^2*b^4*d^4*g*i^2*x^4 + 12*B^2*a*b^3*c^2*d^2*g*i^2*x + 4*(2*b^4*c*d^3*g*
i^2 + a*b^3*d^4*g*i^2)*B^2*x^3 + 6*(b^4*c^2*d^2*g*i^2 + 2*a*b^3*c*d^3*g*i^
2)*B^2*x^2 + (6*a^2*b^2*c^2*d^2*g*i^2 - 4*a^3*b*c*d^3*g*i^2 + a^4*d^4*g*i^2
)*B^2)*log(b*x + a)^2 + (3*B^2*b^4*d^4*g*i^2*x^4 + 12*B^2*a*b^3*c^2*d^2*g*i
^2*x + 4*(2*b^4*c*d^3*g*i^2 + a*b^3*d^4*g*i^2)*B^2*x^3 + 6*(b^4*c^2*d^2*g*i
^2 + 2*a*b^3*c*d^3*g*i^2)*B^2*x^2 - (b^4*c^4*g*i^2 - 4*a*b^3*c^3*d*g*i^2)*B
^2)*log(d*x + c)^2 + (6*B^2*b^4*d^4*g*i^2*x^4*log(e) + 2*((8*g*i^2*log(e) -
g*i^2)*b^4*c*d^3 + (4*g*i^2*log(e) + g*i^2)*a*b^3*d^4)*B^2*x^3 + (a^2*b^2*
d^4*g*i^2 + (12*g*i^2*log(e) - 5*g*i^2)*b^4*c^2*d^2 + 4*(6*g*i^2*log(e) + g
*i^2)*a*b^3*c*d^3)*B^2*x^2 - 2*(b^4*c^3*d*g*i^2 - 4*a^2*b^2*c*d^3*g*i^2 + a
^3*b*d^4*g*i^2 - 2*(6*g*i^2*log(e) - g*i^2)*a*b^3*c^2*d^2)*B^2*x - (2*a*b^3
*c^3*d*g*i^2 - (12*g*i^2*log(e) + g*i^2)*a^2*b^2*c^2*d^2 + 2*(4*g*i^2*log(e)
) - g*i^2)*a^3*b*c*d^3 - (2*g*i^2*log(e) - g*i^2)*a^4*d^4)*B^2)*log(b*x + a
) - (6*B^2*b^4*d^4*g*i^2*x^4*log(e) + 2*((8*g*i^2*log(e) - g*i^2)*b^4*c*d^3
+ (4*g*i^2*log(e) + g*i^2)*a*b^3*d^4)*B^2*x^3 + (a^2*b^2*d^4*g*i^2 + (12*g
*i^2*log(e) - 5*g*i^2)*b^4*c^2*d^2 + 4*(6*g*i^2*log(e) + g*i^2)*a*b^3*c*d^3
)*B^2*x^2 - 2*(b^4*c^3*d*g*i^2 - 4*a^2*b^2*c*d^3*g*i^2 + a^3*b*d^4*g*i^2 -
2*(6*g*i^2*log(e) - g*i^2)*a*b^3*c^2*d^2)*B^2*x + 2*(3*B^2*b^4*d^4*g*i^2*x^
4 + 12*B^2*a*b^3*c^2*d^2*g*i^2*x + 4*(2*b^4*c*d^3*g*i^2 + a*b^3*d^4*g*i^2)*
B^2*x^3 + 6*(b^4*c^2*d^2*g*i^2 + 2*a*b^3*c*d^3*g*i^2)*B^2*x^2 + (6*a^2*b^2*
c^2*d^2*g*i^2 - 4*a^3*b*c*d^3*g*i^2 + a^4*d^4*g*i^2)*B^2)*log(b*x + a))*log
(d*x + c))/(b^3*d^2)

```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (ag + bgx) (ci + dix)^2 \left(A + B \ln \left(\frac{e(a + bx)}{c + dx} \right) \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a*g + b*g*x)*(c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x)))^2,x)

[Out] int((a*g + b*g*x)*(c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x)))^2, x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(d*i*x+c*i)**2*(A+B*ln(e*(b*x+a)/(d*x+c)))**2,x)

[Out] Timed out

$$3.67 \quad \int (ci + dix)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 dx$$

Optimal. Leaf size=334

$$\frac{2Bi^2(bc - ad)^3 \log \left(1 - \frac{b(c+dx)}{d(a+bx)} \right) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{3b^3d} - \frac{2Bi^2(a + bx)(bc - ad)^2 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{3b^3} - \frac{Bi^2(c + dx)}{3b^3}$$

[Out] $1/3*B^2*(-a*d+b*c)^2*i^2*x/b^2+1/3*B^2*(-a*d+b*c)^3*i^2*\ln((b*x+a)/(d*x+c))/b^3/d-2/3*B*(-a*d+b*c)^2*i^2*(b*x+a)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^3-1/3*B*(-a*d+b*c)*i^2*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b/d+1/3*i^2*(d*x+c)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/d+B^2*(-a*d+b*c)^3*i^2*\ln(d*x+c)/b^3/d+2/3*B*(-a*d+b*c)^3*i^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))*\ln(1-b*(d*x+c)/d/(b*x+a))/b^3/d-2/3*B^2*(-a*d+b*c)^3*i^2*\text{polylog}(2,b*(d*x+c)/d/(b*x+a))/b^3/d$

Rubi [A] time = 0.53, antiderivative size = 420, normalized size of antiderivative = 1.26, number of steps used = 20, number of rules used = 13, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}} = 0.406$, Rules used = {2525, 12, 2528, 2486, 31, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 43}

$$\frac{2B^2i^2(bc - ad)^3 \text{PolyLog} \left(2, -\frac{d(a+bx)}{bc-ad} \right)}{3b^3d} - \frac{2Bi^2(bc - ad)^3 \log(a + bx) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{3b^3d} - \frac{2ABi^2x(bc - ad)^2}{3b^2}$$

Antiderivative was successfully verified.

[In] $\text{Int}[(c*i + d*i*x)^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)])^2, x]$

[Out] $(-2*A*B*(b*c - a*d)^2*i^2*x)/(3*b^2) + (B^2*(b*c - a*d)^2*i^2*x)/(3*b^2) + (B^2*(b*c - a*d)^3*i^2*\text{Log}[a + b*x])/(3*b^3*d) + (B^2*(b*c - a*d)^3*i^2*\text{Log}[a + b*x]^2)/(3*b^3*d) - (2*B^2*(b*c - a*d)^2*i^2*(a + b*x)*\text{Log}[(e*(a + b*x))/(c + d*x)])/(3*b^3) - (B*(b*c - a*d)*i^2*(c + d*x)^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(3*b*d) - (2*B*(b*c - a*d)^3*i^2*\text{Log}[a + b*x]*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(3*b^3*d) + (i^2*(c + d*x)^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)])^2)/(3*d) + (2*B^2*(b*c - a*d)^3*i^2*\text{Log}[c + d*x])/(3*b^3*d) - (2*B^2*(b*c - a*d)^3*i^2*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)])/(3*b^3*d) - (2*B^2*(b*c - a*d)^3*i^2*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))])/(3*b^3*d)$

Rule 12

$\text{Int}[(a_*)*(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \&\& \text{!MatchQ}[u, (b_)*(v_)] /; \text{FreeQ}[b, x]$

Rule 31

Int[((a_) + (b_.)*(x_))⁽⁻¹⁾, x_Symbol] := Simp[Log[RemoveContent[a + b*x, x]]/b, x] /; FreeQ[{a, b}, x]

Rule 43

Int[((a_.) + (b_.)*(x_))^{(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)ⁿ, x], x] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && (!IntegerQ[n] || (EqQ[c, 0] && LeQ[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])}

Rule 2301

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*xⁿ])²/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^{(p_.)*((f_) + (g_.)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*xⁿ])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]}

Rule 2391

Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*xⁿ)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)ⁿ])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2418

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)ⁿ])^p, RFx, x]},

```
Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] := Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q]^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunci
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int (67c + 67dx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 dx &= \frac{4489(c+dx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{3d} - \frac{(2B) \int \frac{300763(bc-ad)(c+dx)^2}{a+b}}{201d} \\
&= \frac{4489(c+dx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{3d} - \frac{(8978B(bc-ad)) \int \frac{(c+dx)}{3d}}{3d} \\
&= \frac{4489(c+dx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{3d} - \frac{(8978B(bc-ad)) \int \left(\frac{d(bc-}{3d} \right)}{3d} \\
&= \frac{4489(c+dx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{3d} - \frac{(8978B(bc-ad)) \int (c+a)}{3d} \\
&= -\frac{8978AB(bc-ad)^2x}{3b^2} - \frac{4489B(bc-ad)(c+dx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{3bd} \\
&= -\frac{8978AB(bc-ad)^2x}{3b^2} - \frac{8978B^2(bc-ad)^2(a+bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{3b^3} \\
&= -\frac{8978AB(bc-ad)^2x}{3b^2} - \frac{8978B^2(bc-ad)^2(a+bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{3b^3} \\
&= -\frac{8978AB(bc-ad)^2x}{3b^2} + \frac{4489B^2(bc-ad)^2x}{3b^2} + \frac{4489B^2(bc-ad)^3}{3b^3d} \\
&= -\frac{8978AB(bc-ad)^2x}{3b^2} + \frac{4489B^2(bc-ad)^2x}{3b^2} + \frac{4489B^2(bc-ad)^3}{3b^3d} \\
&= -\frac{8978AB(bc-ad)^2x}{3b^2} + \frac{4489B^2(bc-ad)^2x}{3b^2} + \frac{4489B^2(bc-ad)^3}{3b^3d} \\
&= -\frac{8978AB(bc-ad)^2x}{3b^2} + \frac{4489B^2(bc-ad)^2x}{3b^2} + \frac{4489B^2(bc-ad)^3}{3b^3d}
\end{aligned}$$

Mathematica [A] time = 0.22, size = 287, normalized size = 0.86

$$i^2 \left((c+dx)^3 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)^2 - \frac{B(bc-ad) \left(b^2(c+dx)^2 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right) + 2(bc-ad)^2 \log(a+bx) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right) + 2Abdx(bc-ad) + 2} \right)}{3b^2} \right)$$

Antiderivative was successfully verified.

[In] Integrate[(c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2,x]

[Out] (i^2*((c + d*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 - (B*(b*c - a*d)*
2*A*b*d*(b*c - a*d)*x - B*(b*c - a*d)*(b*d*x + (b*c - a*d)*Log[a + b*x]) +
2*B*d*(b*c - a*d)*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)] + b^2*(c + d*x)^2*
(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 2*(b*c - a*d)^2*Log[a + b*x]*(A + B*
Log[(e*(a + b*x))/(c + d*x)]) - 2*B*(b*c - a*d)^2*Log[c + d*x] - B*(b*c - a
d)^2(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*P
olyLog[2, (d*(a + b*x))/(-(b*c) + a*d)])))/b^3)/(3*d)

fricas [F] time = 1.09, size = 0, normalized size = 0.00

$$\text{integral} \left(A^2 d^2 i^2 x^2 + 2 A^2 c d i^2 x + A^2 c^2 i^2 + (B^2 d^2 i^2 x^2 + 2 B^2 c d i^2 x + B^2 c^2 i^2) \log \left(\frac{bex + ae}{dx + c} \right)^2 + 2 (ABd^2 i^2 x^2 + 2$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorithm="fricas")

[Out] integral(A^2*d^2*i^2*x^2 + 2*A^2*c*d*i^2*x + A^2*c^2*i^2 + (B^2*d^2*i^2*x^2
+ 2*B^2*c*d*i^2*x + B^2*c^2*i^2)*log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*B*d
^2*i^2*x^2 + 2*A*B*c*d*i^2*x + A*B*c^2*i^2)*log((b*e*x + a*e)/(d*x + c)), x
)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorithm="giac")

[Out] Timed out

maple [F] time = 1.83, size = 0, normalized size = 0.00

$$\int (dix + ci)^2 \left(B \ln \left(\frac{(bx + a)e}{dx + c} \right) + A \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)^2,x)

[Out] int((d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)^2,x)

maxima [B] time = 2.03, size = 1202, normalized size = 3.60

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorithm="maxima")

[Out] $\frac{1}{3}A^2d^2i^2x^3 + A^2cdi^2x^2 + 2(x\log(bex/(dx+c)) + a/(dx+c)) + a\log(bx+a)/b - c\log(dx+c)/d)ABc^2i^2 + 2(x^2\log(bex/(dx+c)) + a/(dx+c)) - a^2\log(bx+a)/b^2 + c^2\log(dx+c)/d^2 - (bc-ad)x/(bd)ABcdi^2 + \frac{1}{3}(2x^3\log(bex/(dx+c)) + a/(dx+c)) + 2a^3\log(bx+a)/b^3 - 2c^3\log(dx+c)/d^3 - ((b^2cd - ab^2d^2)x^2 - 2(b^2c^2 - a^2d^2)x)/(b^2d^2)ABd^2i^2 + A^2c^2i^2x - \frac{1}{3}(5ab^2c^2di^2 - 2a^2cd^2i^2 + (2i^2\log(e) - 3i^2)b^2c^3)B^2\log(dx+c)/(b^2d) - \frac{2}{3}(b^3c^3i^2 - 3ab^2c^2di^2 + 3a^2b^2cd^2i^2 - a^3d^3i^2)(\log(bx+a)\log((bdx+a)/(bc-ad)) + 1) + \text{dilog}(-(bdx+a)/(bc-ad))B^2/(b^3d) + \frac{1}{3}(B^2b^3d^3i^2x^3\log(e)^2 + (ab^2d^3i^2\log(e) + (3i^2\log(e)^2 - i^2\log(e))b^3cd^2)B^2x^2 + ((3i^2\log(e)^2 - 4i^2\log(e) + i^2)b^3c^2d + 2(3i^2\log(e) - i^2)ab^2cd^2 - (2i^2\log(e) - i^2)a^2bd^3)B^2x + (B^2b^3d^3i^2x^3 + 3B^2b^3cd^2i^2x^2 + 3B^2b^3c^2di^2x + (3ab^2c^2d^2i^2 - 3a^2b^2cd^2i^2 + a^3d^3i^2)B^2)\log(bx+a)^2 + (B^2b^3d^3i^2x^3 + 3B^2b^3cd^2i^2x^2 + 3B^2b^3c^2di^2x + B^2b^3c^3i^2)\log(dx+c)^2 + (2B^2b^3d^3i^2x^3\log(e) + (ab^2d^3i^2 + (6i^2\log(e) - i^2)b^3cd^2)B^2x^2 + 2(3ab^2c^2d^2i^2 - a^2bd^3i^2 + (3i^2\log(e) - 2i^2)b^3c^2d)B^2x + (2(3i^2\log(e) - 2i^2)ab^2c^2d - (6i^2\log(e) - 7i^2)a^2bcd^2 + (2i^2\log(e) - 3i^2)a^3d^3)B^2)\log(bx+a) - (2B^2b^3d^3i^2x^3\log(e) + (ab^2d^3i^2 + (6i^2\log(e) - i^2)b^3cd^2)B^2x^2 + 2(3ab^2c^2d^2i^2 - a^2bd^3i^2 + (3i^2\log(e) - 2i^2)b^3c^2d)B^2x + 2(B^2b^3d^3i^2x^3 + 3B^2b^3cd^2i^2x^2 + 3B^2b^3c^2di^2x + (3ab^2c^2d^2i^2 - 3a^2b^2cd^2i^2 + a^3d^3i^2)B^2)\log(bx+a))\log(dx+c))/(b^3d)$

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (ci + dix)^2 \left(A + B \ln \left(\frac{e(a + bx)}{c + dx} \right) \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x)))^2,x)

[Out] int((c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x)))^2, x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*(b*x+a)/(d*x+c)))**2,x)

[Out] Timed out

$$3.68 \quad \int \frac{(ci+dix)^2 \left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)^2}{ag+bgx} dx$$

Optimal. Leaf size=535

$$\frac{2Bi^2(bc-ad)^2 Li_2\left(\frac{b(c+dx)}{d(a+bx)}\right) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right) di^2(a+bx)(bc-ad) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)^2}{b^3g} + \frac{B di^2(a+bx)(bc-ad)}{b^3g}$$

[Out] $-B*d*(-a*d+b*c)*i^2*(b*x+a)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^3/g+2*B*(-a*d+b*c)^2*i^2*\ln((-a*d+b*c)/b/(d*x+c))*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^3/g+d*(-a*d+b*c)*i^2*(b*x+a)*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/b^3/g+1/2*i^2*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/b/g+B^2*(-a*d+b*c)^2*i^2*\ln(d*x+c)/b^3/g+B*(-a*d+b*c)^2*i^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))*\ln(1-b*(d*x+c)/d/(b*x+a))/b^3/g-(-a*d+b*c)^2*i^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2*\ln(1-b*(d*x+c)/d/(b*x+a))/b^3/g+2*B^2*(-a*d+b*c)^2*i^2*\text{polylog}(2,d*(b*x+a)/b/(d*x+c))/b^3/g-B^2*(-a*d+b*c)^2*i^2*\text{polylog}(2,b*(d*x+c)/d/(b*x+a))/b^3/g+2*B*(-a*d+b*c)^2*i^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))*\text{polylog}(2,b*(d*x+c)/d/(b*x+a))/b^3/g+2*B^2*(-a*d+b*c)^2*i^2*\text{polylog}(3,b*(d*x+c)/d/(b*x+a))/b^3/g$

Rubi [B] time = 5.12, antiderivative size = 1676, normalized size of antiderivative = 3.13, number of steps used = 86, number of rules used = 27, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}} = 0.643$, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2500, 2440, 2434, 2433, 2375, 2317, 2374, 6589, 2499, 2302, 30, 2396, 2525, 2486, 31}

result too large to display

Antiderivative was successfully verified.

[In] $\text{Int}[\frac{(c*i + d*i*x)^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)])^2}{(a*g + b*g*x)}, x]$

[Out] $-\frac{(A*B*d*(b*c - a*d)*i^2*x)}{b^2*g} - \frac{(a*B^2*d*(b*c - a*d)*i^2*\text{Log}[a + b*x]^2)}{b^3*g} + \frac{B^2*(b*c - a*d)^2*i^2*\text{Log}[a + b*x]^2}{2*b^3*g} - \frac{A*B*(b*c - a*d)^2*i^2*\text{Log}[g*(a + b*x)]^2}{b^3*g} + \frac{B^2*(b*c - a*d)^2*i^2*\text{Log}[g*(a + b*x)]^3}{3*b^3*g} - \frac{B^2*(b*c - a*d)^2*i^2*\text{Log}[a + b*x]^2*\text{Log}[-c - d*x]}{b^3*g} + \frac{2*B^2*(b*c - a*d)^2*i^2*\text{Log}[a + b*x]*\text{Log}[g*(a + b*x)]*\text{Log}[-c - d*x]}{b^3*g} - \frac{B^2*(b*c - a*d)^2*i^2*\text{Log}[g*(a + b*x)]^2*\text{Log}[-c - d*x]}{b^3*g} + \frac{B^2*(b*c - a*d)^2*i^2*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[(c + d*x)^{-1}]^2}{b^3*g} - \frac{B^2*(b*c - a*d)^2*i^2*\text{Log}[g*(a + b*x)]*\text{Log}[(c + d*x)^{-1}]^2}{b^3*g} - \frac{B^2*d*(b*c - a*d)*i^2*(a + b*x)*\text{Log}[(e*(a + b*x))/(c + d*x)]}{b^3*g} + \frac{2*a*B*d*(b*c - a*d)*i^2*\text{Log}[a + b*x]*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)])}{b^3*g} - \frac{B*(b*c - a*d)^2*i^2*\text{Log}[a + b*x]*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)])}{b^3*g} + \frac{d*(b*c - a*d)*i^2*x*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)])}{b^3*g}$

$$\begin{aligned}
& + b*x)) / (c + d*x)]^2) / (b^2*g) + (i^2*(c + d*x)^2*(A + B*\text{Log}[(e*(a + b*x)) / (c + d*x)]^2) / (2*b*g) + (B^2*(b*c - a*d)^2*i^2*\text{Log}[c + d*x]) / (b^3*g) + (2*B^2*c*(b*c - a*d)*i^2*\text{Log}[-((d*(a + b*x)) / (b*c - a*d))] * \text{Log}[c + d*x]) / (b^2*g) - (2*B*c*(b*c - a*d)*i^2*(A + B*\text{Log}[(e*(a + b*x)) / (c + d*x)]) * \text{Log}[c + d*x]) / (b^2*g) - (B^2*c*(b*c - a*d)*i^2*\text{Log}[c + d*x]^2) / (b^2*g) + (2*a*B^2*d*(b*c - a*d)*i^2*\text{Log}[a + b*x] * \text{Log}[(b*(c + d*x)) / (b*c - a*d)]) / (b^3*g) - (B^2*(b*c - a*d)^2*i^2*\text{Log}[a + b*x] * \text{Log}[(b*(c + d*x)) / (b*c - a*d)]) / (b^3*g) + (B^2*(b*c - a*d)^2*i^2*\text{Log}[a + b*x]^2 * \text{Log}[(b*(c + d*x)) / (b*c - a*d)]) / (b^3*g) + (B^2*(b*c - a*d)^2*i^2*\text{Log}[g*(a + b*x)]^2 * \text{Log}[(b*(c + d*x)) / (b*c - a*d)]) / (b^3*g) + ((b*c - a*d)^2*i^2*(A + B*\text{Log}[(e*(a + b*x)) / (c + d*x)]^2 * \text{Log}[a*g + b*g*x]) / (b^3*g) + (2*A*B*(b*c - a*d)^2*i^2*\text{Log}[(b*(c + d*x)) / (b*c - a*d)] * \text{Log}[a*g + b*g*x]) / (b^3*g) - (2*B^2*(b*c - a*d)^2*i^2*(\text{Log}[a + b*x] + \text{Log}[(c + d*x)^{-1}] - \text{Log}[(e*(a + b*x)) / (c + d*x)]) * \text{Log}[(b*(c + d*x)) / (b*c - a*d)] * \text{Log}[a*g + b*g*x]) / (b^3*g) - (B^2*(b*c - a*d)^2*i^2*\text{Log}[(e*(a + b*x)) / (c + d*x)] * \text{Log}[a*g + b*g*x]^2) / (b^3*g) - (B^2*(b*c - a*d)^2*i^2*\text{Log}[(b*(c + d*x)) / (b*c - a*d)] * \text{Log}[a*g + b*g*x]^2) / (b^3*g) + (2*a*B^2*d*(b*c - a*d)*i^2*\text{PolyLog}[2, -((d*(a + b*x)) / (b*c - a*d))]) / (b^3*g) + (2*A*B*(b*c - a*d)^2*i^2*\text{PolyLog}[2, -((d*(a + b*x)) / (b*c - a*d))]) / (b^3*g) - (B^2*(b*c - a*d)^2*i^2*\text{PolyLog}[2, -((d*(a + b*x)) / (b*c - a*d))]) / (b^3*g) + (2*B^2*(b*c - a*d)^2*i^2*\text{Log}[a + b*x] * \text{PolyLog}[2, -((d*(a + b*x)) / (b*c - a*d))]) / (b^3*g) - (2*B^2*(b*c - a*d)^2*i^2*(\text{Log}[a + b*x] + \text{Log}[(c + d*x)^{-1}] - \text{Log}[(e*(a + b*x)) / (c + d*x)]) * \text{PolyLog}[2, -((d*(a + b*x)) / (b*c - a*d))]) / (b^3*g) + (2*B^2*c*(b*c - a*d)*i^2*\text{PolyLog}[2, (b*(c + d*x)) / (b*c - a*d)]) / (b^2*g) - (2*B^2*(b*c - a*d)^2*i^2*\text{Log}[(c + d*x)^{-1}] * \text{PolyLog}[2, (b*(c + d*x)) / (b*c - a*d)]) / (b^3*g) - (2*B^2*(b*c - a*d)^2*i^2*\text{PolyLog}[3, -((d*(a + b*x)) / (b*c - a*d))]) / (b^3*g) - (2*B^2*(b*c - a*d)^2*i^2*\text{PolyLog}[3, (b*(c + d*x)) / (b*c - a*d)]) / (b^3*g)
\end{aligned}$$

Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 30

```
Int[(x_)^(m_), x_Symbol] := Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && NeQ[m, -1]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^-1, x_Symbol] := Simp[Log[RemoveContent[a + b*x, x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Lo
```

$g[c*x^n]^2/(2*b*n), x] /; \text{FreeQ}\{a, b, c, n\}, x]$

Rule 2302

$\text{Int}[(a_.) + \text{Log}[(c_.)*(x_)^{(n_.)}]*(b_.))^{(p_.)}/(x_), x_Symbol] \rightarrow \text{Dist}[1/(b*n), \text{Subst}[\text{Int}[x^p, x], x, a + b*\text{Log}[c*x^n]], x] /; \text{FreeQ}\{a, b, c, n, p\}, x]$

Rule 2317

$\text{Int}[(a_.) + \text{Log}[(c_.)*(x_)^{(n_.)}]*(b_.))^{(p_.)}/((d_.) + (e_.)*(x_)), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[1 + (e*x)/d]*(a + b*\text{Log}[c*x^n])^p)/e, x] - \text{Dist}[(b*n*p)/e, \text{Int}[(\text{Log}[1 + (e*x)/d]*(a + b*\text{Log}[c*x^n])^{(p-1)})/x, x], x] /; \text{FreeQ}\{a, b, c, d, e, n\}, x] \&\& \text{IGtQ}[p, 0]$

Rule 2374

$\text{Int}[(\text{Log}[(d_.)*((e_.) + (f_.)*(x_)^{(m_.)})])*(a_.) + \text{Log}[(c_.)*(x_)^{(n_.)}]*(b_.))^{(p_.)}/(x_), x_Symbol] \rightarrow -\text{Simp}[(\text{PolyLog}[2, -(d*f*x^m)]*(a + b*\text{Log}[c*x^n])^p)/m, x] + \text{Dist}[(b*n*p)/m, \text{Int}[(\text{PolyLog}[2, -(d*f*x^m)]*(a + b*\text{Log}[c*x^n])^{(p-1)})/x, x], x] /; \text{FreeQ}\{a, b, c, d, e, f, m, n\}, x] \&\& \text{IGtQ}[p, 0] \&\& \text{EqQ}[d*e, 1]$

Rule 2375

$\text{Int}[(\text{Log}[(d_.)*((e_.) + (f_.)*(x_)^{(m_.)})^{(r_.)}])*(a_.) + \text{Log}[(c_.)*(x_)^{(n_.)}]*(b_.))^{(p_.)}/(x_), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[d*(e + f*x^m)^r]*(a + b*\text{Log}[c*x^n])^{(p+1)})/(b*n*(p+1)), x] - \text{Dist}[(f*m*r)/(b*n*(p+1)), \text{Int}[(x^{(m-1)}*(a + b*\text{Log}[c*x^n])^{(p+1)})/(e + f*x^m), x], x] /; \text{FreeQ}\{a, b, c, d, e, f, r, m, n\}, x] \&\& \text{IGtQ}[p, 0] \&\& \text{NeQ}[d*e, 1]$

Rule 2390

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_.) + (e_.)*(x_)^{(n_.)})]*(b_.))^{(p_.)*((f_.) + (g_.)*(x_)^{(q_.)})}/(x_), x_Symbol] \rightarrow \text{Dist}[1/e, \text{Subst}[\text{Int}[(f*x)/d]^q*(a + b*\text{Log}[c*x^n])^p, x], x, d + e*x], x] /; \text{FreeQ}\{a, b, c, d, e, f, g, n, p, q\}, x] \&\& \text{EqQ}[e*f - d*g, 0]$

Rule 2391

$\text{Int}[\text{Log}[(c_.)*((d_.) + (e_.)*(x_)^{(n_.)})]/(x_), x_Symbol] \rightarrow -\text{Simp}[\text{PolyLog}[2, -(c*e*x^n)]/n, x] /; \text{FreeQ}\{c, d, e, n\}, x] \&\& \text{EqQ}[c*d, 1]$

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e^n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)/((f_.) + (g_.
)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e^n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] := Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
e*i - d*j)/e + (j*x)/e]^m)], x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] := Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n])/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m))]/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :=
Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*1)/l) + (e*x)/l)^n])*(f +
g*Log[h*(-((j*k - i*1)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)
^(r_.)]^(s_.), x_Symbol] := Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q]^r]^s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)
^(r_.)]*(s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.)
+ (k_.)*(x_)), x_Symbol] := Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q]^r])/((k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)
^(r_.)]*(s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))/((j_.) + (k
_.)*(x_)), x_Symbol] := Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2523

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] := Simp[x*(a +
b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*
RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, p}, x] && Rat
ionalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol]
:> Simp[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol]
:> With[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_Symbol]
:> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6688

```
Int[u_, x_Symbol]
:> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; SimplifierIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol]
:> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]]
```

Rubi steps

$$\begin{aligned}
\int \frac{(68c + 68dx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{ag + bgx} dx &= \int \left(\frac{4624d(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^2g} + \frac{68d(68c + 68dx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{bg} \right) dx \\
&= \frac{(4624(bc - ad)^2) \int \frac{\left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{ag + bgx} dx}{b^2} + \frac{(68d) \int (68c + 68dx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) dx}{bg} \\
&= \frac{4624d(bc - ad)x \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^2g} + \frac{2312(c + dx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{bg} \\
&= \frac{4624d(bc - ad)x \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^2g} + \frac{2312(c + dx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{bg} \\
&= \frac{4624d(bc - ad)x \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^2g} + \frac{2312(c + dx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{bg} \\
&= \frac{4624d(bc - ad)x \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^2g} + \frac{2312(c + dx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{bg} \\
&= -\frac{4624ABd(bc - ad)x}{b^2g} + \frac{9248aBd(bc - ad) \log(a + bx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3g} \\
&= -\frac{4624ABd(bc - ad)x}{b^2g} - \frac{4624B^2d(bc - ad)(a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{b^3g} + \frac{9248aBd(bc - ad) \log(a + bx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3g} \\
&= -\frac{4624ABd(bc - ad)x}{b^2g} - \frac{4624B^2d(bc - ad)(a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{b^3g} + \frac{9248aBd(bc - ad) \log(a + bx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3g} \\
&= -\frac{4624ABd(bc - ad)x}{b^2g} - \frac{4624B^2d(bc - ad)(a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{b^3g} + \frac{9248aBd(bc - ad) \log(a + bx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3g} \\
&= -\frac{4624ABd(bc - ad)x}{b^2g} - \frac{4624B^2d(bc - ad)(a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{b^3g} + \frac{9248aBd(bc - ad) \log(a + bx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3g} \\
&= -\frac{4624ABd(bc - ad)x}{b^2g} - \frac{4624aB^2d(bc - ad) \log^2(a + bx)}{b^3g} + \frac{2312B^2d(bc - ad) \log(a + bx)}{b^3g}
\end{aligned}$$

Mathematica [B] time = 3.67, size = 1987, normalized size = 3.71

result too large to display

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b*g*x), x]

[Out]
$$\begin{aligned} & (i^2*(12*A^2*b*d*(2*b*c - a*d)*x + 6*A^2*b^2*d^2*x^2 + 12*A^2*(b*c - a*d)^2 \\ & *Log[a + b*x] - 24*A*b*B*c*(a*d*Log[a/b + x]^2 - 2*a*d*Log[a/b + x]*(1 + Lo \\ & g[a + b*x]) + 2*(-(b*c) + a*d + Log[c/d + x]*(b*c + a*d*Log[a + b*x] - a*d* \\ & Log[(d*(a + b*x))/(-(b*c) + a*d)]) + (-(b*d*x) + a*d*Log[a + b*x])*Log[(e*(\\ & a + b*x))/(c + d*x)] - 2*a*d*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]) + 12*A \\ & *b^2*B*c^2*(Log[a/b + x]^2 - 2*Log[a + b*x]*(Log[a/b + x] - Log[c/d + x] - \\ & Log[(e*(a + b*x))/(c + d*x)]) - 2*(Log[c/d + x]*Log[(d*(a + b*x))/(-(b*c) + \\ & a*d)] + PolyLog[2, (b*(c + d*x))/(b*c - a*d)])) + 6*A*B*(-4*a*d^2*(a + b*x) \\ &)*(-1 + Log[a/b + x]) + 2*a^2*d^2*Log[a/b + x]^2 + 4*a*b*d*(c + d*x)*(-1 + \\ & Log[c/d + x]) + d^2*(b*x*(2*a - b*x) + 2*b^2*x^2*Log[a/b + x] - 2*a^2*Log[a \\ & + b*x]) - 2*d^2*(b*x*(-2*a + b*x) + 2*a^2*Log[a + b*x])*(Log[a/b + x] - Lo \\ & g[c/d + x] - Log[(e*(a + b*x))/(c + d*x)]) + b^2*(d*x*(-2*c + d*x) - 2*d^2* \\ & x^2*Log[c/d + x] + 2*c^2*Log[c + d*x]) - 4*a^2*d^2*(Log[c/d + x]*Log[(d*(a \\ & + b*x))/(-(b*c) + a*d)] + PolyLog[2, (b*(c + d*x))/(b*c - a*d)])) + 8*b*B^2 \\ & *c*(Log[(e*(a + b*x))/(c + d*x)]*(-(a*d*Log[(e*(a + b*x))/(c + d*x)]^2) + 6 \\ & *(b*c - a*d)*Log[(b*c - a*d)/(b*c + b*d*x)] + 3*d*Log[(e*(a + b*x))/(c + d* \\ & x)]*(a + b*x + a*Log[(b*c - a*d)/(b*c + b*d*x]))) + 6*(b*c - a*d + a*d*Log[\\ & (e*(a + b*x))/(c + d*x)])*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))] - 6*a*d*P \\ & olyLog[3, (d*(a + b*x))/(b*(c + d*x))] + B^2*(4*a^2*d^2*Log[a/b + x]^3 - 1 \\ & 2*a*d^2*(2*b*x - 2*(a + b*x)*Log[a/b + x] + (a + b*x)*Log[a/b + x]^2) - 3*d \\ & ^2*(b*x*(6*a - b*x) + (-6*a^2 - 4*a*b*x + 2*b^2*x^2)*Log[a/b + x] + 2*(a^2 \\ & - b^2*x^2)*Log[a/b + x]^2) - 12*a*b*d*(2*d*x - 2*(c + d*x)*Log[c/d + x] + (\\ & c + d*x)*Log[c/d + x]^2) - 3*b^2*(d*x*(6*c - d*x) + (-6*c^2 - 4*c*d*x + 2*d \\ & ^2*x^2)*Log[c/d + x] + 2*(c^2 - d^2*x^2)*Log[c/d + x]^2) + 6*d^2*(b*x*(-2*a \\ & + b*x) + 2*a^2*Log[a + b*x])*(-Log[a/b + x] + Log[c/d + x] + Log[(e*(a + b \\ & x))/(c + d*x)]^2 - 6*(Log[a/b + x] - Log[c/d + x] - Log[(e*(a + b*x))/(c \\ & + d*x)])*(-4*a*d^2*(a + b*x)*(-1 + Log[a/b + x]) + 2*a^2*d^2*Log[a/b + x]^2 \\ & + 4*a*b*d*(c + d*x)*(-1 + Log[c/d + x]) + d^2*(b*x*(2*a - b*x) + 2*b^2*x^2 \\ & *Log[a/b + x] - 2*a^2*Log[a + b*x]) + b^2*(d*x*(-2*c + d*x) - 2*d^2*x^2*Log \\ & [c/d + x] + 2*c^2*Log[c + d*x]) - 4*a^2*d^2*(Log[c/d + x]*Log[(d*(a + b*x)) \\ & /(-(b*c) + a*d)] + PolyLog[2, (b*(c + d*x))/(b*c - a*d)])) + 6*(2*a*b*c*d + \\ & 3*b^2*c*d*x + 3*a*b*d^2*x - b^2*d^2*x^2 - 2*a*b*d^2*x*Log[c/d + x] + b^2*d \\ & ^2*x^2*Log[c/d + x] - a^2*d^2*Log[a + b*x] - b^2*c^2*Log[c + d*x] - 2*a*b*c \\ & *d*Log[c + d*x] - Log[a/b + x]*(b*d*(2*a*c + b*x*(2*c - d*x)) - 2*d^2*(a^2 \\ & - b^2*x^2)*Log[c/d + x] + (-2*b^2*c^2 + 2*a^2*d^2)*Log[(b*(c + d*x))/(b*c - \\ & a*d)]) + 2*(b^2*c^2 - a^2*d^2)*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)] + \end{aligned}$$

$$4*a*d*(a*d + 2*b*d*x - b*d*x*\text{Log}[c/d + x] - b*c*\text{Log}[c + d*x] + \text{Log}[a/b + x] *(-d*(a + b*x)) + d*(a + b*x)*\text{Log}[c/d + x] + (b*c - a*d)*\text{Log}[(b*(c + d*x))/(b*c - a*d)]) + (b*c - a*d)*\text{PolyLog}[2, (d*(a + b*x))/(-b*c + a*d)] - 2*a^2*d^2*(\text{Log}[a/b + x]^2*(\text{Log}[c/d + x] - \text{Log}[(b*(c + d*x))/(b*c - a*d)]) - 2*\text{Log}[a/b + x]*\text{PolyLog}[2, (d*(a + b*x))/(-b*c + a*d)] + 2*\text{PolyLog}[3, (d*(a + b*x))/(-b*c + a*d)]) + 12*a^2*d^2*(\text{Log}[c/d + x]^2*\text{Log}[(d*(a + b*x))/(-b*c + a*d)] + 2*\text{Log}[c/d + x]*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)] - 2*\text{PolyLog}[3, (b*(c + d*x))/(b*c - a*d)]) - 12*b^2*B^2*c^2*(\text{Log}[(-b*c + a*d)/(d*(a + b*x))]*\text{Log}[(e*(a + b*x))/(c + d*x)]^2 - 2*\text{Log}[(e*(a + b*x))/(c + d*x)]*\text{PolyLog}[2, (b*(c + d*x))/(d*(a + b*x))] - 2*\text{PolyLog}[3, (b*(c + d*x))/(d*(a + b*x))])))/(12*b^3*g)$$

fricas [F] time = 0.79, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{A^2 d^2 i^2 x^2 + 2 A^2 c d i^2 x + A^2 c^2 i^2 + (B^2 d^2 i^2 x^2 + 2 B^2 c d i^2 x + B^2 c^2 i^2) \log \left(\frac{b e x + a e}{d x + c} \right)^2 + 2 (A B d^2 i^2 x^2 + 2 A B c d i^2 x + A B c^2 i^2) \log \left(\frac{b e x + a e}{d x + c} \right)}{b g x + a g}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g),x, algorithm="fricas")

[Out] integral((A^2*d^2*i^2*x^2 + 2*A^2*c*d*i^2*x + A^2*c^2*i^2 + (B^2*d^2*i^2*x^2 + 2*B^2*c*d*i^2*x + B^2*c^2*i^2)*log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*B*d^2*i^2*x^2 + 2*A*B*c*d*i^2*x + A*B*c^2*i^2)*log((b*e*x + a*e)/(d*x + c)))/(b*g*x + a*g), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g),x, algorithm="giac")

[Out] Timed out

maple [F] time = 2.11, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci)^2 \left(B \ln \left(\frac{bx+a}{dx+c} \right) + A \right)^2}{bgx + ag} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g), x)

[Out] int((d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g), x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$2 A^2 c d i^2 \left(\frac{x}{b g} - \frac{a \log(b x + a)}{b^2 g} \right) + \frac{1}{2} A^2 d^2 i^2 \left(\frac{2 a^2 \log(b x + a)}{b^3 g} + \frac{b x^2 - 2 a x}{b^2 g} \right) + \frac{A^2 c^2 i^2 \log(b g x + a g)}{b g} + \frac{(B^2 b^2 d^2 i^2 x^2)}{b g}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g), x, algorithm="maxima")

[Out] $2 A^2 c d i^2 (x / (b g) - a \log(b x + a) / (b^2 g)) + 1 / 2 A^2 d^2 i^2 (2 a^2 \log(b x + a) / (b^3 g) + (b x^2 - 2 a x) / (b^2 g)) + A^2 c^2 i^2 \log(b g x + a g) / (b g) + 1 / 2 (B^2 b^2 d^2 i^2 x^2 + 2 (2 b^2 c d i^2 - a b d^2 i^2) B^2 x + 2 (b^2 c^2 i^2 - 2 a b c d i^2 + a^2 d^2 i^2) B^2 \log(b x + a)) \log(d x + c) / (b^3 g) - \text{integrate}(- (B^2 b^3 c^3 i^2 \log(e)^2 + 2 A B b^3 c^3 i^2 \log(e) + (B^2 b^3 d^3 i^2 \log(e)^2 + 2 A B b^3 d^3 i^2 \log(e)) x^3 + 3 (B^2 b^3 c d^2 i^2 \log(e)^2 + 2 A B b^3 c d^2 i^2 \log(e)) x^2 + (B^2 b^3 d^3 i^2 x^3 + 3 B^2 b^3 c d^2 i^2 x^2 + 3 B^2 b^3 c^2 d i^2 x + B^2 b^3 c^3 i^2) \log(b x + a)^2 + 3 (B^2 b^3 c^2 d i^2 \log(e)^2 + 2 A B b^3 c^2 d i^2 \log(e)) x + 2 (B^2 b^3 c^3 i^2 \log(e) + A B b^3 c^3 i^2 + (B^2 b^3 d^3 i^2 \log(e) + A B b^3 d^3 i^2) x^3 + 3 (B^2 b^3 c d^2 i^2 \log(e) + A B b^3 c d^2 i^2) x^2 + 3 (B^2 b^3 c^2 d i^2 \log(e) + A B b^3 c^2 d i^2) x) \log(b x + a) - (2 B^2 b^3 c^3 i^2 \log(e) + 2 A B b^3 c^3 i^2 + (2 A B b^3 d^3 i^2 + (2 i^2 \log(e) + i^2) B^2 b^3 d^3) x^3 + (6 A B b^3 c d^2 i^2 - (a b^2 d^3 i^2 - 2 (3 i^2 \log(e) + 2 i^2) b^3 c d^2) B^2) x^2 + 2 (3 A B b^3 c^2 d i^2 + (3 b^3 c^2 d i^2 \log(e) + 2 a b^2 c d^2 i^2 - a^2 b d^3 i^2) B^2) x + 2 (B^2 b^3 d^3 i^2 x^3 + 3 B^2 b^3 c d^2 i^2 x^2 + (4 b^3 c^2 d i^2 - 2 a b^2 c d^2 i^2 + a^2 b d^3 i^2) B^2 x + (b^3 c^3 i^2 + a b^2 c^2 d i^2 - 2 a^2 b c d^2 i^2 + a^3 d^3 i^2) B^2) \log(b x + a)) \log(d x + c)) / (b^4 d g x^2 + a b^3 c g + (b^4 c g + a b^3 d g) x), x)$

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c i + d i x)^2 \left(A + B \ln \left(\frac{e^{(a+b x)}}{c+d x} \right) \right)^2}{a g + b g x} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x), x)

[Out] int(((c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x), x)

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$i^2 \left(\int \frac{A^2 c^2}{a+bx} dx + \int \frac{A^2 d^2 x^2}{a+bx} dx + \int \frac{B^2 c^2 \log\left(\frac{ae}{c+dx} + \frac{bex}{c+dx}\right)^2}{a+bx} dx + \int \frac{2ABc^2 \log\left(\frac{ae}{c+dx} + \frac{bex}{c+dx}\right)}{a+bx} dx + \int \frac{2A^2 cdx}{a+bx} dx + \int \frac{B^2 d^2 x^2 \log\left(\frac{ae}{c+dx} + \frac{bex}{c+dx}\right)}{a+bx} dx \right)$$

g

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g), x)

[Out] i**2*(Integral(A**2*c**2/(a + b*x), x) + Integral(A**2*d**2*x**2/(a + b*x), x) + Integral(B**2*c**2*log(a*e/(c + d*x) + b*e*x/(c + d*x))**2/(a + b*x), x) + Integral(2*A*B*c**2*log(a*e/(c + d*x) + b*e*x/(c + d*x))/(a + b*x), x) + Integral(2*A**2*c*d*x/(a + b*x), x) + Integral(B**2*d**2*x**2*log(a*e/(c + d*x) + b*e*x/(c + d*x))**2/(a + b*x), x) + Integral(2*A*B*d**2*x**2*log(a*e/(c + d*x) + b*e*x/(c + d*x))/(a + b*x), x) + Integral(2*B**2*c*d*x*log(a*e/(c + d*x) + b*e*x/(c + d*x))**2/(a + b*x), x) + Integral(4*A*B*c*d*x*log(a*e/(c + d*x) + b*e*x/(c + d*x))/(a + b*x), x))/g

$$3.69 \quad \int \frac{(ci+dx)^2 \left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)^2}{(ag+bgx)^2} dx$$

Optimal. Leaf size=442

$$\frac{d^2 i^2 (a+bx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)^2}{b^3 g^2} + \frac{4Bdi^2(bc-ad) \operatorname{Li}_2\left(\frac{b(c+dx)}{d(a+bx)}\right) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{b^3 g^2} + \frac{2Bdi^2(bc-ad) \log\left(\frac{bc-ad}{b(c+dx)}\right)}{b^3 g^2}$$

[Out] $-2*B^2*(-a*d+b*c)*i^2*(d*x+c)/b^2/g^2/(b*x+a)-2*B*(-a*d+b*c)*i^2*(d*x+c)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^2/g^2/(b*x+a)+2*B*d*(-a*d+b*c)*i^2*\ln((-a*d+b*c)/b/(d*x+c))*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^3/g^2+d^2*i^2*(b*x+a)*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/b^3/g^2-(-a*d+b*c)*i^2*(d*x+c)*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/b^2/g^2/(b*x+a)-2*d*(-a*d+b*c)*i^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2*\ln(1-b*(d*x+c)/d/(b*x+a))/b^3/g^2+2*B^2*d*(-a*d+b*c)*i^2*\operatorname{polylog}(2,d*(b*x+a)/b/(d*x+c))/b^3/g^2+4*B*d*(-a*d+b*c)*i^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))*\operatorname{polylog}(2,b*(d*x+c)/d/(b*x+a))/b^3/g^2+4*B^2*d*(-a*d+b*c)*i^2*\operatorname{polylog}(3,b*(d*x+c)/d/(b*x+a))/b^3/g^2$

Rubi [B] time = 3.89, antiderivative size = 1219, normalized size of antiderivative = 2.76, number of steps used = 65, number of rules used = 21, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}} = 0.500$, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 44, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610}

$$\frac{aB^2d^2 \log^2(a+bx)i^2}{b^3g^2} + \frac{B^2d(bc-ad) \log^2(a+bx)i^2}{b^3g^2} - \frac{2ABd(bc-ad) \log^2(a+bx)i^2}{b^3g^2} - \frac{2B^2d(bc-ad) \log\left(-\frac{bc-ad}{d(a+bx)}\right)}{b^3g^2}$$

Antiderivative was successfully verified.

[In] $\operatorname{Int}[(c*i + d*i*x)^2*(A + B*\operatorname{Log}[(e*(a + b*x))/(c + d*x]])^2)/(a*g + b*g*x)^2, x]$

[Out] $(-2*B^2*(b*c - a*d)^2*i^2)/(b^3*g^2*(a + b*x)) - (2*B^2*d*(b*c - a*d)*i^2*\operatorname{Log}[a + b*x])/b^3*g^2 - (a*B^2*d^2*i^2*\operatorname{Log}[a + b*x]^2)/(b^3*g^2) - (2*A*B*d*(b*c - a*d)*i^2*\operatorname{Log}[a + b*x]^2)/(b^3*g^2) + (B^2*d*(b*c - a*d)*i^2*\operatorname{Log}[a + b*x]^2)/(b^3*g^2) - (2*B^2*d*(b*c - a*d)*i^2*\operatorname{Log}[-((b*c - a*d)/(d*(a + b*x)))]*\operatorname{Log}[(e*(a + b*x))/(c + d*x]])^2)/(b^3*g^2) - (2*B^2*d*(b*c - a*d)*i^2*\operatorname{Log}[a + b*x]*\operatorname{Log}[(e*(a + b*x))/(c + d*x]])^2)/(b^3*g^2) - (2*B*(b*c - a*d)^2*i^2*(A + B*\operatorname{Log}[(e*(a + b*x))/(c + d*x]]))/b^3*g^2*(a + b*x) + (2*a*B*d^2*i^2*\operatorname{Log}[a + b*x]*(A + B*\operatorname{Log}[(e*(a + b*x))/(c + d*x]]))/b^3*g^2 - (2*B*d*(b*c - a*d)*i^2*\operatorname{Log}[a + b*x]*(A + B*\operatorname{Log}[(e*(a + b*x))/(c + d*x]]))/b^3*g^2) + (d^2*i^2*x*(A + B*\operatorname{Log}[(e*(a + b*x))/(c + d*x]])^2)/(b^2*g^2) - ((b*c - a*d)^2*i^2*(A + B*\operatorname{Log}[(e*(a + b*x))/(c + d*x]])^2)/(b^3*g^2*(a + b*x)) + (2$

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*d*(b*c - a*d)*i^2*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2)/(b^
3*g^2) + (2*B^2*d*(b*c - a*d)*i^2*Log[c + d*x])/(b^3*g^2) + (2*B^2*c*d*i^2*
Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(b^2*g^2) - (2*B^2*d*(b*c -
a*d)*i^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(b^3*g^2) - (2*B*
c*d*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x]))*Log[c + d*x])/(b^2*g^2) + (2*B
*d*(b*c - a*d)*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x]))*Log[c + d*x])/(b^3*
g^2) - (B^2*c*d*i^2*Log[c + d*x]^2)/(b^2*g^2) + (B^2*d*(b*c - a*d)*i^2*Log[
c + d*x]^2)/(b^3*g^2) + (2*a*B^2*d^2*i^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*
c - a*d)])/(b^3*g^2) + (4*A*B*d*(b*c - a*d)*i^2*Log[a + b*x]*Log[(b*(c + d*
x))/(b*c - a*d)])/(b^3*g^2) - (2*B^2*d*(b*c - a*d)*i^2*Log[a + b*x]*Log[(b*
(c + d*x))/(b*c - a*d)])/(b^3*g^2) + (2*a*B^2*d^2*i^2*PolyLog[2, -((d*(a +
b*x))/(b*c - a*d))])/(b^3*g^2) + (4*A*B*d*(b*c - a*d)*i^2*PolyLog[2, -((d*(
a + b*x))/(b*c - a*d))])/(b^3*g^2) - (2*B^2*d*(b*c - a*d)*i^2*PolyLog[2, -(
(d*(a + b*x))/(b*c - a*d))])/(b^3*g^2) + (2*B^2*c*d*i^2*PolyLog[2, (b*(c +
d*x))/(b*c - a*d)])/(b^2*g^2) - (2*B^2*d*(b*c - a*d)*i^2*PolyLog[2, (b*(c +
d*x))/(b*c - a*d)])/(b^3*g^2) + (4*B^2*d*(b*c - a*d)*i^2*Log[(e*(a + b*x))
/(c + d*x)]*PolyLog[2, 1 + (b*c - a*d)/(d*(a + b*x))])/(b^3*g^2) + (4*B^2*d
*(b*c - a*d)*i^2*PolyLog[3, 1 + (b*c - a*d)/(d*(a + b*x))])/(b^3*g^2)

```

Rule 12

```

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_)] /; FreeQ[b, x]

```

Rule 44

```

Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])

```

Rule 2301

```

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

```

Rule 2317

```

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] := Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]

```

Rule 2344

```

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),

```

$x_Symbol]$ \rightarrow $\text{Dist}[1/d, \text{Int}[(a + b \cdot \text{Log}[c \cdot x^n])^p/x, x], x] - \text{Dist}[e/d, \text{Int}[(a + b \cdot \text{Log}[c \cdot x^n])^p/(d + e \cdot x), x], x] /;$ $\text{FreeQ}\{a, b, c, d, e, n\}, x\} \ \&\& \ \text{IGtQ}[p, 0]$

Rule 2390

$\text{Int}[(a + \text{Log}[c \cdot (d + e \cdot x)^n] \cdot b)^p \cdot (f + g \cdot x)^q, x_Symbol]$ \rightarrow $\text{Dist}[1/e, \text{Subst}[\text{Int}[(f \cdot x)/d]^q \cdot (a + b \cdot \text{Log}[c \cdot x^n])^p, x], x, d + e \cdot x], x] /;$ $\text{FreeQ}\{a, b, c, d, e, f, g, n, p, q\}, x\} \ \&\& \ \text{EqQ}[e \cdot f - d \cdot g, 0]$

Rule 2391

$\text{Int}[\text{Log}[c \cdot (d + e \cdot x)^n]/(x), x_Symbol]$ \rightarrow $-\text{Simp}[\text{PolyLog}[2, -(c \cdot e \cdot x^n)]/n, x] /;$ $\text{FreeQ}\{c, d, e, n\}, x\} \ \&\& \ \text{EqQ}[c \cdot d, 1]$

Rule 2393

$\text{Int}[(a + \text{Log}[c \cdot (d + e \cdot x)] \cdot b)/(f + g \cdot x), x_Symbol]$ \rightarrow $\text{Dist}[1/g, \text{Subst}[\text{Int}[(a + b \cdot \text{Log}[1 + (c \cdot e \cdot x)/g]]/x, x], x, f + g \cdot x], x] /;$ $\text{FreeQ}\{a, b, c, d, e, f, g\}, x\} \ \&\& \ \text{NeQ}[e \cdot f - d \cdot g, 0] \ \&\& \ \text{EqQ}[g + c \cdot (e \cdot f - d \cdot g), 0]$

Rule 2394

$\text{Int}[(a + \text{Log}[c \cdot (d + e \cdot x)^n] \cdot b)/(f + g \cdot x), x_Symbol]$ \rightarrow $\text{Simp}[(\text{Log}[(e \cdot (f + g \cdot x))/(e \cdot f - d \cdot g)] \cdot (a + b \cdot \text{Log}[c \cdot (d + e \cdot x)^n]))/g, x] - \text{Dist}[(b \cdot e \cdot n)/g, \text{Int}[\text{Log}[(e \cdot (f + g \cdot x))/(e \cdot f - d \cdot g)]/(d + e \cdot x), x], x] /;$ $\text{FreeQ}\{a, b, c, d, e, f, g, n\}, x\} \ \&\& \ \text{NeQ}[e \cdot f - d \cdot g, 0]$

Rule 2411

$\text{Int}[(a + \text{Log}[c \cdot (d + e \cdot x)^n] \cdot b)^p \cdot (f + g \cdot x)^q \cdot (h + i \cdot x)^r, x_Symbol]$ \rightarrow $\text{Dist}[1/e, \text{Subst}[\text{Int}[(g \cdot x)/e]^q \cdot ((e \cdot h - d \cdot i)/e + (i \cdot x)/e)^r \cdot (a + b \cdot \text{Log}[c \cdot x^n])^p, x], x, d + e \cdot x], x] /;$ $\text{FreeQ}\{a, b, c, d, e, f, g, h, i, n, p, q, r\}, x\} \ \&\& \ \text{EqQ}[e \cdot f - d \cdot g, 0] \ \&\& \ (\text{IGtQ}[p, 0] \ || \ \text{IGtQ}[r, 0]) \ \&\& \ \text{IntegerQ}[2 \cdot r]$

Rule 2418

$\text{Int}[(a + \text{Log}[c \cdot (d + e \cdot x)^n] \cdot b)^p \cdot \text{RFX}, x_Symbol]$ \rightarrow $\text{With}\{u = \text{ExpandIntegrand}[(a + b \cdot \text{Log}[c \cdot (d + e \cdot x)^n])^p, \text{RFX}, x]\}, \text{Int}[u, x] /;$ $\text{SumQ}[u] /;$ $\text{FreeQ}\{a, b, c, d, e, n\}, x\} \ \&\& \ \text{RationalFunctionQ}[\text{RFX}, x] \ \&\& \ \text{IntegerQ}[p]$

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] := -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q]^r]^s - 1)/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_)
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] := With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1)/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] := With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
h*x)^t]^u)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s + 1)/(p*r*(s + 1)*(b*c
- a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q]^r]^s + 1)/(g + h*x), x], x] /; FreeQ[k, x] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2523

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] := Simp[x*(a +
b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*
RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, p}, x] && Rat
ionalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_.))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] := With[{w = DerivativeDivides[v, u*v, x]}, Simp[w*PolyLog[n + 1, v], x] /; !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] := With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; SimplifyIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] := With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]]
```

Rubi steps

$$\begin{aligned}
\int \frac{(69c + 69dx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{(ag + bgx)^2} dx &= \int \left(\frac{4761d^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^2g^2} + \frac{4761(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^2g^2(a + bx)^2} \right) dx \\
&= \frac{(4761d^2) \int \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 dx}{b^2g^2} + \frac{(9522d(bc - ad)) \int \frac{(A+B \log \left(\frac{e(a+bx)}{c+dx} \right))^2}{a} dx}{b^2g^2} \\
&= \frac{4761d^2x \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^2g^2} - \frac{4761(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^3g^2(a + bx)} \\
&= \frac{4761d^2x \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^2g^2} - \frac{4761(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^3g^2(a + bx)} \\
&= \frac{4761d^2x \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^2g^2} - \frac{4761(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^3g^2(a + bx)} \\
&= \frac{4761d^2x \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^2g^2} - \frac{4761(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^3g^2(a + bx)} \\
&= -\frac{9522B(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3g^2(a + bx)} + \frac{9522aBd^2 \log(a + bx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3g^2} \\
&= -\frac{9522B(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3g^2(a + bx)} + \frac{9522aBd^2 \log(a + bx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3g^2} \\
&= -\frac{9522B^2d(bc - ad) \log(a + bx) \log^2 \left(\frac{e(a+bx)}{c+dx} \right)}{b^3g^2} - \frac{9522B(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3g^2(a + bx)} \\
&= -\frac{9522B^2(bc - ad)^2}{b^3g^2(a + bx)} - \frac{9522B^2d(bc - ad) \log(a + bx)}{b^3g^2} - \frac{9522B^2d(bc - ad) \log^2(a + bx)}{b^3g^2} \\
&= -\frac{9522B^2(bc - ad)^2}{b^3g^2(a + bx)} - \frac{9522B^2d(bc - ad) \log(a + bx)}{b^3g^2} - \frac{9522ABd(bc - ad) \log(a + bx)}{b^3g^2} \\
&= -\frac{9522B^2(bc - ad)^2}{b^3g^2(a + bx)} - \frac{9522B^2d(bc - ad) \log(a + bx)}{b^3g^2} - \frac{4761aB^2d^2 \log(a + bx)}{b^3g^2} \\
&= -\frac{9522B^2(bc - ad)^2}{b^3g^2(a + bx)} - \frac{9522B^2d(bc - ad) \log(a + bx)}{b^3g^2} - \frac{4761aB^2d^2 \log(a + bx)}{b^3g^2}
\end{aligned}$$

Mathematica [B] time = 6.92, size = 2652, normalized size = 6.00

Result too large to show

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b*g*x)^2,x]

[Out]
$$\begin{aligned} & (i^2(3A^2bd^2x - (3A^2(bc - ad)^2)/(a + bx) + 6A^2d(bc - ad) \\ & * \text{Log}[a + bx] - (6Ab^2Bc^2(-d(a + bx)\text{Log}[c/d + x]) + d(a + bx)*\text{Log} \\ & \text{og}[(d(a + bx))/(-bc) + ad]) + (bc - ad)*(1 + \text{Log}[(e(a + bx))/(c + \\ & d*x)])))/((bc - ad)*(a + bx)) + (3b^2B^2c^2(-2bc + 2ad - 2d(a \\ & + bx)*\text{Log}[a + bx] - 2(bc - ad)*\text{Log}[(e(a + bx))/(c + d*x)] - 2d(a + \\ & bx)*\text{Log}[a + bx]*\text{Log}[(e(a + bx))/(c + d*x)] - (bc - ad)*\text{Log}[(e(a + b \\ & x))/(c + d*x)]^2 + 2d(a + bx)*\text{Log}[c + d*x] - 2d(a + bx)*\text{Log}[(e(a + \\ & bx))/(c + d*x)]*\text{Log}[(bc - ad)/(bc + bdx)] + d(a + bx)*(\text{Log}[a + bx] \\ & *(\text{Log}[a + bx] - 2*\text{Log}[(bc(c + d*x))/(bc - ad)]) - 2*\text{PolyLog}[2, (d(a + b \\ & x))/(-bc) + ad]) + d(a + bx)*(\text{Log}[(bc - ad)/(bc + bdx)]*(2*\text{Log} \\ & (d(a + bx))/(-bc) + ad) + \text{Log}[(bc - ad)/(bc + bdx)]) - 2*\text{PolyLog} \\ & [2, (bc(c + d*x))/(bc - ad)])))/((bc - ad)*(a + bx)) + 6A*b*B*c*d*(\text{Lo} \\ & g[a/b + x]^2 - 2*\text{Log}[a/b + x]*\text{Log}[a + bx] - 2*\text{Log}[c/d + x]*\text{Log}[(d(a + bx) \\ &)/(-bc) + ad] + 2*\text{Log}[a + bx]*((ad)/(bc - ad) + \text{Log}[c/d + x] + \text{Log} \\ & [(e(a + bx))/(c + d*x)] + 2*a*((a + bx)^(-1) + \text{Log}[(e(a + bx))/(c + d \\ & x)]/(a + bx) + (d*\text{Log}[c + d*x])/(-bc) + ad)) - 2*\text{PolyLog}[2, (b(c + d* \\ & x))/(bc - ad)] + 6A*B*d^2*((a + bx)*(-1 + \text{Log}[a/b + x]) - a*\text{Log}[a/b + \\ & x]^2 - (a^2*(1 + \text{Log}[a/b + x]))/(a + bx) - b*(c/d + x)*(-1 + \text{Log}[c/d + x]) \\ & + (a^2*\text{Log}[c/d + x])/(a + bx) + (bx - a^2/(a + bx) - 2*a*\text{Log}[a + bx])* \\ & (-\text{Log}[a/b + x] + \text{Log}[c/d + x] + \text{Log}[(e(a + bx))/(c + d*x)]) + (a^2*d*(\text{Log} \\ & [a + bx] - \text{Log}[c + d*x]))/(-bc) + ad) + 2*a*(\text{Log}[c/d + x]*\text{Log}[(d(a + b \\ & x))/(-bc) + ad] + \text{PolyLog}[2, (b(c + d*x))/(bc - ad)]) + B^2*d^2*(6 \\ & *bx - 6*(a + bx)*\text{Log}[a/b + x] + 3*(a + bx)*\text{Log}[a/b + x]^2 - 2*a*\text{Log}[a/b \\ & + x]^3 - (3a^2*(2 + 2*\text{Log}[a/b + x] + \text{Log}[a/b + x]^2))/(a + bx) + (3b*(2* \\ & d*x - 2*(c + d*x)*\text{Log}[c/d + x] + (c + d*x)*\text{Log}[c/d + x]^2))/d + 3*(bx - a^ \\ & 2/(a + bx) - 2*a*\text{Log}[a + bx])*(-\text{Log}[a/b + x] + \text{Log}[c/d + x] + \text{Log}[(e(a + \\ & bx))/(c + d*x)]^2 - (6*(ad + 2*b*d*x - b*d*x*\text{Log}[c/d + x] - bc*\text{Log}[c + \\ & d*x] + \text{Log}[a/b + x]*(-d(a + bx)) + d(a + bx)*\text{Log}[c/d + x] + (bc - a* \\ & d)*\text{Log}[(b(c + d*x))/(bc - ad)]) + (bc - ad)*\text{PolyLog}[2, (d(a + bx))/(- \\ & bc) + ad]))/d + (3a^2*(d(a + bx)*\text{Log}[a/b + x]^2 + 2*((-bc) + ad) \\ & *\text{Log}[c/d + x] + d(a + bx)*(\text{Log}[a + bx] - \text{Log}[c + d*x])) - 2*\text{Log}[a/b + x] \\ & *((bc - ad)*\text{Log}[c/d + x] + d(a + bx)*\text{Log}[(b(c + d*x))/(bc - ad)]) - \\ & 2*d*(a + bx)*\text{PolyLog}[2, (d(a + bx))/(-bc) + ad]))/((-bc) + ad)*(a \\ & + bx) + (3a^2*(-(b(c + d*x)*\text{Log}[c/d + x]^2) + 2*d*(a + bx)*\text{Log}[c/d + \\ & x]*\text{Log}[(d(a + bx))/(-bc) + ad]) + 2*d*(a + bx)*\text{PolyLog}[2, (b(c + d*x) \\ &))/(bc - ad)))/((bc - ad)*(a + bx)) + 6*(-\text{Log}[a/b + x] + \text{Log}[c/d + x] \end{aligned}$$

$$\begin{aligned}
& + \text{Log}[(e*(a + b*x))/(c + d*x)]*((a + b*x)*(-1 + \text{Log}[a/b + x]) - a*\text{Log}[a/b \\
& + x]^2 - (a^2*(1 + \text{Log}[a/b + x]))/(a + b*x) - b*(c/d + x)*(-1 + \text{Log}[c/d + \\
& x]) + (a^2*\text{Log}[c/d + x])/(a + b*x) + (a^2*d*(\text{Log}[a + b*x] - \text{Log}[c + d*x]))/ \\
& (-b*c) + a*d) + 2*a*(\text{Log}[c/d + x]*\text{Log}[(d*(a + b*x))/(-b*c) + a*d]) + \text{Poly} \\
& \text{Log}[2, (b*(c + d*x))/(b*c - a*d))] + 6*a*(\text{Log}[a/b + x]^2*(\text{Log}[c/d + x] - \text{L} \\
& \text{og}[(b*(c + d*x))/(b*c - a*d)]) - 2*\text{Log}[a/b + x]*\text{PolyLog}[2, (d*(a + b*x))/(- \\
& (b*c) + a*d)] + 2*\text{PolyLog}[3, (d*(a + b*x))/(-b*c) + a*d]) - 6*a*(\text{Log}[c/d \\
& + x]^2*\text{Log}[(d*(a + b*x))/(-b*c) + a*d]) + 2*\text{Log}[c/d + x]*\text{PolyLog}[2, (b*(c \\
& + d*x))/(b*c - a*d)] - 2*\text{PolyLog}[3, (b*(c + d*x))/(b*c - a*d)]) + (2*b*B^2 \\
& *c*d*(6*b*c - 6*a*d - (6*b^2*c*x)/(a + b*x) + (6*a*b*d*x)/(a + b*x) + 6*a*d \\
& *Log[a/b + x] + 3*b*c*Log[a/b + x]^2 - 3*a*d*Log[a/b + x]^2 - 6*b*c*Log[c/d \\
& + x] + 6*b*c*Log[a + b*x] - 6*a*d*Log[a + b*x] - 6*b*c*Log[a/b + x]*Log[a \\
& + b*x] + 6*a*d*Log[a/b + x]*Log[a + b*x] + 6*b*c*Log[c/d + x]*Log[a + b*x] \\
& - 6*a*d*Log[c/d + x]*Log[a + b*x] - 6*b*c*Log[c/d + x]*Log[(d*(a + b*x))/(- \\
& (b*c) + a*d)] + 6*a*d*Log[c/d + x]*Log[(d*(a + b*x))/(-b*c) + a*d]) - (6*b \\
& *(b*c - a*d)*x*Log[(e*(a + b*x))/(c + d*x)]/(a + b*x) + 6*b*c*Log[a + b*x] \\
& *Log[(e*(a + b*x))/(c + d*x)] - 6*a*d*Log[a + b*x]*Log[(e*(a + b*x))/(c + d \\
& *x)] + 3*a*d*Log[(e*(a + b*x))/(c + d*x)]^2 + 3*b*d*x*Log[(e*(a + b*x))/(c \\
& + d*x)]^2 - (3*b^2*x*(c + d*x)*Log[(e*(a + b*x))/(c + d*x)]^2)/(a + b*x) - \\
& 3*b*c*Log[(-b*c) + a*d]/(d*(a + b*x))*Log[(e*(a + b*x))/(c + d*x)]^2 - a* \\
& d*Log[(e*(a + b*x))/(c + d*x)]^3 + 6*b*c*Log[(e*(a + b*x))/(c + d*x)]*Log[(\\
& b*c - a*d)/(b*c + b*d*x)] - 6*a*d*Log[(e*(a + b*x))/(c + d*x)]*Log[(b*c - a \\
& *d)/(b*c + b*d*x)] + 3*a*d*Log[(e*(a + b*x))/(c + d*x)]^2*Log[(b*c - a*d)/(\\
& b*c + b*d*x)] + 6*(b*c - a*d + a*d*Log[(e*(a + b*x))/(c + d*x)])*PolyLog[2, \\
& (d*(a + b*x))/(b*(c + d*x))] - 6*(b*c - a*d)*PolyLog[2, (b*(c + d*x))/(b*c \\
& - a*d)] + 6*b*c*Log[(e*(a + b*x))/(c + d*x)]*PolyLog[2, (b*(c + d*x))/(d*(\\
& a + b*x))] - 6*a*d*PolyLog[3, (d*(a + b*x))/(b*(c + d*x))] + 6*b*c*PolyLog[\\
& 3, (b*(c + d*x))/(d*(a + b*x)))]/(b*c - a*d))/(3*b^3*g^2)
\end{aligned}$$

fricas [F] time = 0.58, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{A^2 d^2 i^2 x^2 + 2 A^2 c d i^2 x + A^2 c^2 i^2 + (B^2 d^2 i^2 x^2 + 2 B^2 c d i^2 x + B^2 c^2 i^2) \log\left(\frac{bex+ae}{dx+c}\right)^2 + 2 (A B d^2 i^2 x^2 + 2 A B c d i^2 x + A^2 B c^2 i^2)}{b^2 g^2 x^2 + 2 a b g^2 x + a^2 g^2} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^2,x, algorithm="fricas")

[Out] integral((A^2*d^2*i^2*x^2 + 2*A^2*c*d*i^2*x + A^2*c^2*i^2 + (B^2*d^2*i^2*x^2 + 2*B^2*c*d*i^2*x + B^2*c^2*i^2)*log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*B*d^2*i^2*x^2 + 2*A*B*c*d*i^2*x + A*B*c^2*i^2)*log((b*e*x + a*e)/(d*x + c)))/(b^2*g^2*x^2 + 2*a*b*g^2*x + a^2*g^2), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^2,x, algorithm="giac")

[Out] Timed out

maple [F] time = 2.14, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci)^2 \left(B \ln \left(\frac{bx+a}{dx+c} \right) + A \right)^2}{(bgx + ag)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^2,x)

[Out] int((d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^2,x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^2,x, algorithm="maxima")

[Out] $-A^2*(a^2/(b^4*g^2*x + a*b^3*g^2) - x/(b^2*g^2) + 2*a*log(b*x + a)/(b^3*g^2)) * d^2*i^2 + 2*A^2*c*d*i^2*(a/(b^3*g^2*x + a*b^2*g^2) + log(b*x + a)/(b^2*g^2)) - 2*A*B*c^2*i^2*(log(b*e*x/(d*x + c) + a*e/(d*x + c)))/(b^2*g^2*x + a*b*g^2) + 1/(b^2*g^2*x + a*b*g^2) + d*log(b*x + a)/((b^2*c - a*b*d)*g^2) - d*log(d*x + c)/((b^2*c - a*b*d)*g^2) - A^2*c^2*i^2/(b^2*g^2*x + a*b*g^2) + (B^2*b^2*d^2*i^2*x^2 + B^2*a*b*d^2*i^2*x - (b^2*c^2*i^2 - 2*a*b*c*d*i^2 + a^2*d^2*i^2)*B^2 + 2*((b^2*c*d*i^2 - a*b*d^2*i^2)*B^2*x + (a*b*c*d*i^2 - a^2*d^2*i^2)*B^2)*log(b*x + a)*log(d*x + c)^2/(b^4*g^2*x + a*b^3*g^2) - integrate(-(B^2*b^3*c^3*i^2*log(e)^2 + (B^2*b^3*d^3*i^2*log(e)^2 + 2*A*B*b^3*d^3*i^2*log(e))*x^3 + 3*(B^2*b^3*c*d^2*i^2*log(e)^2 + 2*A*B*b^3*c*d^2*i^2*log(e))*x^2 + (B^2*b^3*d^3*i^2*x^3 + 3*B^2*b^3*c*d^2*i^2*x^2 + 3*B^2*b^3*c^2*d*i^2*x + B^2*b^3*c^3*i^2)*log(b*x + a)^2 + (3*B^2*b^3*c^2*d*i^2*log(e)^2 + 4*A*B*b^3*c^2*d*i^2*log(e))*x + 2*(B^2*b^3*c^3*i^2*log(e) + (B^2*b^3*d^3*i^2*log(e) + A*B*b^3*d^3*i^2)*x^3 + 3*(B^2*b^3*c*d^2*i^2*log(e) + A*B*b^3*c*d^2$

```

*i^2)*x^2 + (3*B^2*b^3*c^2*d*i^2*log(e) + 2*A*B*b^3*c^2*d*i^2)*x)*log(b*x +
a) - 2*((A*B*b^3*d^3*i^2 + (i^2*log(e) + i^2)*B^2*b^3*d^3)*x^3 + (b^3*c^3*
i^2*log(e) - a*b^2*c^2*d*i^2 + 2*a^2*b*c*d^2*i^2 - a^3*d^3*i^2)*B^2 + (3*A*
B*b^3*c*d^2*i^2 + (3*b^3*c*d^2*i^2*log(e) + 2*a*b^2*d^3*i^2)*B^2)*x^2 + (2*
A*B*b^3*c^2*d*i^2 + (2*a*b^2*c*d^2*i^2 + (3*i^2*log(e) - i^2)*b^3*c^2*d)*B^
2)*x + (B^2*b^3*d^3*i^2*x^3 + (5*b^3*c*d^2*i^2 - 2*a*b^2*d^3*i^2)*B^2*x^2 +
(3*b^3*c^2*d*i^2 + 4*a*b^2*c*d^2*i^2 - 4*a^2*b*d^3*i^2)*B^2*x + (b^3*c^3*i
^2 + 2*a^2*b*c*d^2*i^2 - 2*a^3*d^3*i^2)*B^2)*log(b*x + a))*log(d*x + c))/(b
^5*d*g^2*x^3 + a^2*b^3*c*g^2 + (b^5*c*g^2 + 2*a*b^4*d*g^2)*x^2 + (2*a*b^4*c
*g^2 + a^2*b^3*d*g^2)*x), x)

```

mapad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ci + dix)^2 \left(A + B \ln \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{(ag + bgx)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```

[In] int(((c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x)^
2, x)

```

```

[Out] int(((c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x)^
2, x)

```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```

[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)**2,x)

```

```

[Out] Timed out

```

$$3.70 \quad \int \frac{(ci+dx)^2 \left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)^2}{(ag+bgx)^3} dx$$

Optimal. Leaf size=387

$$\frac{2Bd^2i^2\text{Li}_2\left(\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^3g^3} - \frac{d^2i^2\log\left(1-\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{b^3g^3} - \frac{di^2(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^2g^3(a+bx)}$$

[Out] $-2*B^2*d*i^2*(d*x+c)/b^2/g^3/(b*x+a)-1/4*B^2*i^2*(d*x+c)^2/b/g^3/(b*x+a)^2-2*B*d*i^2*(d*x+c)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^2/g^3/(b*x+a)-1/2*B*i^2*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b/g^3/(b*x+a)^2-d*i^2*(d*x+c)*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/b^2/g^3/(b*x+a)-1/2*i^2*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/b/g^3/(b*x+a)^2-d^2*i^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2*\ln(1-b*(d*x+c)/d/(b*x+a))/b^3/g^3+2*B*d^2*i^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))*\text{polylog}(2,b*(d*x+c)/d/(b*x+a))/b^3/g^3+2*B^2*d^2*i^2*\text{polylog}(3,b*(d*x+c)/d/(b*x+a))/b^3/g^3$

Rubi [B] time = 4.06, antiderivative size = 932, normalized size of antiderivative = 2.41, number of steps used = 73, number of rules used = 20, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}} = 0.476$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610}

$$\frac{3B^2d^2\log^2(a+bx)i^2}{2b^3g^3} - \frac{ABd^2\log^2(a+bx)i^2}{b^3g^3} - \frac{B^2d^2\log\left(-\frac{bc-ad}{d(a+bx)}\right)\log^2\left(\frac{e(a+bx)}{c+dx}\right)i^2}{b^3g^3} - \frac{B^2d^2\log(a+bx)\log^2\left(\frac{e(a+bx)}{c+dx}\right)}{b^3g^3}$$

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2)/(a*g + b*g*x)^3, x]

[Out] $-(B^2*(b*c - a*d)^2*i^2)/(4*b^3*g^3*(a + b*x)^2) - (5*B^2*d*(b*c - a*d)*i^2)/(2*b^3*g^3*(a + b*x)) - (5*B^2*d^2*i^2*Log[a + b*x])/(2*b^3*g^3) - (A*B*d^2*i^2*Log[a + b*x]^2)/(b^3*g^3) + (3*B^2*d^2*i^2*Log[a + b*x]^2)/(2*b^3*g^3) - (B^2*d^2*i^2*Log[-(b*c - a*d)/(d*(a + b*x))])*Log[(e*(a + b*x))/(c + d*x)]^2/(b^3*g^3) - (B^2*d^2*i^2*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)]^2)/(b^3*g^3) - (B*(b*c - a*d)^2*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x]))/(2*b^3*g^3*(a + b*x)^2) - (3*B*d*(b*c - a*d)*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x]))/(b^3*g^3*(a + b*x)) - (3*B*d^2*i^2*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x])))/(b^3*g^3) - ((b*c - a*d)^2*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]^2)/(2*b^3*g^3*(a + b*x)^2) - (2*d*(b*c - a*d)*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]^2)/(b^3*g^3*(a + b*x)) + (d^2*i^2*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]^2)/(b^3*g^3) + (5*B^2*d^2*i^2*Log[c +$

$$\begin{aligned} & d*x))/(2*b^3*g^3) - (3*B^2*d^2*i^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c \\ & + d*x))/(b^3*g^3) + (3*B*d^2*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]*Log[c \\ & + d*x))/(b^3*g^3) + (3*B^2*d^2*i^2*Log[c + d*x]^2)/(2*b^3*g^3) + (2*A*B*d^ \\ & 2*i^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)]/(b^3*g^3) - (3*B^2*d^2*i \\ & ^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)]/(b^3*g^3) + (2*A*B*d^2*i^2* \\ & PolyLog[2, -((d*(a + b*x))/(b*c - a*d))]/(b^3*g^3) - (3*B^2*d^2*i^2*PolyLo \\ & g[2, -((d*(a + b*x))/(b*c - a*d))]/(b^3*g^3) - (3*B^2*d^2*i^2*PolyLog[2, (\\ & b*(c + d*x))/(b*c - a*d)]/(b^3*g^3) + (2*B^2*d^2*i^2*Log[(e*(a + b*x))/(c \\ & + d*x)]*PolyLog[2, 1 + (b*c - a*d)/(d*(a + b*x))]/(b^3*g^3) + (2*B^2*d^2*i \\ & ^2*PolyLog[3, 1 + (b*c - a*d)/(d*(a + b*x))]/(b^3*g^3) \end{aligned}$$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 44

Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])

Rule 2301

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2317

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol] := Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e, Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]

Rule 2344

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))), x_Symbol] := Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n]

$n])^p, x], x, d + e*x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g, n, p, q\}, x] \&\& \text{EqQ}[e*f - d*g, 0]$

Rule 2391

$\text{Int}[\text{Log}[(c_.)*((d_) + (e_.)*(x_)^{(n_.)})]/(x_), x_Symbol] \text{:>} -\text{Simp}[\text{PolyLog}[2, -(c*e*x^n)]/n, x] /; \text{FreeQ}[\{c, d, e, n\}, x] \&\& \text{EqQ}[c*d, 1]$

Rule 2393

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_) + (e_.)*(x_))]*(b_.)]/((f_.) + (g_.)*(x_)), x_Symbol] \text{:>} \text{Dist}[1/g, \text{Subst}[\text{Int}[(a + b*\text{Log}[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g\}, x] \&\& \text{NeQ}[e*f - d*g, 0] \&\& \text{EqQ}[g + c*(e*f - d*g), 0]$

Rule 2394

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_) + (e_.)*(x_)^{(n_.)})]*(b_.)]/((f_.) + (g_.)*(x_)), x_Symbol] \text{:>} \text{Simp}[(\text{Log}[(e*(f + g*x))/(e*f - d*g)]*(a + b*\text{Log}[c*(d + e*x)^n]))/g, x] - \text{Dist}[(b*e*n)/g, \text{Int}[\text{Log}[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g, n\}, x] \&\& \text{NeQ}[e*f - d*g, 0]$

Rule 2411

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_) + (e_.)*(x_)^{(n_.)})]*(b_.)]^{(p_.)*((f_.) + (g_.)*(x_))^{(q_.)*((h_.) + (i_.)*(x_))^{(r_.)}}, x_Symbol] \text{:>} \text{Dist}[1/e, \text{Subst}[\text{Int}[(g*x)/e]^q*(e*h - d*i)/e + (i*x)/e)^r*(a + b*\text{Log}[c*x^n])^p, x], x, d + e*x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g, h, i, n, p, q, r\}, x] \&\& \text{EqQ}[e*f - d*g, 0] \&\& (\text{IGtQ}[p, 0] \mid\mid \text{IGtQ}[r, 0]) \&\& \text{IntegerQ}[2*r]$

Rule 2418

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_) + (e_.)*(x_)^{(n_.)})]*(b_.)]^{(p_.)}*(\text{RFx}_), x_Symbol] \text{:>} \text{With}[\{u = \text{ExpandIntegrand}[(a + b*\text{Log}[c*(d + e*x)^n])^p, \text{RFx}, x]\}, \text{Int}[u, x] /; \text{SumQ}[u] /; \text{FreeQ}[\{a, b, c, d, e, n\}, x] \&\& \text{RationalFunctionQ}[\text{RFx}, x] \&\& \text{IntegerQ}[p]$

Rule 2488

$\text{Int}[\text{Log}[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^{(p_.)*((c_.) + (d_.)*(x_))^{(q_.)})^{(r_.)}]^{(s_.)}]/((g_.) + (h_.)*(x_)), x_Symbol] \text{:>} -\text{Simp}[(\text{Log}[-((b*c - a*d)/(d*(a + b*x))])* \text{Log}[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/h, x] + \text{Dist}[(p*r*s*(b*c - a*d))/h, \text{Int}[(\text{Log}[-((b*c - a*d)/(d*(a + b*x))])* \text{Log}[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1)/((a + b*x)*(c + d*x)), x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g, h, p, q, r, s\}, x] \&\& \text{NeQ}[b*c - a*d, 0] \&\& \text{EqQ}[p + q, 0] \&\& \text{EqQ}$

$[b*g - a*h, 0] \&\& \text{IGtQ}[s, 0]$

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] := With[{g = Simplify[(v - 1)*(c + d*x)/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/(b*c - a*d), x] + Dist[h*p*r*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1)/(a + b*x)*(c + d*x), x], x] /; FreeQ[{g, h}, x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_Symbol] := With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g + h*x)^t]^u)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s + 1)/(p*r*(s + 1)*(b*c - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s + 1)/(g + h*x), x], x] /; FreeQ[k, x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x]
```


onQ[RGx, x] && IGtQ[n, 0]

Rule 6610

Int[(u_)*PolyLog[n_, v_], x_Symbol] :=> With[{w = DerivativeDivides[v, u*v, x]}, Simp[w*PolyLog[n + 1, v], x] /; !FalseQ[w]] /; FreeQ[n, x]

Rule 6688

Int[u_, x_Symbol] :=> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; SimplifierIntegrandQ[v, u, x]]

Rule 6742

Int[u_, x_Symbol] :=> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]]

Rubi steps

$$\begin{aligned}
\int \frac{(70c + 70dx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{(ag + bgx)^3} dx &= \int \left(\frac{4900(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^2 g^3 (a + bx)^3} + \frac{9800d(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2 g^3 (a + bx)^2} \right) dx \\
&= \frac{(4900d^2) \int \frac{\left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{a+bx} dx}{b^2 g^3} + \frac{(9800d(bc - ad)) \int \frac{\left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{(a+bx)^2} dx}{b^2 g^3} \\
&= -\frac{2450(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^3 g^3 (a + bx)^2} - \frac{9800d(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3 g^3 (a + bx)} \\
&= -\frac{2450(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^3 g^3 (a + bx)^2} - \frac{9800d(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3 g^3 (a + bx)} \\
&= -\frac{2450(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^3 g^3 (a + bx)^2} - \frac{9800d(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3 g^3 (a + bx)} \\
&= -\frac{2450(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^3 g^3 (a + bx)^2} - \frac{9800d(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3 g^3 (a + bx)} \\
&= -\frac{2450B(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3 g^3 (a + bx)^2} - \frac{14700Bd(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3 g^3 (a + bx)} \\
&= -\frac{2450B(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3 g^3 (a + bx)^2} - \frac{14700Bd(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3 g^3 (a + bx)} \\
&= -\frac{4900B^2 d^2 \log(a + bx) \log^2 \left(\frac{e(a+bx)}{c+dx} \right)}{b^3 g^3} - \frac{2450B(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3 g^3 (a + bx)^2} \\
&= -\frac{1225B^2 (bc - ad)^2}{b^3 g^3 (a + bx)^2} - \frac{12250B^2 d (bc - ad)}{b^3 g^3 (a + bx)} - \frac{12250B^2 d^2 \log(a + bx)}{b^3 g^3} \\
&= -\frac{1225B^2 (bc - ad)^2}{b^3 g^3 (a + bx)^2} - \frac{12250B^2 d (bc - ad)}{b^3 g^3 (a + bx)} - \frac{12250B^2 d^2 \log(a + bx)}{b^3 g^3} \\
&= -\frac{1225B^2 (bc - ad)^2}{b^3 g^3 (a + bx)^2} - \frac{12250B^2 d (bc - ad)}{b^3 g^3 (a + bx)} - \frac{12250B^2 d^2 \log(a + bx)}{b^3 g^3} \\
&= -\frac{1225B^2 (bc - ad)^2}{b^3 g^3 (a + bx)^2} - \frac{12250B^2 d (bc - ad)}{b^3 g^3 (a + bx)} - \frac{12250B^2 d^2 \log(a + bx)}{b^3 g^3}
\end{aligned}$$

Mathematica [B] time = 7.13, size = 3582, normalized size = 9.26

Result too large to show

Antiderivative was successfully verified.

[In] Integrate[(((c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))^2)/(a*g + b*g*x)^3,x]

[Out]
$$\begin{aligned} & (i^2*(-6*A^2*(b*c - a*d)^4 + 24*A^2*d*(-(b*c) + a*d)^3*(a + b*x) + 12*A^2*d \\ & ^2*(b*c - a*d)^2*(a + b*x)^2*\text{Log}[a + b*x] - 6*A*b^2*B*c^2*(b^2*c^2 - 4*a*b* \\ & c*d + a^2*d^2 - 2*b^2*c*d*x - 2*a*b*d^2*x - 2*b^2*d^2*x^2 + 2*d^2*(a + b*x) \\ & ^2*\text{Log}[c/d + x] - 2*d^2*(a + b*x)^2*\text{Log}[(d*(a + b*x))/(-(b*c) + a*d)] + 2*b \\ & ^2*c^2*\text{Log}[(e*(a + b*x))/(c + d*x)] - 4*a*b*c*d*\text{Log}[(e*(a + b*x))/(c + d*x) \\ &] + 2*a^2*d^2*\text{Log}[(e*(a + b*x))/(c + d*x])) - 12*A*b*B*c*d*(3*a*b^2*c^2 - 4 \\ & *a^2*b*c*d + a^3*d^2 + 4*b^3*c^2*x - 6*a*b^2*c*d*x + 2*a^2*b*d^2*x - 2*d*(- \\ & 2*b*c + a*d)*(a + b*x)^2*\text{Log}[a + b*x] + 2*(b*c - a*d)^2*(a + 2*b*x)*\text{Log}[(e \\ & (a + b*x))/(c + d*x)] - 4*a^2*b*c*d*\text{Log}[c + d*x] + 2*a^3*d^2*\text{Log}[c + d*x] - \\ & 8*a*b^2*c*d*x*\text{Log}[c + d*x] + 4*a^2*b*d^2*x*\text{Log}[c + d*x] - 4*b^3*c*d*x^2*\text{Lo} \\ & g[c + d*x] + 2*a*b^2*d^2*x^2*\text{Log}[c + d*x]) - 3*b^2*B^2*c^2*((b*c - a*d)^2 + \\ & 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d^2*(a + b*x)^2*\text{Log}[a + b*x] + 2*(b*c - a \\ & d)^2*\text{Log}[(e*(a + b*x))/(c + d*x)] + 4*d*(-(b*c) + a*d)*(a + b*x)*\text{Log}[(e*(a \\ & + b*x))/(c + d*x)] - 4*d^2*(a + b*x)^2*\text{Log}[a + b*x]*\text{Log}[(e*(a + b*x))/(c + \\ & d*x)] + 2*(b*c - a*d)^2*\text{Log}[(e*(a + b*x))/(c + d*x)]^2 + 2*d^2*(a + b*x)^2 \\ & *\text{Log}[c + d*x] - 4*d*(a + b*x)*(b*c - a*d + d*(a + b*x))*\text{Log}[a + b*x] - d*(a \\ & + b*x)*\text{Log}[c + d*x]) - 4*d^2*(a + b*x)^2*\text{Log}[(e*(a + b*x))/(c + d*x)]*\text{Log}[(\\ & b*c - a*d)/(b*c + b*d*x)] + 2*d^2*(a + b*x)^2*(\text{Log}[a + b*x]*(\text{Log}[a + b*x] - \\ & 2*\text{Log}[(b*(c + d*x))/(b*c - a*d)]) - 2*\text{PolyLog}[2, (d*(a + b*x))/(-(b*c) + a \\ & *d)]) + 2*d^2*(a + b*x)^2*(\text{Log}[(b*c - a*d)/(b*c + b*d*x)]*(2*\text{Log}[(d*(a + b* \\ & x))/(-(b*c) + a*d)] + \text{Log}[(b*c - a*d)/(b*c + b*d*x)]) - 2*\text{PolyLog}[2, (b*(c \\ & + d*x))/(b*c - a*d)]) + 6*A*B*d^2*(2*(b*c - a*d)^2*(a + b*x)^2*\text{Log}[a/b + x \\ &]^2 + 8*a*(b*c - a*d)^2*(a + b*x)*(1 + \text{Log}[a/b + x]) - a^2*(b*c - a*d)^2*(1 \\ & + 2*\text{Log}[a/b + x]) - 2*(b*c - a*d)^2*(a*(3*a + 4*b*x) + 2*(a + b*x)^2*\text{Log}[a \\ & + b*x])*(\text{Log}[a/b + x] - \text{Log}[c/d + x] - \text{Log}[(e*(a + b*x))/(c + d*x)]) + 8*a \\ & *(b*c - a*d)*(a + b*x)*((-b*c) + a*d)*\text{Log}[c/d + x] + d*(a + b*x)*(\text{Log}[a + \\ & b*x] - \text{Log}[c + d*x]) + 2*a^2*((b*c - a*d)^2*\text{Log}[c/d + x] + d*(a + b*x)*(b* \\ & c - a*d + d*(a + b*x)*\text{Log}[a + b*x] - d*(a + b*x)*\text{Log}[c + d*x])) - 4*(b*c - \\ & a*d)^2*(a + b*x)^2*(\text{Log}[c/d + x]*\text{Log}[(d*(a + b*x))/(-(b*c) + a*d)] + \text{PolyLo} \\ & g[2, (b*(c + d*x))/(b*c - a*d)]) - 6*b*B^2*c*d*(4*(b*c - a*d)^2*(a + b*x)* \\ & (2 + 2*\text{Log}[a/b + x] + \text{Log}[a/b + x]^2) - a*(b*c - a*d)^2*(1 + 2*\text{Log}[a/b + x] \\ & + 2*\text{Log}[a/b + x]^2) + 2*(b*c - a*d)^2*(a + 2*b*x)*(-\text{Log}[a/b + x] + \text{Log}[c/d \\ & + x] + \text{Log}[(e*(a + b*x))/(c + d*x]))^2 - 2*(\text{Log}[a/b + x] - \text{Log}[c/d + x] - \\ & \text{Log}[(e*(a + b*x))/(c + d*x]))*(4*(b*c - a*d)^2*(a + b*x)*(1 + \text{Log}[a/b + x]) \\ & - a*(b*c - a*d)^2*(1 + 2*\text{Log}[a/b + x]) - 4*(b*c - a*d)*(a + b*x)*((b*c - a \\ & d)*\text{Log}[c/d + x] - d*(a + b*x)*(\text{Log}[a + b*x] - \text{Log}[c + d*x])) + 2*a*((b*c - \end{aligned}$$

$$\begin{aligned}
& a*d)^2*\text{Log}[c/d + x] + d*(a + b*x)*(b*c - a*d + d*(a + b*x)*\text{Log}[a + b*x] - \\
& d*(a + b*x)*\text{Log}[c + d*x])) + 4*(b*c - a*d)*(a + b*x)*(d*(a + b*x)*\text{Log}[a/b \\
& + x]^2 + 2*((-b*c) + a*d)*\text{Log}[c/d + x] + d*(a + b*x)*(\text{Log}[a + b*x] - \text{Log}[c \\
& + d*x])) - 2*\text{Log}[a/b + x]*((b*c - a*d)*\text{Log}[c/d + x] + d*(a + b*x)*\text{Log}[(b*(c \\
& + d*x))/(b*c - a*d)]) - 2*d*(a + b*x)*\text{PolyLog}[2, (d*(a + b*x))/(-b*c) + \\
& a*d)] - 2*a*(d*(-b*c) + a*d)*(a + b*x) - (b*c - a*d)^2*(1 + 2*\text{Log}[a/b + x \\
&])*\text{Log}[c/d + x] - d^2*(a + b*x)^2*\text{Log}[a + b*x] + d^2*(a + b*x)^2*\text{Log}[c + d* \\
& x] - d*(a + b*x)*(d*(a + b*x)*\text{Log}[a/b + x]^2 + 2*(b*c - a*d)*(1 + \text{Log}[a/b + \\
& x]) - 2*d*(a + b*x)*(\text{Log}[a/b + x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)] + \text{PolyLog} \\
& [2, (d*(a + b*x))/(-b*c) + a*d])) + 4*(b*c - a*d)*(a + b*x)*(\text{Log}[c/d + x \\
&]*(b*(c + d*x)*\text{Log}[c/d + x] - 2*d*(a + b*x)*\text{Log}[(d*(a + b*x))/(-b*c) + a*d \\
&])) - 2*d*(a + b*x)*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)] + 2*a*(2*d*(-b*c \\
& + a*d)*(a + b*x)*\text{Log}[c/d + x] - (b*c - a*d)^2*\text{Log}[c/d + x]^2 + d^2*(a + \\
& b*x)^2*\text{Log}[c/d + x]^2 + 2*d^2*(a + b*x)^2*\text{Log}[a + b*x] - 2*d^2*(a + b*x)^2* \\
& \text{Log}[c/d + x]*\text{Log}[(d*(a + b*x))/(-b*c) + a*d]) - 2*d^2*(a + b*x)^2*\text{Log}[c + \\
& d*x] - 2*d^2*(a + b*x)^2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]) + B^2*d^2* \\
& (4*(b*c - a*d)^2*(a + b*x)^2*\text{Log}[a/b + x]^3 + 24*a*(b*c - a*d)^2*(a + b*x)* \\
& (2 + 2*\text{Log}[a/b + x] + \text{Log}[a/b + x]^2) - 3*a^2*(b*c - a*d)^2*(1 + 2*\text{Log}[a/b \\
& + x] + 2*\text{Log}[a/b + x]^2) + 6*(b*c - a*d)^2*(a*(3*a + 4*b*x) + 2*(a + b*x)^2 \\
& *\text{Log}[a + b*x])*(-\text{Log}[a/b + x] + \text{Log}[c/d + x] + \text{Log}[(e*(a + b*x))/(c + d*x)] \\
&)^2 + 24*a*(b*c - a*d)*(a + b*x)*(\text{Log}[c/d + x]*(b*(c + d*x)*\text{Log}[c/d + x] - \\
& 2*d*(a + b*x)*\text{Log}[(d*(a + b*x))/(-b*c) + a*d])) - 2*d*(a + b*x)*\text{PolyLog}[2, \\
& (b*(c + d*x))/(b*c - a*d)] + 6*a^2*(2*d*(-b*c) + a*d)*(a + b*x)*\text{Log}[c/d \\
& + x] - (b*c - a*d)^2*\text{Log}[c/d + x]^2 + d^2*(a + b*x)^2*\text{Log}[c/d + x]^2 + 2*d^ \\
& 2*(a + b*x)^2*\text{Log}[a + b*x] - 2*d^2*(a + b*x)^2*\text{Log}[c/d + x]*\text{Log}[(d*(a + b*x) \\
&)/(-b*c) + a*d]) - 2*d^2*(a + b*x)^2*\text{Log}[c + d*x] - 2*d^2*(a + b*x)^2*\text{Pol} \\
& y\text{Log}[2, (b*(c + d*x))/(b*c - a*d)] - 6*(\text{Log}[a/b + x] - \text{Log}[c/d + x] - \text{Log} \\
& [(e*(a + b*x))/(c + d*x)])*(2*(b*c - a*d)^2*(a + b*x)^2*\text{Log}[a/b + x]^2 + 8*a \\
& *(b*c - a*d)^2*(a + b*x)*(1 + \text{Log}[a/b + x]) - a^2*(b*c - a*d)^2*(1 + 2*\text{Log} \\
& [a/b + x]) - 8*a*(b*c - a*d)*(a + b*x)*((b*c - a*d)*\text{Log}[c/d + x] - d*(a + b* \\
& x)*(\text{Log}[a + b*x] - \text{Log}[c + d*x])) + 2*a^2*((b*c - a*d)^2*\text{Log}[c/d + x] + d*(\\
& a + b*x)*(b*c - a*d + d*(a + b*x)*\text{Log}[a + b*x] - d*(a + b*x)*\text{Log}[c + d*x])) \\
& - 4*(b*c - a*d)^2*(a + b*x)^2*(\text{Log}[c/d + x]*\text{Log}[(d*(a + b*x))/(-b*c) + a* \\
& d]) + \text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]) + 6*(4*a*(b*c - a*d)*(a + b*x) \\
&)*(d*(a + b*x)*\text{Log}[a/b + x]^2 + 2*((-b*c) + a*d)*\text{Log}[c/d + x] + d*(a + b*x) \\
&)*(\text{Log}[a + b*x] - \text{Log}[c + d*x])) - 2*\text{Log}[a/b + x]*((b*c - a*d)*\text{Log}[c/d + x] \\
& + d*(a + b*x)*\text{Log}[(b*(c + d*x))/(b*c - a*d)]) - 2*d*(a + b*x)*\text{PolyLog}[2, (\\
& d*(a + b*x))/(-b*c) + a*d)] - a^2*(d*(-b*c) + a*d)*(a + b*x) - (b*c - a* \\
& d)^2*(1 + 2*\text{Log}[a/b + x])* \text{Log}[c/d + x] - d^2*(a + b*x)^2*\text{Log}[a + b*x] + d^2 \\
& *(a + b*x)^2*\text{Log}[c + d*x] - d*(a + b*x)*(d*(a + b*x)*\text{Log}[a/b + x]^2 + 2*(b* \\
& c - a*d)*(1 + \text{Log}[a/b + x]) - 2*d*(a + b*x)*(\text{Log}[a/b + x]*\text{Log}[(b*(c + d*x) \\
&)/(b*c - a*d)] + \text{PolyLog}[2, (d*(a + b*x))/(-b*c) + a*d)])) - 2*(b*c - a*d) \\
& ^2*(a + b*x)^2*(\text{Log}[a/b + x]^2*(\text{Log}[c/d + x] - \text{Log}[(b*(c + d*x))/(b*c - a*d \\
&])) - 2*\text{Log}[a/b + x]*\text{PolyLog}[2, (d*(a + b*x))/(-b*c) + a*d)] + 2*\text{PolyLog}[3 \\
& , (d*(a + b*x))/(-b*c) + a*d)]) + 12*(b*c - a*d)^2*(a + b*x)^2*(\text{Log}[c/d +
\end{aligned}$$

$x^2 \text{Log}[(d(a + bx))/(-bc + ad)] + 2 \text{Log}[c/d + x] \text{PolyLog}[2, (b(c + dx))/(bc - ad)] - 2 \text{PolyLog}[3, (b(c + dx))/(bc - ad)])))/(12b^3(bc - ad)^2g^3(a + bx)^2)$

fricas [F] time = 0.97, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{A^2 d^2 i^2 x^2 + 2 A^2 c d i^2 x + A^2 c^2 i^2 + (B^2 d^2 i^2 x^2 + 2 B^2 c d i^2 x + B^2 c^2 i^2) \log\left(\frac{bex+ae}{dx+c}\right)^2 + 2 (ABd^2 i^2 x^2 + 2 ABcd i^2 x + A^2 Bc^2 i^2) \log\left(\frac{bex+ae}{dx+c}\right)}{b^3 g^3 x^3 + 3 ab^2 g^3 x^2 + 3 a^2 b g^3 x + a^3 g^3}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^3,x, algorithm="fricas")

[Out] integral((A^2*d^2*i^2*x^2 + 2*A^2*c*d*i^2*x + A^2*c^2*i^2 + (B^2*d^2*i^2*x^2 + 2*B^2*c*d*i^2*x + B^2*c^2*i^2)*log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*B*d^2*i^2*x^2 + 2*A*B*c*d*i^2*x + A*B*c^2*i^2)*log((b*e*x + a*e)/(d*x + c)))/(b^3*g^3*x^3 + 3*a*b^2*g^3*x^2 + 3*a^2*b*g^3*x + a^3*g^3), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^3,x, algorithm="giac")

[Out] Timed out

maple [F] time = 2.05, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci)^2 \left(B \ln\left(\frac{bx+ae}{dx+c}\right) + A \right)^2}{(bgx + ag)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^3,x)

[Out] int((d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^3,x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^3,x, algorithm="maxima")

[Out]
$$-A*B*c*d*i^2*(2*(2*b*x + a)*\log(b*e*x/(d*x + c) + a*e/(d*x + c)))/(b^4*g^3*x^2 + 2*a*b^3*g^3*x + a^2*b^2*g^3) + (3*a*b*c - a^2*d + 2*(2*b^2*c - a*b*d)*x)/((b^5*c - a*b^4*d)*g^3*x^2 + 2*(a*b^4*c - a^2*b^3*d)*g^3*x + (a^2*b^3*c - a^3*b^2*d)*g^3) + 2*(2*b*c*d - a*d^2)*\log(b*x + a)/((b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)*g^3) - 2*(2*b*c*d - a*d^2)*\log(d*x + c)/((b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)*g^3) + 1/2*A^2*d^2*i^2*((4*a*b*x + 3*a^2)/(b^5*g^3*x^2 + 2*a*b^4*g^3*x + a^2*b^3*g^3) + 2*\log(b*x + a)/(b^3*g^3)) + 1/2*A*B*c^2*i^2*((2*b*d*x - b*c + 3*a*d)/((b^4*c - a*b^3*d)*g^3*x^2 + 2*(a*b^3*c - a^2*b^2*d)*g^3*x + (a^2*b^2*c - a^3*b*d)*g^3) - 2*\log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^3*g^3*x^2 + 2*a*b^2*g^3*x + a^2*b*g^3) + 2*d^2*\log(b*x + a)/((b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*g^3) - 2*d^2*\log(d*x + c)/((b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*g^3) - (2*b*x + a)*A^2*c*d*i^2/(b^4*g^3*x^2 + 2*a*b^3*g^3*x + a^2*b^2*g^3) - 1/2*A^2*c^2*i^2/(b^3*g^3*x^2 + 2*a*b^2*g^3*x + a^2*b*g^3) - 1/2*(4*(b^2*c*d*i^2 - a*b*d^2*i^2)*B^2*x + (b^2*c^2*i^2 + 2*a*b*c*d*i^2 - 3*a^2*d^2*i^2)*B^2 - 2*(B^2*b^2*d^2*i^2*x^2 + 2*B^2*a*b*d^2*i^2*x + B^2*a^2*d^2*i^2)*\log(b*x + a))*\log(d*x + c)^2/(b^5*g^3*x^2 + 2*a*b^4*g^3*x + a^2*b^3*g^3) - \int(-3*B^2*b^3*c^2*d*i^2*x*\log(e)^2 + B^2*b^3*c^3*i^2*\log(e)^2 + (B^2*b^3*d^3*i^2*\log(e)^2 + 2*A*B*b^3*d^3*i^2*\log(e))*x^3 + (3*B^2*b^3*c*d^2*i^2*\log(e)^2 + 2*A*B*b^3*c*d^2*i^2*\log(e))*x^2 + (B^2*b^3*d^3*i^2*x^3 + 3*B^2*b^3*c*d^2*i^2*x^2 + 3*B^2*b^3*c^2*d*i^2*x + B^2*b^3*c^3*i^2)*\log(b*x + a)^2 + 2*(3*B^2*b^3*c^2*d*i^2*x*\log(e) + B^2*b^3*c^3*i^2*\log(e) + (B^2*b^3*d^3*i^2*\log(e) + A*B*b^3*d^3*i^2))*x^3 + (3*B^2*b^3*c*d^2*i^2*\log(e) + A*B*b^3*c*d^2*i^2)*x^2)*\log(b*x + a) + ((6*a*b^2*c*d^2*i^2 - 7*a^2*b*d^3*i^2 - (6*i^2*\log(e) - i^2)*b^3*c^2*d)*B^2*x - 2*(B^2*b^3*d^3*i^2*\log(e) + A*B*b^3*d^3*i^2)*x^3 - (2*b^3*c^3*i^2*\log(e) - a*b^2*c^2*d*i^2 - 2*a^2*b*c*d^2*i^2 + 3*a^3*d^3*i^2)*B^2 - 2*(A*B*b^3*c*d^2*i^2 + (2*a*b^2*d^3*i^2 + (3*i^2*\log(e) - 2*i^2)*b^3*c*d^2)*B^2))*x^2 - 2*(2*B^2*b^3*d^3*i^2*x^3 + 3*(b^3*c*d^2*i^2 + a*b^2*d^3*i^2)*B^2*x^2 + 3*(b^3*c^2*d*i^2 + a^2*b*d^3*i^2)*B^2*x + (b^3*c^3*i^2 + a^3*d^3*i^2)*B^2)*\log(b*x + a))*\log(d*x + c))/(b^6*d*g^3*x^4 + a^3*b^3*c*g^3 + (b^6*c*g^3 + 3*a*b^5*d*g^3)*x^3 + 3*(a*b^5*c*g^3 + a^2*b^4*d*g^3)*x^2 + (3*a^2*b^4*c*g^3 + a^3*b^3*d*g^3)*x), x)$$

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ci + dix)^2 \left(A + B \ln \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{(ag + bgx)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x)^3,x)

[Out] int(((c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x)^3, x)

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$i^2 \left(\int \frac{A^2 c^2}{a^3 + 3a^2 b x + 3ab^2 x^2 + b^3 x^3} dx + \int \frac{A^2 d^2 x^2}{a^3 + 3a^2 b x + 3ab^2 x^2 + b^3 x^3} dx + \int \frac{B^2 c^2 \log\left(\frac{ae}{c+dx} + \frac{bex}{c+dx}\right)^2}{a^3 + 3a^2 b x + 3ab^2 x^2 + b^3 x^3} dx + \int \frac{2ABc^2 \log\left(\frac{ae}{c+dx} + \frac{bex}{c+dx}\right)}{a^3 + 3a^2 b x + 3ab^2 x^2 + b^3 x^3} dx + \int \right.$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)**3,x)

[Out] i**2*(Integral(A**2*c**2/(a**3 + 3*a**2*b*x + 3*a*b**2*x**2 + b**3*x**3), x) + Integral(A**2*d**2*x**2/(a**3 + 3*a**2*b*x + 3*a*b**2*x**2 + b**3*x**3), x) + Integral(B**2*c**2*log(a*e/(c + d*x) + b*e*x/(c + d*x))**2/(a**3 + 3*a**2*b*x + 3*a*b**2*x**2 + b**3*x**3), x) + Integral(2*A*B*c**2*log(a*e/(c + d*x) + b*e*x/(c + d*x))/(a**3 + 3*a**2*b*x + 3*a*b**2*x**2 + b**3*x**3), x) + Integral(2*A**2*c*d*x/(a**3 + 3*a**2*b*x + 3*a*b**2*x**2 + b**3*x**3), x) + Integral(B**2*d**2*x**2*log(a*e/(c + d*x) + b*e*x/(c + d*x))**2/(a**3 + 3*a**2*b*x + 3*a*b**2*x**2 + b**3*x**3), x) + Integral(2*A*B*d**2*x**2*log(a*e/(c + d*x) + b*e*x/(c + d*x))/(a**3 + 3*a**2*b*x + 3*a*b**2*x**2 + b**3*x**3), x) + Integral(2*B**2*c*d*x*log(a*e/(c + d*x) + b*e*x/(c + d*x))**2/(a**3 + 3*a**2*b*x + 3*a*b**2*x**2 + b**3*x**3), x) + Integral(4*A*B*c*d*x*log(a*e/(c + d*x) + b*e*x/(c + d*x))/(a**3 + 3*a**2*b*x + 3*a*b**2*x**2 + b**3*x**3), x))/g**3

$$3.71 \quad \int \frac{(ci+dx)^2 \left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)^2}{(ag+bgx)^4} dx$$

Optimal. Leaf size=147

$$\frac{i^2(c+dx)^3 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)^2}{3g^4(a+bx)^3(bc-ad)} - \frac{2Bi^2(c+dx)^3 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{9g^4(a+bx)^3(bc-ad)} - \frac{2B^2i^2(c+dx)^3}{27g^4(a+bx)^3(bc-ad)}$$

[Out] $-2/27*B^2*i^2*(d*x+c)^3/(-a*d+b*c)/g^4/(b*x+a)^3-2/9*B*i^2*(d*x+c)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)/g^4/(b*x+a)^3-1/3*i^2*(d*x+c)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/(-a*d+b*c)/g^4/(b*x+a)^3$

Rubi [C] time = 3.13, antiderivative size = 827, normalized size of antiderivative = 5.63, number of steps used = 92, number of rules used = 11, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}} = 0.262$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{B^2i^2 \log^2(a+bx)d^3}{3b^3(bc-ad)g^4} + \frac{B^2i^2 \log^2(c+dx)d^3}{3b^3(bc-ad)g^4} - \frac{2B^2i^2 \log(a+bx)d^3}{9b^3(bc-ad)g^4} - \frac{2Bi^2 \log(a+bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right) d^3}{3b^3(bc-ad)g^4} + \frac{2B^2i^2}{9b^3}$$

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b*g*x)^4, x]

[Out] $(-2*B^2*(b*c - a*d)^2*i^2)/(27*b^3*g^4*(a + b*x)^3) - (2*B^2*d*(b*c - a*d)*i^2)/(9*b^3*g^4*(a + b*x)^2) - (2*B^2*d^2*i^2)/(9*b^3*g^4*(a + b*x)) - (2*B^2*d^3*i^2*Log[a + b*x])/(9*b^3*(b*c - a*d)*g^4) + (B^2*d^3*i^2*Log[a + b*x]^2)/(3*b^3*(b*c - a*d)*g^4) - (2*B*(b*c - a*d)^2*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(9*b^3*g^4*(a + b*x)^3) - (2*B*d*(b*c - a*d)*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(3*b^3*g^4*(a + b*x)^2) - (2*B*d^2*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(3*b^3*g^4*(a + b*x)) - (2*B*d^3*i^2*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(3*b^3*(b*c - a*d)*g^4) - ((b*c - a*d)^2*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(3*b^3*g^4*(a + b*x)^3) - (d*(b*c - a*d)*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(b^3*g^4*(a + b*x)^2) - (d^2*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(b^3*g^4*(a + b*x)) + (2*B^2*d^3*i^2*Log[c + d*x])/(9*b^3*(b*c - a*d)*g^4) - (2*B^2*d^3*i^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(3*b^3*(b*c - a*d)*g^4) + (2*B*d^3*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/(3*b^3*(b*c - a*d)*g^4) + (B^2*d^3*i^2*Log[c + d*x]^2)/(3*b^3*(b*c - a*d)*g^4) - (2*B^2*d^3*i^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)]/(3*b^3*(b*c - a*d)*g^4) - (2*B^2*d^3*i^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(3*b^3*(b$

$*c - a*d)*g^4) - (2*B^2*d^3*i^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]/(3*b^3*(b*c - a*d)*g^4)$

Rule 12

$Int[(a_)*(u_), x_Symbol] \rightarrow Dist[a, Int[u, x], x] /; FreeQ[a, x] \&\& !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]$

Rule 44

$Int[((a_) + (b_)*(x_))^(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] \rightarrow Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] \&\& NeQ[b*c - a*d, 0] \&\& ILtQ[m, 0] \&\& IntegerQ[n] \&\& !(IGtQ[n, 0] \&\& LtQ[m + n + 2, 0])$

Rule 2301

$Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] \rightarrow Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]$

Rule 2390

$Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.)*(x_))^(q_.), x_Symbol] \rightarrow Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] \&\& EqQ[e*f - d*g, 0]$

Rule 2391

$Int[Log[(c_.)*((d_) + (e_.)*(x_))^(n_.))]/(x_), x_Symbol] \rightarrow -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] \&\& EqQ[c*d, 1]$

Rule 2393

$Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))])*(b_.)/((f_.) + (g_.)*(x_)), x_Symbol] \rightarrow Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] \&\& NeQ[e*f - d*g, 0] \&\& EqQ[g + c*(e*f - d*g), 0]$

Rule 2394

$Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.)/((f_.) + (g_.)*(x_))), x_Symbol] \rightarrow Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e^n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] \&\& NeQ[e*f - d*g, 0]$

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(Rfx_), x_Symbol]
:= With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, Rfx, x]},
Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
Rfx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol]
:= Simp[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^n)/e, x] - Dist[(b*n*p)/e,
Int[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.),
x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1)),
x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /; FreeQ[{a, b, c, d,
e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(Rgx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, Rgx, x]}, Int[u, x] /; SumQ[u]]
/; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[
Rgx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(71c + 71dx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{(ag + bgx)^4} dx &= \int \left(\frac{5041(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^2g^4(a + bx)^4} + \frac{10082d(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g^4(a + bx)^4} \right) dx \\
&= \frac{(5041d^2) \int \frac{\left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{(a+bx)^2} dx}{b^2g^4} + \frac{(10082d(bc - ad)) \int \frac{\left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{(a+bx)^3} dx}{b^2g^4} \\
&= -\frac{5041(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{3b^3g^4(a + bx)^3} - \frac{5041d(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3g^4(a + bx)^3} \\
&= -\frac{5041(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{3b^3g^4(a + bx)^3} - \frac{5041d(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3g^4(a + bx)^3} \\
&= -\frac{5041(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{3b^3g^4(a + bx)^3} - \frac{5041d(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3g^4(a + bx)^3} \\
&= -\frac{5041(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{3b^3g^4(a + bx)^3} - \frac{5041d(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3g^4(a + bx)^3} \\
&= -\frac{10082B(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{9b^3g^4(a + bx)^3} - \frac{10082Bd(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{3b^3g^4(a + bx)^3} \\
&= -\frac{10082B(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{9b^3g^4(a + bx)^3} - \frac{10082Bd(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{3b^3g^4(a + bx)^3} \\
&= -\frac{10082B(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{9b^3g^4(a + bx)^3} - \frac{10082Bd(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{3b^3g^4(a + bx)^3} \\
&= -\frac{10082B^2(bc - ad)^2}{27b^3g^4(a + bx)^3} - \frac{10082B^2d(bc - ad)}{9b^3g^4(a + bx)^2} - \frac{10082B^2d^2}{9b^3g^4(a + bx)} - \frac{10082Bd^2}{3b^3g^4(a + bx)} \\
&= -\frac{10082B^2(bc - ad)^2}{27b^3g^4(a + bx)^3} - \frac{10082B^2d(bc - ad)}{9b^3g^4(a + bx)^2} - \frac{10082B^2d^2}{9b^3g^4(a + bx)} - \frac{10082Bd^2}{3b^3g^4(a + bx)} \\
&= -\frac{10082B^2(bc - ad)^2}{27b^3g^4(a + bx)^3} - \frac{10082B^2d(bc - ad)}{9b^3g^4(a + bx)^2} - \frac{10082B^2d^2}{9b^3g^4(a + bx)} - \frac{10082Bd^2}{3b^3g^4(a + bx)} \\
&= -\frac{10082B^2(bc - ad)^2}{27b^3g^4(a + bx)^3} - \frac{10082B^2d(bc - ad)}{9b^3g^4(a + bx)^2} - \frac{10082B^2d^2}{9b^3g^4(a + bx)} - \frac{10082Bd^2}{3b^3g^4(a + bx)}
\end{aligned}$$

Mathematica [C] time = 2.25, size = 1355, normalized size = 9.22

$$i^2 \left(18 \left(A + B \log \left(\frac{e^{(a+bx)}}{c+dx} \right) \right)^2 (bc - ad)^3 + 54d(a + bx) \left(A + B \log \left(\frac{e^{(a+bx)}}{c+dx} \right) \right)^2 (bc - ad)^2 - 54d^2(ad - bc)(a + bx)^2 \right)$$

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b*g*x)^4,x]

[Out] -1/54*(i^2*(18*(b*c - a*d)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 + 54*d*(b*c - a*d)^2*(a + b*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 - 54*d^2*(-(b*c) + a*d)*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 + 54*B*d^2*(a + b*x)^2*(2*(b*c - a*d)*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 2*d*(a + b*x)*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 2*d*(a + b*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x] + 2*B*(b*c - a*d + d*(a + b*x))*Log[a + b*x] - d*(a + b*x)*Log[c + d*x]) - B*d*(a + b*x)*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(- (b*c) + a*d)]) + B*d*(a + b*x)*((2*Log[(d*(a + b*x))/(- (b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])) + 27*B*d*(a + b*x)*(2*(b*c - a*d)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 4*d*(-(b*c) + a*d)*(a + b*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 4*d^2*(a + b*x)^2*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 4*d^2*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x] - 4*B*d*(a + b*x)*(b*c - a*d + d*(a + b*x)*Log[a + b*x] - d*(a + b*x)*Log[c + d*x]) + B*((b*c - a*d)^2 + 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d^2*(a + b*x)^2*Log[a + b*x] + 2*d^2*(a + b*x)^2*Log[c + d*x]) + 2*B*d^2*(a + b*x)^2*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(- (b*c) + a*d)]) - 2*B*d^2*(a + b*x)^2*((2*Log[(d*(a + b*x))/(- (b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])) + B*(12*(b*c - a*d)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 18*d*(b*c - a*d)^2*(a + b*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 36*d^2*(b*c - a*d)*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 36*d^3*(a + b*x)^3*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 36*d^3*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x] + 36*B*d^2*(a + b*x)^2*(b*c - a*d + d*(a + b*x)*Log[a + b*x] - d*(a + b*x)*Log[c + d*x]) - 9*B*d*(a + b*x)*((b*c - a*d)^2 + 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d^2*(a + b*x)^2*Log[a + b*x] + 2*d^2*(a + b*x)^2*Log[c + d*x]) + 2*B*(2*(b*c - a*d)^3 - 3*d*(b*c - a*d)^2*(a + b*x) + 6*d^2*(b*c - a*d)*(a + b*x)^2 + 6*d^3*(a + b*x)^3*Log[a + b*x] - 6*d^3*(a + b*x)^3*Log[c + d*x]) - 18*B*d^3*(a + b*x)^3*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(- (b*c) + a*d)]) + 18*B*d^3*(a + b*x)^3*((2*Log[(d*(a + b*x))/(- (b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(b^3*(b*c - a*d)*g^4*(a + b*x)^3)

fricas [B] time = 0.85, size = 444, normalized size = 3.02

$$3 \left((9A^2 + 6AB + 2B^2)b^3cd^2 - (9A^2 + 6AB + 2B^2)ab^2d^3 \right) i^2 x^2 + 3 \left((9A^2 + 6AB + 2B^2)b^3c^2d - (9A^2 + 6AB + 2B^2)ab^2cd^2 \right) i^2 x + 3 \left((9A^2 + 6AB + 2B^2)b^3c^2d^2 - (9A^2 + 6AB + 2B^2)ab^2cd^3 \right) i^2$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^4,x, algorithm="fricas")

[Out]
$$-1/27*(3*((9*A^2 + 6*A*B + 2*B^2)*b^3*c*d^2 - (9*A^2 + 6*A*B + 2*B^2)*a*b^2*d^3)*i^2*x^2 + 3*((9*A^2 + 6*A*B + 2*B^2)*b^3*c^2*d - (9*A^2 + 6*A*B + 2*B^2)*a^2*b*d^3)*i^2*x + ((9*A^2 + 6*A*B + 2*B^2)*b^3*c^3 - (9*A^2 + 6*A*B + 2*B^2)*a^3*d^3)*i^2 + 9*(B^2*b^3*d^3*i^2*x^3 + 3*B^2*b^3*c*d^2*i^2*x^2 + 3*B^2*b^3*c^2*d*i^2*x + B^2*b^3*c^3*i^2)*log((b*e*x + a*e)/(d*x + c))^2 + 6*((3*A*B + B^2)*b^3*d^3*i^2*x^3 + 3*(3*A*B + B^2)*b^3*c*d^2*i^2*x^2 + 3*(3*A*B + B^2)*b^3*c^2*d*i^2*x + (3*A*B + B^2)*b^3*c^3*i^2)*log((b*e*x + a*e)/(d*x + c)))/((b^7*c - a*b^6*d)*g^4*x^3 + 3*(a*b^6*c - a^2*b^5*d)*g^4*x^2 + 3*(a^2*b^5*c - a^3*b^4*d)*g^4*x + (a^3*b^4*c - a^4*b^3*d)*g^4)$$

giac [A] time = 2.20, size = 180, normalized size = 1.22

$$\frac{\left(9B^2e^4 \log\left(\frac{bx+ae}{dx+c}\right)^2 + 18ABe^4 \log\left(\frac{bx+ae}{dx+c}\right) + 6B^2e^4 \log\left(\frac{bx+ae}{dx+c}\right) + 9A^2e^4 + 6ABe^4 + 2B^2e^4 \right) (dx+c)^3 \left(\frac{b}{bce-ade} \right)}{27(bx+ae)^3g^4}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^4,x, algorithm="giac")

[Out]
$$1/27*(9*B^2*e^4*log((b*x*e + a*e)/(d*x + c))^2 + 18*A*B*e^4*log((b*x*e + a*e)/(d*x + c)) + 6*B^2*e^4*log((b*x*e + a*e)/(d*x + c)) + 9*A^2*e^4 + 6*A*B*e^4 + 2*B^2*e^4)*(d*x + c)^3*(b*c/((b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))/((b*x*e + a*e)^3*g^4)$$

maple [B] time = 0.05, size = 890, normalized size = 6.05

$$\frac{B^2ad e^3 i^2 \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)^2}{3(ad-bc)^2 \left(\frac{ae}{dx+c} - \frac{bce}{(dx+c)d} + \frac{be}{d}\right)^3 g^4} - \frac{B^2bc e^3 i^2 \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)^2}{3(ad-bc)^2 \left(\frac{ae}{dx+c} - \frac{bce}{(dx+c)d} + \frac{be}{d}\right)^3 g^4} + \frac{2ABad e^3 i^2 \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{3(ad-bc)^2 \left(\frac{ae}{dx+c} - \frac{bce}{(dx+c)d} + \frac{be}{d}\right)^3 g^4}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{int}((d*i*x+c*i)^2*(B*\ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^4, x)$

[Out] $\frac{1}{3}d^3e^{3i^2}/(a^2d-b^2c)^2/g^4A^2/(1/(d*x+c)*a^2e-1/(d*x+c)*b^2c/d^2e+b/d^2e)^3$
 $*a-1/3e^{3i^2}/(a^2d-b^2c)^2/g^4A^2/(1/(d*x+c)*a^2e-1/(d*x+c)*b^2c/d^2e+b/d^2e)^3$
 $+2/3d^3e^{3i^2}/(a^2d-b^2c)^2/g^4A*B/(1/(d*x+c)*a^2e-1/(d*x+c)*b^2c/d^2e+b/d^2e)^3$
 $*\ln(b/d^2e+(a^2d-b^2c)/(d*x+c)/d^2e)*a-2/3e^{3i^2}/(a^2d-b^2c)^2/g^4A*B/(1/(d*x+c)*a^2e-1/(d*x+c)*b^2c/d^2e+b/d^2e)^3$
 $*\ln(b/d^2e+(a^2d-b^2c)/(d*x+c)/d^2e)*b^2c+2/9d^3e^{3i^2}/(a^2d-b^2c)^2/g^4A*B/(1/(d*x+c)*a^2e-1/(d*x+c)*b^2c/d^2e+b/d^2e)^3$
 $*a-2/9e^{3i^2}/(a^2d-b^2c)^2/g^4A*B/(1/(d*x+c)*a^2e-1/(d*x+c)*b^2c/d^2e+b/d^2e)^3$
 $*b^2c+1/3d^3e^{3i^2}/(a^2d-b^2c)^2/g^4B^2/(1/(d*x+c)*a^2e-1/(d*x+c)*b^2c/d^2e+b/d^2e)^3$
 $*\ln(b/d^2e+(a^2d-b^2c)/(d*x+c)/d^2e)^2*a-1/3e^{3i^2}/(a^2d-b^2c)^2/g^4B^2/(1/(d*x+c)*a^2e-1/(d*x+c)*b^2c/d^2e+b/d^2e)^3$
 $*\ln(b/d^2e+(a^2d-b^2c)/(d*x+c)/d^2e)^2*b^2c+2/9d^3e^{3i^2}/(a^2d-b^2c)^2/g^4B^2/(1/(d*x+c)*a^2e-1/(d*x+c)*b^2c/d^2e+b/d^2e)^3$
 $*\ln(b/d^2e+(a^2d-b^2c)/(d*x+c)/d^2e)*a-2/9e^{3i^2}/(a^2d-b^2c)^2/g^4B^2/(1/(d*x+c)*a^2e-1/(d*x+c)*b^2c/d^2e+b/d^2e)^3$
 $*\ln(b/d^2e+(a^2d-b^2c)/(d*x+c)/d^2e)*b^2c+2/27d^3e^{3i^2}/(a^2d-b^2c)^2/g^4B^2/(1/(d*x+c)*a^2e-1/(d*x+c)*b^2c/d^2e+b/d^2e)^3$
 $*a-2/27e^{3i^2}/(a^2d-b^2c)^2/g^4B^2/(1/(d*x+c)*a^2e-1/(d*x+c)*b^2c/d^2e+b/d^2e)^3$
 $*b^2c$

maxima [B] time = 5.28, size = 5532, normalized size = 37.63

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{integrate}((d*i*x+c*i)^2*(A+B*\log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^4, x, \text{algorithm}="maxima")$

[Out] $-1/3*(3*b*x + a)*B^2*c*d*i^2*\log(b*e*x/(d*x + c) + a*e/(d*x + c))^2/(b^5*g^4*x^3 + 3*a*b^4*g^4*x^2 + 3*a^2*b^3*g^4*x + a^3*b^2*g^4) - 1/3*(3*b^2*x^2 + 3*a*b*x + a^2)*B^2*d^2*i^2*\log(b*e*x/(d*x + c) + a*e/(d*x + c))^2/(b^6*g^4*x^3 + 3*a*b^5*g^4*x^2 + 3*a^2*b^4*g^4*x + a^3*b^3*g^4) - 1/54*(6*((6*b^2*d^2*x^2 + 2*b^2*c^2 - 7*a*b*c*d + 11*a^2*d^2 - 3*(b^2*c*d - 5*a*b*d^2)*x)/((b^6*c^2 - 2*a*b^5*c*d + a^2*b^4*d^2)*g^4*x^3 + 3*(a*b^5*c^2 - 2*a^2*b^4*c*d + a^3*b^3*d^2)*g^4*x^2 + 3*(a^2*b^4*c^2 - 2*a^3*b^3*c*d + a^4*b^2*d^2)*g^4*x + (a^3*b^3*c^2 - 2*a^4*b^2*c*d + a^5*b*d^2)*g^4) + 6*d^3*\log(b*x + a)/((b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^3)*g^4) - 6*d^3*\log(d*x + c)/((b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^3)*g^4))*\log(b*e*x/(d*x + c) + a*e/(d*x + c)) + (4*b^3*c^3 - 27*a*b^2*c^2*d + 108*a^2*b*c*d^2 - 85*a^3*d^3 + 66*(b^3*c*d^2 - a*b^2*d^3)*x^2 - 18*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*\log(b*x + a)^2 - 18*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*\log(d*x + c)^2 - 3*(5*b^3*c^2*d - 54*a*b^2*c*d^2 + 49*a^2*b*d^3)*x + 66*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*\log(b*x + a) - 6*(11*b^3*d^3*x^3 + 33*a*b^2*d^3*x^2 + 33*a^2*b*d^3*x + 11*a^3*d^3 - 6*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*\log(b*x + a))*\log(d*x + c))/(a^3*b^4*c^3*g^4 - 3*a^4*b^3*c^2$

$$\begin{aligned}
& *d*g^4 + 3*a^5*b^2*c*d^2*g^4 - a^6*b*d^3*g^4 + (b^7*c^3*g^4 - 3*a*b^6*c^2*d \\
& *g^4 + 3*a^2*b^5*c*d^2*g^4 - a^3*b^4*d^3*g^4)*x^3 + 3*(a*b^6*c^3*g^4 - 3*a^ \\
& 2*b^5*c^2*d*g^4 + 3*a^3*b^4*c*d^2*g^4 - a^4*b^3*d^3*g^4)*x^2 + 3*(a^2*b^5*c \\
& ^3*g^4 - 3*a^3*b^4*c^2*d*g^4 + 3*a^4*b^3*c*d^2*g^4 - a^5*b^2*d^3*g^4)*x)*B \\
& ^2*c^2*i^2 - 1/54*(6*((5*a*b^2*c^2 - 22*a^2*b*c*d + 5*a^3*d^2 - 6*(3*b^3*c*d \\
& d - a*b^2*d^2)*x^2 + 3*(3*b^3*c^2 - 16*a*b^2*c*d + 5*a^2*b*d^2)*x)/((b^7*c^ \\
& 2 - 2*a*b^6*c*d + a^2*b^5*d^2)*g^4*x^3 + 3*(a*b^6*c^2 - 2*a^2*b^5*c*d + a^3 \\
& *b^4*d^2)*g^4*x^2 + 3*(a^2*b^5*c^2 - 2*a^3*b^4*c*d + a^4*b^3*d^2)*g^4*x + (\\
& a^3*b^4*c^2 - 2*a^4*b^3*c*d + a^5*b^2*d^2)*g^4) - 6*(3*b*c*d^2 - a*d^3)*\log \\
& (b*x + a)/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*g^4) + \\
& 6*(3*b*c*d^2 - a*d^3)*\log(d*x + c)/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c \\
& *d^2 - a^3*b^2*d^3)*g^4)*\log(b*e*x/(d*x + c) + a*e/(d*x + c)) + (19*a*b^3*c \\
& ^3 - 189*a^2*b^2*c^2*d + 189*a^3*b*c*d^2 - 19*a^4*d^3 - 6*(27*b^4*c^2*d - \\
& 32*a*b^3*c*d^2 + 5*a^2*b^2*d^3)*x^2 + 18*(3*a^3*b*c*d^2 - a^4*d^3 + (3*b^4*c \\
& *d^2 - a*b^3*d^3)*x^3 + 3*(3*a*b^3*c*d^2 - a^2*b^2*d^3)*x^2 + 3*(3*a^2*b^2 \\
& *c*d^2 - a^3*b*d^3)*x)*\log(b*x + a)^2 + 18*(3*a^3*b*c*d^2 - a^4*d^3 + (3*b^ \\
& 4*c*d^2 - a*b^3*d^3)*x^3 + 3*(3*a*b^3*c*d^2 - a^2*b^2*d^3)*x^2 + 3*(3*a^2*b \\
& ^2*c*d^2 - a^3*b*d^3)*x)*\log(d*x + c)^2 + 3*(9*b^4*c^3 - 125*a*b^3*c^2*d + \\
& 135*a^2*b^2*c*d^2 - 19*a^3*b*d^3)*x - 6*(27*a^3*b*c*d^2 - 5*a^4*d^3 + (27*b \\
& ^4*c*d^2 - 5*a*b^3*d^3)*x^3 + 3*(27*a*b^3*c*d^2 - 5*a^2*b^2*d^3)*x^2 + 3*(2 \\
& 7*a^2*b^2*c*d^2 - 5*a^3*b*d^3)*x)*\log(b*x + a) + 6*(27*a^3*b*c*d^2 - 5*a^4 \\
& d^3 + (27*b^4*c*d^2 - 5*a*b^3*d^3)*x^3 + 3*(27*a*b^3*c*d^2 - 5*a^2*b^2*d^3) \\
& *x^2 + 3*(27*a^2*b^2*c*d^2 - 5*a^3*b*d^3)*x - 6*(3*a^3*b*c*d^2 - a^4*d^3 + \\
& (3*b^4*c*d^2 - a*b^3*d^3)*x^3 + 3*(3*a*b^3*c*d^2 - a^2*b^2*d^3)*x^2 + 3*(3*a \\
& ^2*b^2*c*d^2 - a^3*b*d^3)*x)*\log(b*x + a))*\log(d*x + c))/(a^3*b^5*c^3*g^4 \\
& - 3*a^4*b^4*c^2*d*g^4 + 3*a^5*b^3*c*d^2*g^4 - a^6*b^2*d^3*g^4 + (b^8*c^3*g^ \\
& 4 - 3*a*b^7*c^2*d*g^4 + 3*a^2*b^6*c*d^2*g^4 - a^3*b^5*d^3*g^4)*x^3 + 3*(a*b \\
& ^7*c^3*g^4 - 3*a^2*b^6*c^2*d*g^4 + 3*a^3*b^5*c*d^2*g^4 - a^4*b^4*d^3*g^4)*x \\
& ^2 + 3*(a^2*b^6*c^3*g^4 - 3*a^3*b^5*c^2*d*g^4 + 3*a^4*b^4*c*d^2*g^4 - a^5*b \\
& ^3*d^3*g^4)*x)*B^2*c*d*i^2 - 1/54*(6*((11*a^2*b^2*c^2 - 7*a^3*b*c*d + 2*a^ \\
& 4*d^2 + 6*(3*b^4*c^2 - 3*a*b^3*c*d + a^2*b^2*d^2)*x^2 + 3*(9*a*b^3*c^2 - 7* \\
& a^2*b^2*c*d + 2*a^3*b*d^2)*x)/((b^8*c^2 - 2*a*b^7*c*d + a^2*b^6*d^2)*g^4*x^ \\
& 3 + 3*(a*b^7*c^2 - 2*a^2*b^6*c*d + a^3*b^5*d^2)*g^4*x^2 + 3*(a^2*b^6*c^2 - \\
& 2*a^3*b^5*c*d + a^4*b^4*d^2)*g^4*x + (a^3*b^5*c^2 - 2*a^4*b^4*c*d + a^5*b^3 \\
& *d^2)*g^4) + 6*(3*b^2*c^2*d - 3*a*b*c*d^2 + a^2*d^3)*\log(b*x + a)/((b^6*c^3 \\
& - 3*a*b^5*c^2*d + 3*a^2*b^4*c*d^2 - a^3*b^3*d^3)*g^4) - 6*(3*b^2*c^2*d - 3 \\
& *a*b*c*d^2 + a^2*d^3)*\log(d*x + c)/((b^6*c^3 - 3*a*b^5*c^2*d + 3*a^2*b^4*c \\
& *d^2 - a^3*b^3*d^3)*g^4))*\log(b*e*x/(d*x + c) + a*e/(d*x + c)) + (85*a^2*b^3 \\
& *c^3 - 108*a^3*b^2*c^2*d + 27*a^4*b*c*d^2 - 4*a^5*d^3 + 6*(18*b^5*c^3 - 27* \\
& a*b^4*c^2*d + 11*a^2*b^3*c*d^2 - 2*a^3*b^2*d^3)*x^2 - 18*(3*a^3*b^2*c^2*d - \\
& 3*a^4*b*c*d^2 + a^5*d^3 + (3*b^5*c^2*d - 3*a*b^4*c*d^2 + a^2*b^3*d^3)*x^3 \\
& + 3*(3*a*b^4*c^2*d - 3*a^2*b^3*c*d^2 + a^3*b^2*d^3)*x^2 + 3*(3*a^2*b^3*c^2*d \\
& d - 3*a^3*b^2*c*d^2 + a^4*b*d^3)*x)*\log(b*x + a)^2 - 18*(3*a^3*b^2*c^2*d - \\
& 3*a^4*b*c*d^2 + a^5*d^3 + (3*b^5*c^2*d - 3*a*b^4*c*d^2 + a^2*b^3*d^3)*x^3 + \\
& 3*(3*a*b^4*c^2*d - 3*a^2*b^3*c*d^2 + a^3*b^2*d^3)*x^2 + 3*(3*a^2*b^3*c^2*d
\end{aligned}$$

$$\begin{aligned}
& - 3a^3b^2cd^2 + a^4bd^3) * x) * \log(dx + c)^2 + 3(63a^3b^4c^3 - 86a^4 \\
& 2b^3c^2d + 27a^3b^2cd^2 - 4a^4bd^3) * x + 6(18a^3b^2c^2d - 9a^4 \\
& b^3cd^2 + 2a^5d^3 + (18b^5c^2d - 9a^4b^4cd^2 + 2a^2b^3d^3) * x^3 \\
& + 3(18a^3b^4c^2d - 9a^2b^3cd^2 + 2a^3b^2d^3) * x^2 + 3(18a^2b^3 \\
& c^2d - 9a^3b^2cd^2 + 2a^4bd^3) * x) * \log(bx + a) - 6(18a^3b^2c^2 \\
& d - 9a^4b^3cd^2 + 2a^5d^3 + (18b^5c^2d - 9a^4b^4cd^2 + 2a^2b^3d^3) \\
& * x^3 + 3(18a^3b^4c^2d - 9a^2b^3cd^2 + 2a^3b^2d^3) * x^2 + 3(18 \\
& a^2b^3c^2d - 9a^3b^2cd^2 + 2a^4bd^3) * x - 6(3a^3b^2c^2d - 3a^4 \\
& b^3cd^2 + a^5d^3 + (3b^5c^2d - 3a^4b^4cd^2 + a^2b^3d^3) * x^3 + 3 \\
& * (3a^3b^4c^2d - 3a^2b^3cd^2 + a^3b^2d^3) * x^2 + 3(3a^2b^3c^2d - \\
& 3a^3b^2cd^2 + a^4bd^3) * x) * \log(bx + a)) / (a^3b^6c^3g^4 - 3a^4b^5c^2d \\
& * g^4 + 3a^5b^4cd^2 * g^4 - a^6b^3d^3 * g^4 + (b^9c^3 * g^4 - 3a^2b^8c^2d * g^4 \\
& + 3a^2b^7cd^2 * g^4 - a^3b^6d^3 * g^4) * x^3 + 3(a^2b^8c^3 * g^4 - 3a^2b^7c^2d * g^4 \\
& + 3a^3b^6cd^2 * g^4 - a^4b^5d^3 * g^4) * x^2 + 3(a^2b^7c^3 * g^4 - 3a^3b^6c^2d * g^4 \\
& + 3a^4b^5cd^2 * g^4 - a^5b^4d^3 * g^4) * x) * B^2d^2i^2 - 1/9A*Bd^2i^2 * (6(3b^2 * x^2 + 3a * b * x + \\
& a^2) * \log(b * e * x / (d * x + c) + a * e / (d * x + c)) / (b^6 * g^4 * x^3 + 3a * b^5 * g^4 * x^2 + \\
& 3a^2 * b^4 * g^4 * x + a^3 * b^3 * g^4) + (11a^2 * b^2 * c^2 - 7a^3 * b * c * d + 2a^4 * d^2 \\
& + 6(3b^4 * c^2 - 3a * b^3 * c * d + a^2 * b^2 * d^2) * x^2 + 3(9a * b^3 * c^2 - 7a^2 * b^2 * c * d \\
& + 2a^3 * b * d^2) * x) / ((b^8 * c^2 - 2a * b^7 * c * d + a^2 * b^6 * d^2) * g^4 * x^3 + 3(a * b^7 * c^2 \\
& - 2a^2 * b^6 * c * d + a^3 * b^5 * d^2) * g^4 * x^2 + 3(a^2 * b^6 * c^2 - 2a^3 * b^5 * c * d \\
& + a^4 * b^4 * d^2) * g^4 * x + (a^3 * b^5 * c^2 - 2a^4 * b^4 * c * d + a^5 * b^3 * d^2) * g^4) \\
& + 6(3b^2 * c^2 * d - 3a * b * c * d^2 + a^2 * d^3) * \log(bx + a) / ((b^6 * c^3 - 3a * b^5 * c^2 * d \\
& + 3a^2 * b^4 * c * d^2 - a^3 * b^3 * d^3) * g^4) - 6(3b^2 * c^2 * d - 3a * b * c * d^2 \\
& + a^2 * d^3) * \log(dx + c) / ((b^6 * c^3 - 3a * b^5 * c^2 * d + 3a^2 * b^4 * c * d^2 - \\
& a^3 * b^3 * d^3) * g^4) - 1/9A*B*c*d*i^2 * (6(3b * x + a) * \log(b * e * x / (d * x + c) + a * e / (d * x + c)) \\
& / (b^5 * g^4 * x^3 + 3a * b^4 * g^4 * x^2 + 3a^2 * b^3 * g^4 * x + a^3 * b^2 * g^4) \\
& + (5a * b^2 * c^2 - 22a^2 * b * c * d + 5a^3 * d^2 - 6(3b^3 * c * d - a * b^2 * d^2) * x^2 \\
& + 3(3b^3 * c^2 - 16a * b^2 * c * d + 5a^2 * b * d^2) * x) / ((b^7 * c^2 - 2a * b^6 * c * d + \\
& a^2 * b^5 * d^2) * g^4 * x^3 + 3(a * b^6 * c^2 - 2a^2 * b^5 * c * d + a^3 * b^4 * d^2) * g^4 * x^2 \\
& + 3(a^2 * b^5 * c^2 - 2a^3 * b^4 * c * d + a^4 * b^3 * d^2) * g^4 * x + (a^3 * b^4 * c^2 - 2a^4 * b^3 * c * d \\
& + a^5 * b^2 * d^2) * g^4) - 6(3b * c * d^2 - a * d^3) * \log(bx + a) / ((b^5 * c^3 - 3a * b^4 * c^2 * d \\
& + 3a^2 * b^3 * c * d^2 - a^3 * b^2 * d^3) * g^4) + 6(3b * c * d^2 - a * d^3) * \log(dx + c) / ((b^5 * c^3 - 3a * b^4 * c^2 * d \\
& + 3a^2 * b^3 * c * d^2 - a^3 * b^2 * d^3) * g^4) - 1/9A*B*c^2*i^2 * ((6b^2 * d^2 * x^2 + 2b^2 * c^2 - 7a * b * c * d + 11a^2 * d^2 \\
& - 3(b^2 * c * d - 5a * b * d^2) * x) / ((b^6 * c^2 - 2a * b^5 * c * d + a^2 * b^4 * d^2) * g^4 * x^3 \\
& + 3(a * b^5 * c^2 - 2a^2 * b^4 * c * d + a^3 * b^3 * d^2) * g^4 * x^2 + 3(a^2 * b^4 * c^2 - 2a^3 * b^3 * c * d \\
& + a^4 * b^2 * d^2) * g^4 * x + (a^3 * b^3 * c^2 - 2a^4 * b^2 * c * d + a^5 * b * d^2) * g^4) + 6 * \log(b * e * x / (d * x + c) \\
& + a * e / (d * x + c)) / (b^4 * g^4 * x^3 + 3a * b^3 * g^4 * x^2 + 3a^2 * b^2 * g^4 * x + a^3 * b * g^4) \\
& + 6 * d^3 * \log(bx + a) / ((b^4 * c^3 - 3a * b^3 * c^2 * d + 3a^2 * b^2 * c * d^2 - a^3 * b * d^3) * g^4) - 6 * d^3 * \log(dx + c) / ((b^4 * c^3 - 3a * b^3 * c^2 * d \\
& + 3a^2 * b^2 * c * d^2 - a^3 * b * d^3) * g^4) - 1/3B^2*c^2*i^2 * \log(b * e * x / (d * x + c) + a * e / (d * x + c))^2 / (b^4 * g^4 * x^3 + 3a * b^3 * g^4 * x^2 + 3a^2 * b^2 * g^4 * x + a^3 * b * g^4) - 1/3 * (3b * x + a) * A^2 * c * d * i^2 / (b^5 * g^4 * x^3 + 3a * b^4 * g^4 * x^2 + 3a^2 * b^3 * g^4 * x + a^3 * b^2 * g^4) - 1/3 * (3b^2 * x^2 + 3a * b * x +
\end{aligned}$$

$$a^2)A^2d^2i^2/(b^6g^4x^3 + 3a*b^5g^4x^2 + 3a^2b^4g^4x + a^3b^3g^4) - 1/3A^2c^2i^2/(b^4g^4x^3 + 3a*b^3g^4x^2 + 3a^2b^2g^4x + a^3b^3g^4)$$

mupad [B] time = 7.41, size = 1153, normalized size = 7.84

$$\frac{x^2 (9 A^2 b^2 d^2 i^2 + 6 A B b^2 d^2 i^2 + 2 B^2 b^2 d^2 i^2) + x (9 c A^2 b^2 d i^2 + 9 a A^2 b d^2 i^2 + 6 c A B b^2 d i^2 + 6 a A B b d i^2)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x)^4,x)

[Out] - (x^2*(9*A^2*b^2*d^2*i^2 + 2*B^2*b^2*d^2*i^2 + 6*A*B*b^2*d^2*i^2) + x*(9*A^2*a*b*d^2*i^2 + 2*B^2*a*b*d^2*i^2 + 9*A^2*b^2*c*d*i^2 + 2*B^2*b^2*c*d*i^2 + 6*A*B*a*b*d^2*i^2 + 6*A*B*b^2*c*d*i^2) + 3*A^2*a^2*d^2*i^2 + 3*A^2*b^2*c^2*i^2 + (2*B^2*a^2*d^2*i^2)/3 + (2*B^2*b^2*c^2*i^2)/3 + 2*A*B*a^2*d^2*i^2 + 2*A*B*b^2*c^2*i^2 + 3*A^2*a*b*c*d*i^2 + (2*B^2*a*b*c*d*i^2)/3 + 2*A*B*a*b*c*d*i^2)/(9*a^3*b^3*g^4 + 9*b^6*g^4*x^3 + 27*a^2*b^4*g^4*x + 27*a*b^5*g^4*x^2) - log((e*(a + b*x))/(c + d*x))^2*((x*(b*((B^2*c*d*i^2)/(3*b^3*g^4) + (B^2*a*d^2*i^2)/(3*b^4*g^4)) + (2*B^2*c*d*i^2)/(3*b^2*g^4) + (2*B^2*a*d^2*i^2)/(3*b^3*g^4)) + a*((B^2*c*d*i^2)/(3*b^3*g^4) + (B^2*a*d^2*i^2)/(3*b^4*g^4)) + (B^2*c^2*i^2)/(3*b^2*g^4) + (B^2*d^2*i^2*x^2)/(b^2*g^4))/(3*a^2*x + a^3/b + b^2*x^3 + 3*a*b*x^2) - (B^2*d^3*i^2)/(3*b^3*g^4*(a*d - b*c))) - (log((e*(a + b*x))/(c + d*x))*(x*(b*((B*i^2*(2*A*b*c - B*a*d + B*b*c))/(3*b^4*g^4) + (2*A*B*a*d*i^2)/(3*b^4*g^4)) + (2*B*i^2*(2*A*b*c - B*a*d + B*b*c))/(3*b^3*g^4) + (2*B^2*d^3*i^2*(b*((3*a^2*d^2 + b^2*c^2 - 4*a*b*c*d))/(6*b*d^3) + (a*(a*d - b*c))/(3*b*d^2)) + (3*a^2*d^2 + b^2*c^2 - 4*a*b*c*d)/(3*d^3) + (2*a*(a*d - b*c))/(3*d^2)))/(3*b^3*g^4*(a*d - b*c)) + (4*A*B*a*d*i^2)/(3*b^3*g^4) + x^2*((2*A*B*d*i^2)/(b^2*g^4) - (2*B^2*d^3*i^2*(b^2*c - a*b*d)/(3*d^2) - (2*b*(a*d - b*c))/(3*d^2)))/(3*b^3*g^4*(a*d - b*c))) + a*((B*i^2*(2*A*b*c - B*a*d + B*b*c))/(3*b^4*g^4) + (2*A*B*a*d*i^2)/(3*b^4*g^4) + (2*B*i^2*(A*b^2*c^2 - B*a^2*d^2 + B*a*b*c*d))/(3*b^4*d*g^4) + (2*B^2*d^3*i^2*(a*((3*a^2*d^2 + b^2*c^2 - 4*a*b*c*d))/(6*b*d^3) + (a*(a*d - b*c))/(3*b*d^2)) + (3*a^3*d^3 - b^3*c^3 + 4*a*b^2*c^2*d - 6*a^2*b*c*d^2)/(3*b*d^4)))/(3*b^3*g^4*(a*d - b*c)))/((3*a^2*x)/d + a^3/(b*d) + (b^2*x^3)/d + (3*a*b*x^2)/d) - (B*d^3*i^2*atan(((9*b^4*c*g^4 + 9*a*b^3*d*g^4)/(9*b^3*g^4) + 2*b*d*x)*1i)/(a*d - b*c))*(3*A + B)*4i)/(9*b^3*g^4*(a*d - b*c))

sympy [B] time = 69.83, size = 1182, normalized size = 8.04

$$\frac{2Bd^3i^2(3A+B)\log\left(x + \frac{6ABad^4i^2+6ABbcd^3i^2+2B^2ad^4i^2+2B^2bcd^3i^2-\frac{2Ba^2d^5i^2(3A+B)}{ad-bc}+\frac{4Babcd^4i^2(3A+B)}{ad-bc}-\frac{2Bb^2c^2d^3i^2(3A+B)}{ad-bc}}{12ABbd^4i^2+4B^2bd^4i^2}\right)}{9b^3g^4(ad-bc)} + \dots$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)**4,x)
[Out] -2*B*d**3*i**2*(3*A + B)*log(x + (6*A*B*a*d**4*i**2 + 6*A*B*b*c*d**3*i**2 +
2*B**2*a*d**4*i**2 + 2*B**2*b*c*d**3*i**2 - 2*B*a**2*d**5*i**2*(3*A + B)/(
a*d - b*c) + 4*B*a*b*c*d**4*i**2*(3*A + B)/(a*d - b*c) - 2*B*b**2*c**2*d**3
*i**2*(3*A + B)/(a*d - b*c))/(12*A*B*b*d**4*i**2 + 4*B**2*b*d**4*i**2))/(9*
b**3*g**4*(a*d - b*c)) + 2*B*d**3*i**2*(3*A + B)*log(x + (6*A*B*a*d**4*i**2
+ 6*A*B*b*c*d**3*i**2 + 2*B**2*a*d**4*i**2 + 2*B**2*b*c*d**3*i**2 + 2*B*a*
*2*d**5*i**2*(3*A + B)/(a*d - b*c) - 4*B*a*b*c*d**4*i**2*(3*A + B)/(a*d - b
*c) + 2*B*b**2*c**2*d**3*i**2*(3*A + B)/(a*d - b*c))/(12*A*B*b*d**4*i**2 +
4*B**2*b*d**4*i**2))/(9*b**3*g**4*(a*d - b*c)) + (B**2*c**3*i**2 + 3*B**2*c
**2*d*i**2*x + 3*B**2*c*d**2*i**2*x**2 + B**2*d**3*i**2*x**3)*log(e*(a + b*
x)/(c + d*x))**2/(3*a**4*d*g**4 - 3*a**3*b*c*g**4 + 9*a**3*b*d*g**4*x - 9*a
**2*b**2*c*g**4*x + 9*a**2*b**2*d*g**4*x**2 - 9*a*b**3*c*g**4*x**2 + 3*a*b*
*3*d*g**4*x**3 - 3*b**4*c*g**4*x**3) + (-9*A**2*a**2*d**2*i**2 - 9*A**2*a*b
*c*d*i**2 - 9*A**2*b**2*c**2*i**2 - 6*A*B*a**2*d**2*i**2 - 6*A*B*a*b*c*d*i
**2 - 6*A*B*b**2*c**2*i**2 - 2*B**2*a**2*d**2*i**2 - 2*B**2*a*b*c*d*i**2 - 2
*B**2*b**2*c**2*i**2 + x**2*(-27*A**2*b**2*d**2*i**2 - 18*A*B*b**2*d**2*i**
2 - 6*B**2*b**2*d**2*i**2) + x*(-27*A**2*a*b*d**2*i**2 - 27*A**2*b**2*c*d*i
**2 - 18*A*B*a*b*d**2*i**2 - 18*A*B*b**2*c*d*i**2 - 6*B**2*a*b*d**2*i**2 -
6*B**2*b**2*c*d*i**2))/(27*a**3*b**3*g**4 + 81*a**2*b**4*g**4*x + 81*a*b**5
*g**4*x**2 + 27*b**6*g**4*x**3) + (-6*A*B*a**2*d**2*i**2 - 6*A*B*a*b*c*d*i
**2 - 18*A*B*a*b*d**2*i**2*x - 6*A*B*b**2*c**2*i**2 - 18*A*B*b**2*c*d*i**2*x
- 18*A*B*b**2*d**2*i**2*x**2 - 2*B**2*a**2*d**2*i**2 - 2*B**2*a*b*c*d*i**2
- 6*B**2*a*b*d**2*i**2*x - 2*B**2*b**2*c**2*i**2 - 6*B**2*b**2*c*d*i**2*x
- 6*B**2*b**2*d**2*i**2*x**2)*log(e*(a + b*x)/(c + d*x))/(9*a**3*b**3*g**4
+ 27*a**2*b**4*g**4*x + 27*a*b**5*g**4*x**2 + 9*b**6*g**4*x**3)
```

$$3.72 \quad \int \frac{(ci+dx)^2 \left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)^2}{(ag+bgx)^5} dx$$

Optimal. Leaf size=299

$$\frac{bi^2(c+dx)^4 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)^2}{4g^5(a+bx)^4(bc-ad)^2} - \frac{bBi^2(c+dx)^4 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{8g^5(a+bx)^4(bc-ad)^2} + \frac{di^2(c+dx)^3 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)^2}{3g^5(a+bx)^3(bc-ad)^2} +$$

[Out] $2/27*B^2*d*i^2*(d*x+c)^3/(-a*d+b*c)^2/g^5/(b*x+a)^3-1/32*b*B^2*i^2*(d*x+c)^4/(-a*d+b*c)^2/g^5/(b*x+a)^4+2/9*B*d*i^2*(d*x+c)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^2/g^5/(b*x+a)^3-1/8*b*B*i^2*(d*x+c)^4*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^2/g^5/(b*x+a)^4+1/3*d*i^2*(d*x+c)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/(-a*d+b*c)^2/g^5/(b*x+a)^3-1/4*b*i^2*(d*x+c)^4*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/(-a*d+b*c)^2/g^5/(b*x+a)^4$

Rubi [C] time = 3.69, antiderivative size = 920, normalized size of antiderivative = 3.08, number of steps used = 104, number of rules used = 11, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}} = 0.262$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$-\frac{B^2i^2\log^2(a+bx)d^4}{12b^3(bc-ad)^2g^5} - \frac{B^2i^2\log^2(c+dx)d^4}{12b^3(bc-ad)^2g^5} + \frac{7B^2i^2\log(a+bx)d^4}{72b^3(bc-ad)^2g^5} + \frac{Bi^2\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)d^4}{6b^3(bc-ad)^2g^5} - \frac{7B^2i^2\log^2(a+bx)d^4}{72b^3(bc-ad)^2g^5}$$

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2)/(a*g + b*g*x)^5, x]

[Out] $-(B^2*(b*c - a*d)^2*i^2)/(32*b^3*g^5*(a + b*x)^4) - (11*B^2*d*(b*c - a*d)*i^2)/(216*b^3*g^5*(a + b*x)^3) + (5*B^2*d^2*i^2)/(144*b^3*g^5*(a + b*x)^2) + (7*B^2*d^3*i^2)/(72*b^3*(b*c - a*d)*g^5*(a + b*x)) + (7*B^2*d^4*i^2*Log[a + b*x])/(72*b^3*(b*c - a*d)^2*g^5) - (B^2*d^4*i^2*Log[a + b*x]^2)/(12*b^3*(b*c - a*d)^2*g^5) - (B*(b*c - a*d)^2*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x]))/(8*b^3*g^5*(a + b*x)^4) - (5*B*d*(b*c - a*d)*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x]))/(18*b^3*g^5*(a + b*x)^3) - (B*d^2*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x]))/(12*b^3*g^5*(a + b*x)^2) + (B*d^3*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x]))/(6*b^3*(b*c - a*d)*g^5*(a + b*x)) + (B*d^4*i^2*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x]))/(6*b^3*(b*c - a*d)^2*g^5) - ((b*c - a*d)^2*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2)/(4*b^3*g^5*(a + b*x)^4) - (2*d*(b*c - a*d)*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2)/(3*b^3*g^5*(a + b*x)^3) - (d^2*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2)/(2*b^3*g^5*(a + b*x)^2) - (7*B^2*d^4*i^2*Log[c + d*x])/(72*b^3*(b*c - a*d)^2*g^5) + ($

$$\begin{aligned} & B^2 d^4 i^2 \text{Log}\left[-\frac{d(a+bx)}{b^3 c - a^2 d}\right] \text{Log}[c+dx] / (6 b^3 (b^3 c - a^2 d)^2 g^5) - (B^2 d^4 i^2 (A + B \text{Log}\left[\frac{e(a+bx)}{c+dx}\right]) \text{Log}[c+dx]) / \\ & (6 b^3 (b^3 c - a^2 d)^2 g^5) - (B^2 d^4 i^2 \text{Log}[c+dx]^2) / (12 b^3 (b^3 c - a^2 d)^2 g^5) + (B^2 d^4 i^2 \text{Log}[a+bx] \text{Log}\left[\frac{b(c+dx)}{b^3 c - a^2 d}\right]) / (6 b^3 \\ & (b^3 c - a^2 d)^2 g^5) + (B^2 d^4 i^2 \text{PolyLog}[2, -\frac{d(a+bx)}{b^3 c - a^2 d}]) / (6 b^3 (b^3 c - a^2 d)^2 g^5) + (B^2 d^4 i^2 \text{PolyLog}[2, \frac{b(c+dx)}{b^3 c - a^2 d}]) / (6 b^3 (b^3 c - a^2 d)^2 g^5) \end{aligned}$$
Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(72c + 72dx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{(ag + bgx)^5} dx &= \int \left(\frac{5184(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^2 g^5 (a + bx)^5} + \frac{10368d(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2 g^5 (a + bx)^4} \right) dx \\
&= \frac{(5184d^2) \int \frac{\left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{(a+bx)^3} dx}{b^2 g^5} + \frac{(10368d(bc - ad)) \int \frac{\left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{(a+bx)^4} dx}{b^2 g^5} \\
&= -\frac{1296(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^3 g^5 (a + bx)^4} - \frac{3456d(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3 g^5 (a + bx)^3} \\
&= -\frac{1296(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^3 g^5 (a + bx)^4} - \frac{3456d(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3 g^5 (a + bx)^3} \\
&= -\frac{1296(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^3 g^5 (a + bx)^4} - \frac{3456d(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3 g^5 (a + bx)^3} \\
&= -\frac{1296(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^3 g^5 (a + bx)^4} - \frac{3456d(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3 g^5 (a + bx)^3} \\
&= -\frac{648B(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3 g^5 (a + bx)^4} - \frac{1440Bd(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3 g^5 (a + bx)^3} \\
&= -\frac{648B(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3 g^5 (a + bx)^4} - \frac{1440Bd(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3 g^5 (a + bx)^3} \\
&= -\frac{648B(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3 g^5 (a + bx)^4} - \frac{1440Bd(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^3 g^5 (a + bx)^3} \\
&= -\frac{162B^2(bc - ad)^2}{b^3 g^5 (a + bx)^4} - \frac{264B^2d(bc - ad)}{b^3 g^5 (a + bx)^3} + \frac{180B^2d^2}{b^3 g^5 (a + bx)^2} + \frac{504B^2d^2}{b^3 (bc - ad)} \\
&= -\frac{162B^2(bc - ad)^2}{b^3 g^5 (a + bx)^4} - \frac{264B^2d(bc - ad)}{b^3 g^5 (a + bx)^3} + \frac{180B^2d^2}{b^3 g^5 (a + bx)^2} + \frac{504B^2d^2}{b^3 (bc - ad)} \\
&= -\frac{162B^2(bc - ad)^2}{b^3 g^5 (a + bx)^4} - \frac{264B^2d(bc - ad)}{b^3 g^5 (a + bx)^3} + \frac{180B^2d^2}{b^3 g^5 (a + bx)^2} + \frac{504B^2d^2}{b^3 (bc - ad)} \\
&= -\frac{162B^2(bc - ad)^2}{b^3 g^5 (a + bx)^4} - \frac{264B^2d(bc - ad)}{b^3 g^5 (a + bx)^3} + \frac{180B^2d^2}{b^3 g^5 (a + bx)^2} + \frac{504B^2d^2}{b^3 (bc - ad)}
\end{aligned}$$

Mathematica [C] time = 3.10, size = 1788, normalized size = 5.98

result too large to display

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b*g*x)^5,x]

[Out]
$$-1/864*(i^2*(216*(b*c - a*d)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 - 576*d*(-(b*c) + a*d)^3*(a + b*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 + 432*d^2*(b*c - a*d)^2*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 + 216*B*d^2*(a + b*x)^2*(2*(b*c - a*d)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 4*d*(-(b*c) + a*d)*(a + b*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 4*d^2*(a + b*x)^2*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 4*d^2*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x] - 4*B*d*(a + b*x)*(b*c - a*d + d*(a + b*x)*Log[a + b*x] - d*(a + b*x)*Log[c + d*x]) + B*((b*c - a*d)^2 + 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d^2*(a + b*x)^2*Log[a + b*x] + 2*d^2*(a + b*x)^2*Log[c + d*x]) + 2*B*d^2*(a + b*x)^2*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) - 2*B*d^2*(a + b*x)^2*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]) + 32*B*d*(a + b*x)*(12*(b*c - a*d)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 18*d*(b*c - a*d)^2*(a + b*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 36*d^2*(b*c - a*d)*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 36*d^3*(a + b*x)^3*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 36*d^3*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x] + 36*B*d^2*(a + b*x)^2*(b*c - a*d + d*(a + b*x)*Log[a + b*x] - d*(a + b*x)*Log[c + d*x]) - 9*B*d*(a + b*x)*((b*c - a*d)^2 + 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d^2*(a + b*x)^2*Log[a + b*x] + 2*d^2*(a + b*x)^2*Log[c + d*x]) + 2*B*(2*(b*c - a*d)^3 - 3*d*(b*c - a*d)^2*(a + b*x) + 6*d^2*(b*c - a*d)*(a + b*x)^2 + 6*d^3*(a + b*x)^3*Log[a + b*x] - 6*d^3*(a + b*x)^3*Log[c + d*x]) - 18*B*d^3*(a + b*x)^3*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + 18*B*d^3*(a + b*x)^3*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]) + 3*B*(36*(b*c - a*d)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 48*d*(-(b*c) + a*d)^3*(a + b*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 72*d^2*(b*c - a*d)^2*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 144*d^3*(-(b*c) + a*d)*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 144*d^4*(a + b*x)^4*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 144*d^4*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x] - 144*B*d^3*(a + b*x)^3*(b*c - a*d + d*(a + b*x)*Log[a + b*x] - d*(a + b*x)*Log[c + d*x]) + 36*B*d^2*(a + b*x)^2*((b*c - a*d)^2 + 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d^2*(a + b*x)^2*Log[a + b*x] + 2*d^2*(a + b*x)^2*Log[c + d*x]) - 8*B*d*(a + b*x)*(2*(b*c - a*d)^3 - 3*d*(b*c - a*d)^2*(a + b*x) + 6*d^2*(b*c - a*d)*(a$$

$$+ b*x)^2 + 6*d^3*(a + b*x)^3*\text{Log}[a + b*x] - 6*d^3*(a + b*x)^3*\text{Log}[c + d*x])$$

$$+ 3*B*(3*(b*c - a*d)^4 + 4*d*(-(b*c) + a*d)^3*(a + b*x) + 6*d^2*(b*c - a*d)^2*(a + b*x)^2 + 12*d^3*(-(b*c) + a*d)*(a + b*x)^3 - 12*d^4*(a + b*x)^4*\text{Log}[a + b*x] + 12*d^4*(a + b*x)^4*\text{Log}[c + d*x]) + 72*B*d^4*(a + b*x)^4*(\text{Log}[a + b*x]*(\text{Log}[a + b*x] - 2*\text{Log}[(b*(c + d*x))/(b*c - a*d)]) - 2*\text{PolyLog}[2, (d*(a + b*x))/(-(b*c) + a*d)]) - 72*B*d^4*(a + b*x)^4*((2*\text{Log}[(d*(a + b*x))/(-(b*c) + a*d)] - \text{Log}[c + d*x])* \text{Log}[c + d*x] + 2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])))/((b^3*(b*c - a*d)^2*g^5*(a + b*x)^4)$$

fricas [B] time = 0.89, size = 837, normalized size = 2.80

$$12 \left((12 AB + 7 B^2) b^4 c d^3 - (12 AB + 7 B^2) a b^3 d^4 \right) i^2 x^3 - 6 \left((72 A^2 + 12 AB - 5 B^2) b^4 c^2 d^2 - 16 (9 A^2 + 6 AB + 2 B^2) \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^5,x, alg orithm="fricas")

[Out] 1/864*(12*((12*A*B + 7*B^2)*b^4*c*d^3 - (12*A*B + 7*B^2)*a*b^3*d^4)*i^2*x^3 - 6*((72*A^2 + 12*A*B - 5*B^2)*b^4*c^2*d^2 - 16*(9*A^2 + 6*A*B + 2*B^2)*a*b^3*c*d^3 + (72*A^2 + 84*A*B + 37*B^2)*a^2*b^2*d^4)*i^2*x^2 - 4*((144*A^2 + 60*A*B + 11*B^2)*b^4*c^3*d - 24*(9*A^2 + 6*A*B + 2*B^2)*a*b^3*c^2*d^2 + (72*A^2 + 84*A*B + 37*B^2)*a^3*b*d^4)*i^2*x - (27*(8*A^2 + 4*A*B + B^2)*b^4*c^4 - 32*(9*A^2 + 6*A*B + 2*B^2)*a*b^3*c^3*d + (72*A^2 + 84*A*B + 37*B^2)*a^4*d^4)*i^2 + 72*(B^2*b^4*d^4*i^2*x^4 + 4*B^2*a*b^3*d^4*i^2*x^3 - 6*(B^2*b^4*c^2*d^2 - 2*B^2*a*b^3*c*d^3)*i^2*x^2 - 4*(2*B^2*b^4*c^3*d - 3*B^2*a*b^3*c^2*d^2)*i^2*x - (3*B^2*b^4*c^4 - 4*B^2*a*b^3*c^3*d)*i^2)*log((b*e*x + a*e)/(d*x + c))^2 + 12*((12*A*B + 7*B^2)*b^4*d^4*i^2*x^4 + 4*(3*B^2*b^4*c*d^3 + 4*(3*A*B + B^2)*a*b^3*d^4)*i^2*x^3 - 6*((12*A*B + B^2)*b^4*c^2*d^2 - 8*(3*A*B + B^2)*a*b^3*c*d^3)*i^2*x^2 - 4*((24*A*B + 5*B^2)*b^4*c^3*d - 12*(3*A*B + B^2)*a*b^3*c^2*d^2)*i^2*x - (9*(4*A*B + B^2)*b^4*c^4 - 16*(3*A*B + B^2)*a*b^3*c^3*d)*i^2)*log((b*e*x + a*e)/(d*x + c)))/((b^9*c^2 - 2*a*b^8*c*d + a^2*b^7*d^2)*g^5*x^4 + 4*(a*b^8*c^2 - 2*a^2*b^7*c*d + a^3*b^6*d^2)*g^5*x^3 + 6*(a^2*b^7*c^2 - 2*a^3*b^6*c*d + a^4*b^5*d^2)*g^5*x^2 + 4*(a^3*b^6*c^2 - 2*a^4*b^5*c*d + a^5*b^4*d^2)*g^5*x + (a^4*b^5*c^2 - 2*a^5*b^4*c*d + a^6*b^3*d^2)*g^5)

giac [A] time = 2.82, size = 425, normalized size = 1.42

$$\left(216 B^2 b e^5 \log\left(\frac{bxe+ae}{dx+c}\right)^2 - \frac{288 (bxe+ae) B^2 d e^4 \log\left(\frac{bxe+ae}{dx+c}\right)^2}{dx+c} + 432 AB b e^5 \log\left(\frac{bxe+ae}{dx+c}\right) + 108 B^2 b e^5 \log\left(\frac{bxe+ae}{dx+c}\right) - \frac{576 (bxe+ae)}{dx+c} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^5,x, alg
orithm="giac")
```

```
[Out] 1/864*(216*B^2*b*e^5*log((b*x*e + a*e)/(d*x + c))^2 - 288*(b*x*e + a*e)*B^2
*d*e^4*log((b*x*e + a*e)/(d*x + c))^2/(d*x + c) + 432*A*B*b*e^5*log((b*x*e
+ a*e)/(d*x + c)) + 108*B^2*b*e^5*log((b*x*e + a*e)/(d*x + c)) - 576*(b*x*e
+ a*e)*A*B*d*e^4*log((b*x*e + a*e)/(d*x + c))/(d*x + c) - 192*(b*x*e + a*e
)*B^2*d*e^4*log((b*x*e + a*e)/(d*x + c))/(d*x + c) + 216*A^2*b*e^5 + 108*A
*B*b*e^5 + 27*B^2*b*e^5 - 288*(b*x*e + a*e)*A^2*d*e^4/(d*x + c) - 192*(b*x*e
+ a*e)*A*B*d*e^4/(d*x + c) - 64*(b*x*e + a*e)*B^2*d*e^4/(d*x + c))*(b*c/((
b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))/((b*x*e +
a*e)^4*b*c*g^5/(d*x + c)^4 - (b*x*e + a*e)^4*a*d*g^5/(d*x + c)^4)
```

maple [B] time = 0.05, size = 1814, normalized size = 6.07

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^5,x)
```

```
[Out] 1/3*d^2*e^3*i^2/(a*d-b*c)^3/g^5*A^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)
^3*a-1/3*d*e^3*i^2/(a*d-b*c)^3/g^5*A^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d
*e)^3*b*c-1/4*d*e^4*i^2/(a*d-b*c)^3/g^5*A^2*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/
d*e+b/d*e)^4*a+1/4*e^4*i^2/(a*d-b*c)^3/g^5*A^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)
*b*c/d*e+b/d*e)^4*c+2/3*d^2*e^3*i^2/(a*d-b*c)^3/g^5*A*B/(1/(d*x+c)*a*e-1/(d
*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-2/3*d*e^3*i^2/(a*d
-b*c)^3/g^5*A*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c
)/(d*x+c)/d*e)*b*c+2/9*d^2*e^3*i^2/(a*d-b*c)^3/g^5*A*B/(1/(d*x+c)*a*e-1/(d*
x+c)*b*c/d*e+b/d*e)^3*a-2/9*d*e^3*i^2/(a*d-b*c)^3/g^5*A*B/(1/(d*x+c)*a*e-1/
(d*x+c)*b*c/d*e+b/d*e)^3*b*c-1/2*d*e^4*i^2/(a*d-b*c)^3/g^5*A*B*b/(1/(d*x+c)
*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+1/2*e^4*i
^2/(a*d-b*c)^3/g^5*A*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*ln(b/d
*e+(a*d-b*c)/(d*x+c)/d*e)*c-1/8*d*e^4*i^2/(a*d-b*c)^3/g^5*A*B*b/(1/(d*x+c)*
a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*a+1/8*e^4*i^2/(a*d-b*c)^3/g^5*A*B*b^2/(1/(d*
x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*c+1/3*d^2*e^3*i^2/(a*d-b*c)^3/g^5*B^2/(
1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*
a-1/3*d*e^3*i^2/(a*d-b*c)^3/g^5*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)
^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b*c+2/9*d^2*e^3*i^2/(a*d-b*c)^3/g^5*B^
2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)
*a-2/9*d*e^3*i^2/(a*d-b*c)^3/g^5*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)
^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*c+2/27*d^2*e^3*i^2/(a*d-b*c)^3/g^5*B^
2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*a-2/27*d*e^3*i^2/(a*d-b*c)^3/g^
5*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*b*c-1/4*d*e^4*i^2/(a*d-b*c)
```

$$\frac{1}{g^5 B^2 b} \left(\frac{1}{(dx+c)^a e^{-1/(dx+c)} b^c / d^e + b/d^e} \right)^4 \ln \left(\frac{b/d^e + (a*d-b*c)}{(dx+c)/d^e} \right)^{2a+1/4} e^{4i^2/(a*d-b*c)^3} \frac{1}{g^5 B^2 b^2} \left(\frac{1}{(dx+c)^a e^{-1/(dx+c)} b^c / d^e + b/d^e} \right)^4 \ln \left(\frac{b/d^e + (a*d-b*c)}{(dx+c)/d^e} \right)^{2c-1/8} d^{4i^2/(a*d-b*c)^3} \frac{1}{g^5 B^2 b} \left(\frac{1}{(dx+c)^a e^{-1/(dx+c)} b^c / d^e + b/d^e} \right)^4 \ln \left(\frac{b/d^e + (a*d-b*c)}{(dx+c)/d^e} \right)^{a+1/8} e^{4i^2/(a*d-b*c)^3} \frac{1}{g^5 B^2 b^2} \left(\frac{1}{(dx+c)^a e^{-1/(dx+c)} b^c / d^e + b/d^e} \right)^4 \ln \left(\frac{b/d^e + (a*d-b*c)}{(dx+c)/d^e} \right)^{c-1/32} d^{4i^2/(a*d-b*c)^3} \frac{1}{g^5 B^2 b} \left(\frac{1}{(dx+c)^a e^{-1/(dx+c)} b^c / d^e + b/d^e} \right)^4 \frac{1}{g^5 B^2 b^2} \left(\frac{1}{(dx+c)^a e^{-1/(dx+c)} b^c / d^e + b/d^e} \right)^4 c$$

maxima [B] time = 8.09, size = 8031, normalized size = 26.86

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^5,x, alg orithm="maxima")

[Out]
$$\begin{aligned} & -1/6*(4*b*x + a)*B^2*c*d*i^2*\log(b*e*x/(d*x + c) + a*e/(d*x + c))^2/(b^6*g^5*x^4 + 4*a*b^5*g^5*x^3 + 6*a^2*b^4*g^5*x^2 + 4*a^3*b^3*g^5*x + a^4*b^2*g^5) \\ & - 1/12*(6*b^2*x^2 + 4*a*b*x + a^2)*B^2*d^2*i^2*\log(b*e*x/(d*x + c) + a*e/(d*x + c))^2/(b^7*g^5*x^4 + 4*a*b^6*g^5*x^3 + 6*a^2*b^5*g^5*x^2 + 4*a^3*b^4*g^5*x + a^4*b^3*g^5) \\ & + 1/288*(12*((12*b^3*d^3*x^3 - 3*b^3*c^3 + 13*a*b^2*c^2*d - 23*a^2*b*c*d^2 + 25*a^3*d^3 - 6*(b^3*c*d^2 - 7*a*b^2*d^3))*x^2 + 4*(b^3*c^2*d - 5*a*b^2*c*d^2 + 13*a^2*b*d^3)*x)/((b^8*c^3 - 3*a*b^7*c^2*d + 3*a^2*b^6*c*d^2 - a^3*b^5*d^3)*g^5*x^4 + 4*(a*b^7*c^3 - 3*a^2*b^6*c^2*d + 3*a^3*b^5*c*d^2 - a^4*b^4*d^3)*g^5*x^3 + 6*(a^2*b^6*c^3 - 3*a^3*b^5*c^2*d + 3*a^4*b^4*c*d^2 - a^5*b^3*d^3)*g^5*x^2 + 4*(a^3*b^5*c^3 - 3*a^4*b^4*c^2*d + 3*a^5*b^3*c*d^2 - a^6*b^2*d^3)*g^5*x + (a^4*b^4*c^3 - 3*a^5*b^3*c^2*d + 3*a^6*b^2*c*d^2 - a^7*b*d^3)*g^5) + 12*d^4*log(b*x + a)/((b^5*c^4 - 4*a*b^4*c^3*d + 6*a^2*b^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)*g^5) - 12*d^4*log(d*x + c)/((b^5*c^4 - 4*a*b^4*c^3*d + 6*a^2*b^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)*g^5))*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - (9*b^4*c^4 - 64*a*b^3*c^3*d + 216*a^2*b^2*c^2*d^2 - 576*a^3*b*c*d^3 + 415*a^4*d^4 - 300*(b^4*c*d^3 - a*b^3*d^4))*x^3 + 6*(13*b^4*c^2*d^2 - 176*a*b^3*c*d^3 + 163*a^2*b^2*d^4)*x^2 + 72*(b^4*d^4*x^4 + 4*a*b^3*d^4*x^3 + 6*a^2*b^2*d^4*x^2 + 4*a^3*b*d^4*x + a^4*d^4)*log(b*x + a)^2 + 72*(b^4*d^4*x^4 + 4*a*b^3*d^4*x^3 + 6*a^2*b^2*d^4*x^2 + 4*a^3*b*d^4*x + a^4*d^4)*log(d*x + c)^2 - 4*(7*b^4*c^3*d - 60*a*b^3*c^2*d^2 + 324*a^2*b^2*c*d^3 - 271*a^3*b*d^4)*x - 300*(b^4*d^4*x^4 + 4*a*b^3*d^4*x^3 + 6*a^2*b^2*d^4*x^2 + 4*a^3*b*d^4*x + a^4*d^4)*log(b*x + a) + 12*(25*b^4*d^4*x^4 + 100*a*b^3*d^4*x^3 + 150*a^2*b^2*d^4*x^2 + 100*a^3*b*d^4*x + 25*a^4*d^4 - 12*(b^4*d^4*x^4 + 4*a*b^3*d^4*x^3 + 6*a^2*b^2*d^4*x^2 + 4*a^3*b*d^4*x + a^4*d^4)*log(b*x + a))*log(d*x + c))/(a^4*b^5*c^4*g^5 - 4*a^5*b^4*c^3*d*g^5 + 6*a^6*b^3*c^2*d^2*g^5 - 4*a^7*b^2*c*d^3*g^5 + a^8*b*d^4*g^5 + (b^9*c^4*g^5 - 4*a*b^8*c^3*d*g^5 + 6*a^2*b^7*c^2*d^2*g^5 - 4*a^3*b^6*c*d^3*g^5 + a^4*b^5*d^4*g^5))*x^4 + 4*(a*b^8*c^4*g^5 - 4*a^2*b^7*c^3*d*g^5 +$$

$$\begin{aligned}
& 6*a^3*b^6*c^2*d^2*g^5 - 4*a^4*b^5*c*d^3*g^5 + a^5*b^4*d^4*g^5)*x^3 + 6*(a^2 \\
& *b^7*c^4*g^5 - 4*a^3*b^6*c^3*d*g^5 + 6*a^4*b^5*c^2*d^2*g^5 - 4*a^5*b^4*c*d^ \\
& 3*g^5 + a^6*b^3*d^4*g^5)*x^2 + 4*(a^3*b^6*c^4*g^5 - 4*a^4*b^5*c^3*d*g^5 + 6 \\
& *a^5*b^4*c^2*d^2*g^5 - 4*a^6*b^3*c*d^3*g^5 + a^7*b^2*d^4*g^5)*x))*B^2*c^2*i \\
& ^2 - 1/432*(12*((7*a*b^3*c^3 - 33*a^2*b^2*c^2*d + 75*a^3*b*c*d^2 - 13*a^4*d \\
& ^3 + 12*(4*b^4*c*d^2 - a*b^3*d^3))*x^3 - 6*(4*b^4*c^2*d - 29*a*b^3*c*d^2 + 7 \\
& *a^2*b^2*d^3))*x^2 + 4*(4*b^4*c^3 - 21*a*b^3*c^2*d + 57*a^2*b^2*c*d^2 - 13*a \\
& ^3*b*d^3))*x)/((b^9*c^3 - 3*a*b^8*c^2*d + 3*a^2*b^7*c*d^2 - a^3*b^6*d^3)*g^5 \\
& *x^4 + 4*(a*b^8*c^3 - 3*a^2*b^7*c^2*d + 3*a^3*b^6*c*d^2 - a^4*b^5*d^3)*g^5* \\
& x^3 + 6*(a^2*b^7*c^3 - 3*a^3*b^6*c^2*d + 3*a^4*b^5*c*d^2 - a^5*b^4*d^3)*g^5 \\
& *x^2 + 4*(a^3*b^6*c^3 - 3*a^4*b^5*c^2*d + 3*a^5*b^4*c*d^2 - a^6*b^3*d^3)*g^ \\
& 5*x + (a^4*b^5*c^3 - 3*a^5*b^4*c^2*d + 3*a^6*b^3*c*d^2 - a^7*b^2*d^3)*g^5) \\
& + 12*(4*b*c*d^3 - a*d^4)*log(b*x + a)/((b^6*c^4 - 4*a*b^5*c^3*d + 6*a^2*b^4 \\
& *c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*g^5) - 12*(4*b*c*d^3 - a*d^4)*log \\
& (d*x + c)/((b^6*c^4 - 4*a*b^5*c^3*d + 6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + \\
& a^4*b^2*d^4)*g^5)*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + (37*a*b^4*c^4 - \\
& 304*a^2*b^3*c^3*d + 1512*a^3*b^2*c^2*d^2 - 1360*a^4*b*c*d^3 + 115*a^5*d^4 + \\
& 12*(88*b^5*c^2*d^2 - 101*a*b^4*c*d^3 + 13*a^2*b^3*d^4))*x^3 - 6*(40*b^5*c^3 \\
& *d - 609*a*b^4*c^2*d^2 + 648*a^2*b^3*c*d^3 - 79*a^3*b^2*d^4))*x^2 - 72*(4*a^ \\
& 4*b*c*d^3 - a^5*d^4 + (4*b^5*c*d^3 - a*b^4*d^4))*x^4 + 4*(4*a*b^4*c*d^3 - a^ \\
& 2*b^3*d^4))*x^3 + 6*(4*a^2*b^3*c*d^3 - a^3*b^2*d^4))*x^2 + 4*(4*a^3*b^2*c*d^3 \\
& - a^4*b*d^4)*x)*log(b*x + a)^2 - 72*(4*a^4*b*c*d^3 - a^5*d^4 + (4*b^5*c*d^ \\
& 3 - a*b^4*d^4))*x^4 + 4*(4*a*b^4*c*d^3 - a^2*b^3*d^4))*x^3 + 6*(4*a^2*b^3*c*d \\
& ^3 - a^3*b^2*d^4))*x^2 + 4*(4*a^3*b^2*c*d^3 - a^4*b*d^4)*x)*log(d*x + c)^2 + \\
& 4*(16*b^5*c^4 - 163*a*b^4*c^3*d + 1068*a^2*b^3*c^2*d^2 - 1036*a^3*b^2*c*d^ \\
& 3 + 115*a^4*b*d^4))*x + 12*(88*a^4*b*c*d^3 - 13*a^5*d^4 + (88*b^5*c*d^3 - 13 \\
& *a*b^4*d^4))*x^4 + 4*(88*a*b^4*c*d^3 - 13*a^2*b^3*d^4))*x^3 + 6*(88*a^2*b^3*c \\
& *d^3 - 13*a^3*b^2*d^4))*x^2 + 4*(88*a^3*b^2*c*d^3 - 13*a^4*b*d^4)*x)*log(b*x \\
& + a) - 12*(88*a^4*b*c*d^3 - 13*a^5*d^4 + (88*b^5*c*d^3 - 13*a*b^4*d^4))*x^4 \\
& + 4*(88*a*b^4*c*d^3 - 13*a^2*b^3*d^4))*x^3 + 6*(88*a^2*b^3*c*d^3 - 13*a^3*b \\
& ^2*d^4))*x^2 + 4*(88*a^3*b^2*c*d^3 - 13*a^4*b*d^4)*x - 12*(4*a^4*b*c*d^3 - a \\
& ^5*d^4 + (4*b^5*c*d^3 - a*b^4*d^4))*x^4 + 4*(4*a*b^4*c*d^3 - a^2*b^3*d^4))*x^ \\
& 3 + 6*(4*a^2*b^3*c*d^3 - a^3*b^2*d^4))*x^2 + 4*(4*a^3*b^2*c*d^3 - a^4*b*d^4) \\
& *x)*log(b*x + a)*log(d*x + c))/(a^4*b^6*c^4*g^5 - 4*a^5*b^5*c^3*d*g^5 + 6* \\
& a^6*b^4*c^2*d^2*g^5 - 4*a^7*b^3*c*d^3*g^5 + a^8*b^2*d^4*g^5 + (b^10*c^4*g^5 \\
& - 4*a*b^9*c^3*d*g^5 + 6*a^2*b^8*c^2*d^2*g^5 - 4*a^3*b^7*c*d^3*g^5 + a^4*b^ \\
& 6*d^4*g^5))*x^4 + 4*(a*b^9*c^4*g^5 - 4*a^2*b^8*c^3*d*g^5 + 6*a^3*b^7*c^2*d^2 \\
& *g^5 - 4*a^4*b^6*c*d^3*g^5 + a^5*b^5*d^4*g^5))*x^3 + 6*(a^2*b^8*c^4*g^5 - 4* \\
& a^3*b^7*c^3*d*g^5 + 6*a^4*b^6*c^2*d^2*g^5 - 4*a^5*b^5*c*d^3*g^5 + a^6*b^4*d \\
& ^4*g^5))*x^2 + 4*(a^3*b^7*c^4*g^5 - 4*a^4*b^6*c^3*d*g^5 + 6*a^5*b^5*c^2*d^2* \\
& g^5 - 4*a^6*b^4*c*d^3*g^5 + a^7*b^3*d^4*g^5)*x))*B^2*c*d*i^2 - 1/864*(12*((\\
& 13*a^2*b^3*c^3 - 75*a^3*b^2*c^2*d + 33*a^4*b*c*d^2 - 7*a^5*d^3 - 12*(6*b^5* \\
& c^2*d - 4*a*b^4*c*d^2 + a^2*b^3*d^3))*x^3 + 6*(6*b^5*c^3 - 46*a*b^4*c^2*d + \\
& 29*a^2*b^3*c*d^2 - 7*a^3*b^2*d^3))*x^2 + 4*(10*a*b^4*c^3 - 63*a^2*b^3*c^2*d \\
& + 33*a^3*b^2*c*d^2 - 7*a^4*b*d^3))*x)/((b^10*c^3 - 3*a*b^9*c^2*d + 3*a^2*b^8
\end{aligned}$$

$$\begin{aligned}
& *c*d^2 - a^3*b^7*d^3)*g^5*x^4 + 4*(a*b^9*c^3 - 3*a^2*b^8*c^2*d + 3*a^3*b^7*c*d^2 - a^4*b^6*d^3)*g^5*x^3 + 6*(a^2*b^8*c^3 - 3*a^3*b^7*c^2*d + 3*a^4*b^6*c*d^2 - a^5*b^5*d^3)*g^5*x^2 + 4*(a^3*b^7*c^3 - 3*a^4*b^6*c^2*d + 3*a^5*b^5*c*d^2 - a^6*b^4*d^3)*g^5*x + (a^4*b^6*c^3 - 3*a^5*b^5*c^2*d + 3*a^6*b^4*c*d^2 - a^7*b^3*d^3)*g^5) - 12*(6*b^2*c^2*d^2 - 4*a*b*c*d^3 + a^2*d^4)*\log(b*x + a)/((b^7*c^4 - 4*a*b^6*c^3*d + 6*a^2*b^5*c^2*d^2 - 4*a^3*b^4*c*d^3 + a^4*b^3*d^4)*g^5) + 12*(6*b^2*c^2*d^2 - 4*a*b*c*d^3 + a^2*d^4)*\log(d*x + c)/((b^7*c^4 - 4*a*b^6*c^3*d + 6*a^2*b^5*c^2*d^2 - 4*a^3*b^4*c*d^3 + a^4*b^3*d^4)*g^5))*\log(b*e*x/(d*x + c) + a*e/(d*x + c)) + (115*a^2*b^4*c^4 - 1360*a^3*b^3*c^3*d + 1512*a^4*b^2*c^2*d^2 - 304*a^5*b*c*d^3 + 37*a^6*d^4 - 12*(108*b^6*c^3*d - 148*a*b^5*c^2*d^2 + 47*a^2*b^4*c*d^3 - 7*a^3*b^3*d^4)*x^3 + 6*(36*b^6*c^4 - 712*a*b^5*c^3*d + 903*a^2*b^4*c^2*d^2 - 264*a^3*b^3*c*d^3 + 37*a^4*b^2*d^4)*x^2 + 72*(6*a^4*b^2*c^2*d^2 - 4*a^5*b*c*d^3 + a^6*d^4 + (6*b^6*c^2*d^2 - 4*a*b^5*c*d^3 + a^2*b^4*d^4)*x^4 + 4*(6*a*b^5*c^2*d^2 - 4*a^2*b^4*c*d^3 + a^3*b^3*d^4)*x^3 + 6*(6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*x^2 + 4*(6*a^3*b^3*c^2*d^2 - 4*a^4*b^2*c*d^3 + a^5*b*d^4)*x)*\log(b*x + a)^2 + 72*(6*a^4*b^2*c^2*d^2 - 4*a^5*b*c*d^3 + a^6*d^4 + (6*b^6*c^2*d^2 - 4*a*b^5*c*d^3 + a^2*b^4*d^4)*x^4 + 4*(6*a*b^5*c^2*d^2 - 4*a^2*b^4*c*d^3 + a^3*b^3*d^4)*x^3 + 6*(6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*x^2 + 4*(6*a^3*b^3*c^2*d^2 - 4*a^4*b^2*c*d^3 + a^5*b*d^4)*x)*\log(d*x + c)^2 + 4*(76*a*b^5*c^4 - 1057*a^2*b^4*c^3*d + 1248*a^3*b^3*c^2*d^2 - 304*a^4*b^2*c*d^3 + 37*a^5*b*d^4)*x - 12*(108*a^4*b^2*c^2*d^2 - 40*a^5*b*c*d^3 + 7*a^6*d^4 + (108*b^6*c^2*d^2 - 40*a*b^5*c*d^3 + 7*a^2*b^4*d^4)*x^4 + 4*(108*a*b^5*c^2*d^2 - 40*a^2*b^4*c*d^3 + 7*a^3*b^3*d^4)*x^3 + 6*(108*a^2*b^4*c^2*d^2 - 40*a^3*b^3*c*d^3 + 7*a^4*b^2*d^4)*x^2 + 4*(108*a^3*b^3*c^2*d^2 - 40*a^4*b^2*c*d^3 + 7*a^5*b*d^4)*x)*\log(b*x + a) + 12*(108*a^4*b^2*c^2*d^2 - 40*a^5*b*c*d^3 + 7*a^6*d^4 + (108*b^6*c^2*d^2 - 40*a*b^5*c*d^3 + 7*a^2*b^4*d^4)*x^4 + 4*(108*a*b^5*c^2*d^2 - 40*a^2*b^4*c*d^3 + 7*a^3*b^3*d^4)*x^3 + 6*(108*a^2*b^4*c^2*d^2 - 40*a^3*b^3*c*d^3 + 7*a^4*b^2*d^4)*x^2 + 4*(108*a^3*b^3*c^2*d^2 - 40*a^4*b^2*c*d^3 + 7*a^5*b*d^4)*x - 12*(6*a^4*b^2*c^2*d^2 - 4*a^5*b*c*d^3 + a^6*d^4 + (6*b^6*c^2*d^2 - 4*a*b^5*c*d^3 + a^2*b^4*d^4)*x^4 + 4*(6*a*b^5*c^2*d^2 - 4*a^2*b^4*c*d^3 + a^3*b^3*d^4)*x^3 + 6*(6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*x^2 + 4*(6*a^3*b^3*c^2*d^2 - 4*a^4*b^2*c*d^3 + a^5*b*d^4)*x)*\log(b*x + a))*\log(d*x + c))/(a^4*b^7*c^4*g^5 - 4*a^5*b^6*c^3*d*g^5 + 6*a^6*b^5*c^2*d^2*g^5 - 4*a^7*b^4*c*d^3*g^5 + a^8*b^3*d^4*g^5 + (b^11*c^4*g^5 - 4*a*b^10*c^3*d*g^5 + 6*a^2*b^9*c^2*d^2*g^5 - 4*a^3*b^8*c*d^3*g^5 + a^4*b^7*d^4*g^5)*x^4 + 4*(a*b^10*c^4*g^5 - 4*a^2*b^9*c^3*d*g^5 + 6*a^3*b^8*c^2*d^2*g^5 - 4*a^4*b^7*c*d^3*g^5 + a^5*b^6*d^4*g^5)*x^3 + 6*(a^2*b^9*c^4*g^5 - 4*a^3*b^8*c^3*d*g^5 + 6*a^4*b^7*c^2*d^2*g^5 - 4*a^5*b^6*c*d^3*g^5 + a^6*b^5*d^4*g^5)*x^2 + 4*(a^3*b^8*c^4*g^5 - 4*a^4*b^7*c^3*d*g^5 + 6*a^5*b^6*c^2*d^2*g^5 - 4*a^6*b^5*c*d^3*g^5 + a^7*b^4*d^4*g^5)*x)*B^2*d^2*i^2 - 1/72*A*B*d^2*i^2*(12*(6*b^2*x^2 + 4*a*b*x + a^2)*\log(b*e*x/(d*x + c) + a*e/(d*x + c)))/(b^7*g^5*x^4 + 4*a*b^6*g^5*x^3 + 6*a^2*b^5*g^5*x^2 + 4*a^3*b^4*g^5*x + a^4*b^3*g^5) + (13*a^2*b^3*c^3 - 75*a^3*b^2*c^2*d + 33*a^4*b*c*d^2 - 7*a^5*d^3 - 12*(6*b^5*c^2*d - 4*a*b^4*c*d^2 + a^2*b^3*d^3)*x^3 + 6*
\end{aligned}$$

$$\begin{aligned}
& (6*b^5*c^3 - 46*a*b^4*c^2*d + 29*a^2*b^3*c*d^2 - 7*a^3*b^2*d^3)*x^2 + 4*(10 \\
& *a*b^4*c^3 - 63*a^2*b^3*c^2*d + 33*a^3*b^2*c*d^2 - 7*a^4*b*d^3)*x)/((b^{10}*c \\
& ^3 - 3*a*b^9*c^2*d + 3*a^2*b^8*c*d^2 - a^3*b^7*d^3)*g^5*x^4 + 4*(a*b^9*c^3 \\
& - 3*a^2*b^8*c^2*d + 3*a^3*b^7*c*d^2 - a^4*b^6*d^3)*g^5*x^3 + 6*(a^2*b^8*c^3 \\
& - 3*a^3*b^7*c^2*d + 3*a^4*b^6*c*d^2 - a^5*b^5*d^3)*g^5*x^2 + 4*(a^3*b^7*c^ \\
& 3 - 3*a^4*b^6*c^2*d + 3*a^5*b^5*c*d^2 - a^6*b^4*d^3)*g^5*x + (a^4*b^6*c^3 - \\
& 3*a^5*b^5*c^2*d + 3*a^6*b^4*c*d^2 - a^7*b^3*d^3)*g^5) - 12*(6*b^2*c^2*d^2 \\
& - 4*a*b*c*d^3 + a^2*d^4)*\log(b*x + a)/((b^7*c^4 - 4*a*b^6*c^3*d + 6*a^2*b^5 \\
& *c^2*d^2 - 4*a^3*b^4*c*d^3 + a^4*b^3*d^4)*g^5) + 12*(6*b^2*c^2*d^2 - 4*a*b \\
& *c*d^3 + a^2*d^4)*\log(d*x + c)/((b^7*c^4 - 4*a*b^6*c^3*d + 6*a^2*b^5*c^2*d^2 \\
& - 4*a^3*b^4*c*d^3 + a^4*b^3*d^4)*g^5)) - 1/36*A*B*c*d*i^2*(12*(4*b*x + a)* \\
& \log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^6*g^5*x^4 + 4*a*b^5*g^5*x^3 + 6*a^2 \\
& *b^4*g^5*x^2 + 4*a^3*b^3*g^5*x + a^4*b^2*g^5) + (7*a*b^3*c^3 - 33*a^2*b^2*c \\
& ^2*d + 75*a^3*b*c*d^2 - 13*a^4*d^3 + 12*(4*b^4*c*d^2 - a*b^3*d^3)*x^3 - 6*(\\
& 4*b^4*c^2*d - 29*a*b^3*c*d^2 + 7*a^2*b^2*d^3)*x^2 + 4*(4*b^4*c^3 - 21*a*b^3 \\
& *c^2*d + 57*a^2*b^2*c*d^2 - 13*a^3*b*d^3)*x)/((b^9*c^3 - 3*a*b^8*c^2*d + 3* \\
& a^2*b^7*c*d^2 - a^3*b^6*d^3)*g^5*x^4 + 4*(a*b^8*c^3 - 3*a^2*b^7*c^2*d + 3*a \\
& ^3*b^6*c*d^2 - a^4*b^5*d^3)*g^5*x^3 + 6*(a^2*b^7*c^3 - 3*a^3*b^6*c^2*d + 3* \\
& a^4*b^5*c*d^2 - a^5*b^4*d^3)*g^5*x^2 + 4*(a^3*b^6*c^3 - 3*a^4*b^5*c^2*d + 3* \\
& a^5*b^4*c*d^2 - a^6*b^3*d^3)*g^5*x + (a^4*b^5*c^3 - 3*a^5*b^4*c^2*d + 3*a^ \\
& 6*b^3*c*d^2 - a^7*b^2*d^3)*g^5) + 12*(4*b*c*d^3 - a*d^4)*\log(b*x + a)/((b^6 \\
& *c^4 - 4*a*b^5*c^3*d + 6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*g \\
& ^5) - 12*(4*b*c*d^3 - a*d^4)*\log(d*x + c)/((b^6*c^4 - 4*a*b^5*c^3*d + 6*a^2 \\
& *b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*g^5)) + 1/24*A*B*c^2*i^2*((12 \\
& *b^3*d^3*x^3 - 3*b^3*c^3 + 13*a*b^2*c^2*d - 23*a^2*b*c*d^2 + 25*a^3*d^3 - 6 \\
& *(b^3*c*d^2 - 7*a*b^2*d^3)*x^2 + 4*(b^3*c^2*d - 5*a*b^2*c*d^2 + 13*a^2*b*d^ \\
& 3)*x)/((b^8*c^3 - 3*a*b^7*c^2*d + 3*a^2*b^6*c*d^2 - a^3*b^5*d^3)*g^5*x^4 + \\
& 4*(a*b^7*c^3 - 3*a^2*b^6*c^2*d + 3*a^3*b^5*c*d^2 - a^4*b^4*d^3)*g^5*x^3 + 6 \\
& *(a^2*b^6*c^3 - 3*a^3*b^5*c^2*d + 3*a^4*b^4*c*d^2 - a^5*b^3*d^3)*g^5*x^2 + \\
& 4*(a^3*b^5*c^3 - 3*a^4*b^4*c^2*d + 3*a^5*b^3*c*d^2 - a^6*b^2*d^3)*g^5*x + (\\
& a^4*b^4*c^3 - 3*a^5*b^3*c^2*d + 3*a^6*b^2*c*d^2 - a^7*b*d^3)*g^5) - 12*\log(\\
& b*e*x/(d*x + c) + a*e/(d*x + c))/(b^5*g^5*x^4 + 4*a*b^4*g^5*x^3 + 6*a^2*b^3 \\
& *g^5*x^2 + 4*a^3*b^2*g^5*x + a^4*b*g^5) + 12*d^4*\log(b*x + a)/((b^5*c^4 - 4 \\
& *a*b^4*c^3*d + 6*a^2*b^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)*g^5) - 12*d \\
& ^4*\log(d*x + c)/((b^5*c^4 - 4*a*b^4*c^3*d + 6*a^2*b^3*c^2*d^2 - 4*a^3*b^2*c \\
& *d^3 + a^4*b*d^4)*g^5)) - 1/4*B^2*c^2*i^2*\log(b*e*x/(d*x + c) + a*e/(d*x + \\
& c))^2/(b^5*g^5*x^4 + 4*a*b^4*g^5*x^3 + 6*a^2*b^3*g^5*x^2 + 4*a^3*b^2*g^5*x \\
& + a^4*b*g^5) - 1/6*(4*b*x + a)*A^2*c*d*i^2/(b^6*g^5*x^4 + 4*a*b^5*g^5*x^3 + \\
& 6*a^2*b^4*g^5*x^2 + 4*a^3*b^3*g^5*x + a^4*b^2*g^5) - 1/12*(6*b^2*x^2 + 4*a \\
& *b*x + a^2)*A^2*d^2*i^2/(b^7*g^5*x^4 + 4*a*b^6*g^5*x^3 + 6*a^2*b^5*g^5*x^2 \\
& + 4*a^3*b^4*g^5*x + a^4*b^3*g^5) - 1/4*A^2*c^2*i^2/(b^5*g^5*x^4 + 4*a*b^4*g \\
& ^5*x^3 + 6*a^2*b^3*g^5*x^2 + 4*a^3*b^2*g^5*x + a^4*b*g^5)
\end{aligned}$$

mupad [B] time = 11.20, size = 1940, normalized size = 6.49

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{int}(((c*i + d*i*x)^2*(A + B*\log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x)^5, x)$

[Out] $-\log\left(\frac{e*(a + b*x)}{c + d*x}\right)^2 * \left(\frac{x*(b*((B^2*c*d*i^2)/(6*b^3*g^5) + (B^2*a*d^2*i^2)/(12*b^4*g^5)) + (B^2*c*d*i^2)/(2*b^2*g^5) + (B^2*a*d^2*i^2)/(4*b^3*g^5))}{(12*b^4*g^5)} + \frac{(B^2*c*d*i^2)/(6*b^3*g^5) + (B^2*a*d^2*i^2)/(12*b^4*g^5)}{(12*b^4*g^5)} + \frac{(B^2*c^2*i^2)/(4*b^2*g^5) + (B^2*d^2*i^2*x^2)/(2*b^2*g^5)}{(4*a^3*x + a^4/b + b^3*x^4 + 6*a^2*b*x^2 + 4*a*b^2*x^3)} - \frac{(B^2*d^4*i^2)/(12*b^3*g^5*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))}{(12*b^3*g^5*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))} - \frac{(72*A^2*a^3*d^3*i^2 - 216*A^2*b^3*c^3*i^2 + 37*B^2*a^3*d^3*i^2 - 27*B^2*b^3*c^3*i^2 + 84*A*B*a^3*d^3*i^2 - 108*A*B*b^3*c^3*i^2 + 72*A^2*a*b^2*c^2*d*i^2 + 72*A^2*a^2*b*c*d^2*i^2 + 37*B^2*a*b^2*c^2*d*i^2 + 37*B^2*a^2*b*c*d^2*i^2 + 84*A*B*a*b^2*c^2*d*i^2 + 84*A*B*a^2*b*c*d^2*i^2)/(12*(a*d - b*c))}{(12*(a*d - b*c))} + \frac{(x^3*(7*B^2*b^3*d^3*i^2 + 12*A*B*b^3*d^3*i^2))/(a*d - b*c)}{(a*d - b*c)} + \frac{(x*(72*A^2*a^2*b*d^3*i^2 + 37*B^2*a^2*b*d^3*i^2 - 144*A^2*b^3*c^2*d*i^2 - 11*B^2*b^3*c^2*d*i^2 + 72*A^2*a*b^2*c*d^2*i^2 + 37*B^2*a*b^2*c*d^2*i^2 + 84*A*B*a^2*b*d^3*i^2 - 60*A*B*b^3*c^2*d*i^2 + 84*A*B*a*b^2*c*d^2*i^2))/(3*(a*d - b*c))}{(3*(a*d - b*c))} + \frac{(x^2*(72*A^2*a*b^2*d^3*i^2 + 37*B^2*a*b^2*d^3*i^2 - 72*A^2*b^3*c*d^2*i^2 + 5*B^2*b^3*c*d^2*i^2 + 84*A*B*a*b^2*d^3*i^2 - 12*A*B*b^3*c*d^2*i^2))/(2*(a*d - b*c))}{(2*(a*d - b*c))} / (72*a^4*b^3*g^5 + 72*b^7*g^5*x^4 + 288*a^3*b^4*g^5*x + 288*a*b^6*g^5*x^3 + 432*a^2*b^5*g^5*x^2) - \left(\frac{\log\left(\frac{e*(a + b*x)}{c + d*x}\right)*(x^2*((A*B*d*i^2)/(b^2*g^5) + (B^2*d^4*i^2*(b*(b*((4*a^2*d^2 + b^2*c^2 - 5*a*b*c*d))/(12*b*d^3) + (a*(a*d - b*c))/(4*b*d^2)) + (4*a^2*d^2 + b^2*c^2 - 5*a*b*c*d)/(6*d^3) + (a*(a*d - b*c))/(2*d^2)) - a*((b^2*c - a*b*d)/(4*d^2) - (b*(a*d - b*c))/(2*d^2)) + (b^3*c^2 + 4*a^2*b*d^2 - 5*a*b^2*c*d)/(4*d^3))}{(6*b^3*g^5*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))} + a*((B*i^2*(4*A*b*c - B*a*d + B*b*c))/(12*b^4*g^5) + (A*B*a*d*i^2)/(6*b^4*g^5) + x*(b*((B*i^2*(4*A*b*c - B*a*d + B*b*c))/(12*b^4*g^5) + (A*B*a*d*i^2)/(6*b^4*g^5)) + (B*i^2*(4*A*b*c - B*a*d + B*b*c))/(4*b^3*g^5) + (B^2*d^4*i^2*(b*(a*((4*a^2*d^2 + b^2*c^2 - 5*a*b*c*d))/(12*b*d^3) + (a*(a*d - b*c))/(4*b*d^2)) + (6*a^3*d^3 - b^3*c^3 + 5*a*b^2*c^2*d - 10*a^2*b*c*d^2)/(12*b*d^4)) + a*(b*((4*a^2*d^2 + b^2*c^2 - 5*a*b*c*d))/(12*b*d^3) + (a*(a*d - b*c))/(4*b*d^2)) + (4*a^2*d^2 + b^2*c^2 - 5*a*b*c*d)/(6*d^3) + (a*(a*d - b*c))/(2*d^2)) + (6*a^3*d^3 - b^3*c^3 + 5*a*b^2*c^2*d - 10*a^2*b*c*d^2)/(4*d^4))}{(6*b^3*g^5*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))} + \frac{(A*B*a*d*i^2)/(2*b^3*g^5) + (B*i^2*(6*A*b^2*c^2 - 2*B*a^2*d^2 + B*b^2*c^2 + B*a*b*c*d))/(12*b^4*d*g^5) + (B^2*d^4*i^2*(a*(a*((4*a^2*d^2 + b^2*c^2 - 5*a*b*c*d))/(12*b*d^3) + (a*(a*d - b*c))/(4*b*d^2)) + (6*a^3*d^3 - b^3*c^3 + 5*a*b^2*c^2*d - 10*a^2*b*c*d^2)/(12*b*d^4)) + (4*a^4*d^4 + b^4*c^4 + 10*a^2*b^2*c^2*d^2 - 5*a*b^3*c^3*d - 10*a^3*b*c*d^3)/(4*b*d^5))}{(6*b^3*g^5*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))} - \frac{(B^2*d^4*i^2*x^3*(b*((b^2*c - a*b*d)/(4*d^2) - (b*(a*d - b*c))/(2*d^2)) + (b^3*c - a*b^2*d)/(4*d^2)))/(6*b^3*g^5*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))}{(6*b^3*g^5*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))} / ((4*a^3*x)/d + a^4/(b*d) + (b^3*x^4)/d + (6*a^2*b*x^2)/d + (4*a*b^2*x^3)/d) - (B*d^4*i^2*atan(((2*b*d*x - (72*b^5*c^2*g^5 - 72*a^2*b^3*d^2*g^5)/(72*b^3*g^5*(a*d - b*c))))*1i$

$)/(a*d - b*c))*(12*A + 7*B)*1i)/(36*b^3*g^5*(a*d - b*c)^2)$

sympy [B] time = 134.61, size = 2055, normalized size = 6.87

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)**5,x)
[Out] -B*d**4*i**2*(12*A + 7*B)*log(x + (12*A*B*a*d**5*i**2 + 12*A*B*b*c*d**4*i**
2 + 7*B**2*a*d**5*i**2 + 7*B**2*b*c*d**4*i**2 - B*a**3*d**7*i**2*(12*A + 7*
B)/(a*d - b*c)**2 + 3*B*a**2*b*c*d**6*i**2*(12*A + 7*B)/(a*d - b*c)**2 - 3*
B*a*b**2*c**2*d**5*i**2*(12*A + 7*B)/(a*d - b*c)**2 + B*b**3*c**3*d**4*i**2
*(12*A + 7*B)/(a*d - b*c)**2)/(24*A*B*b*d**5*i**2 + 14*B**2*b*d**5*i**2))/(
72*b**3*g**5*(a*d - b*c)**2) + B*d**4*i**2*(12*A + 7*B)*log(x + (12*A*B*a*d
**5*i**2 + 12*A*B*b*c*d**4*i**2 + 7*B**2*a*d**5*i**2 + 7*B**2*b*c*d**4*i**2
+ B*a**3*d**7*i**2*(12*A + 7*B)/(a*d - b*c)**2 - 3*B*a**2*b*c*d**6*i**2*(1
2*A + 7*B)/(a*d - b*c)**2 + 3*B*a*b**2*c**2*d**5*i**2*(12*A + 7*B)/(a*d - b
*c)**2 - B*b**3*c**3*d**4*i**2*(12*A + 7*B)/(a*d - b*c)**2)/(24*A*B*b*d**5*
i**2 + 14*B**2*b*d**5*i**2))/(72*b**3*g**5*(a*d - b*c)**2) + (4*B**2*a*c**3
*d*i**2 + 12*B**2*a*c**2*d**2*i**2*x + 12*B**2*a*c*d**3*i**2*x**2 + 4*B**2*
a*d**4*i**2*x**3 - 3*B**2*b*c**4*i**2 - 8*B**2*b*c**3*d*i**2*x - 6*B**2*b*c
**2*d**2*i**2*x**2 + B**2*b*d**4*i**2*x**4)*log(e*(a + b*x)/(c + d*x))**2/(
12*a**6*d**2*g**5 - 24*a**5*b*c*d*g**5 + 48*a**5*b*d**2*g**5*x + 12*a**4*b*
**2*c**2*g**5 - 96*a**4*b**2*c*d*g**5*x + 72*a**4*b**2*d**2*g**5*x**2 + 48*a
**3*b**3*c**2*g**5*x - 144*a**3*b**3*c*d*g**5*x**2 + 48*a**3*b**3*d**2*g**5
*x**3 + 72*a**2*b**4*c**2*g**5*x**2 - 96*a**2*b**4*c*d*g**5*x**3 + 12*a**2*
b**4*d**2*g**5*x**4 + 48*a*b**5*c**2*g**5*x**3 - 24*a*b**5*c*d*g**5*x**4 +
12*b**6*c**2*g**5*x**4) + (-12*A*B*a**3*d**3*i**2 - 12*A*B*a**2*b*c*d**2*i*
**2 - 48*A*B*a**2*b*d**3*i**2*x - 12*A*B*a*b**2*c**2*d*i**2 - 48*A*B*a*b**2*
c*d**2*i**2*x - 72*A*B*a*b**2*d**3*i**2*x**2 + 36*A*B*b**3*c**3*i**2 + 96*A
*B*b**3*c**2*d*i**2*x + 72*A*B*b**3*c*d**2*i**2*x**2 - 7*B**2*a**3*d**3*i**
2 - 7*B**2*a**2*b*c*d**2*i**2 - 28*B**2*a**2*b*d**3*i**2*x - 7*B**2*a*b**2*
c**2*d*i**2 - 28*B**2*a*b**2*c*d**2*i**2*x - 42*B**2*a*b**2*d**3*i**2*x**2
+ 9*B**2*b**3*c**3*i**2 + 20*B**2*b**3*c**2*d*i**2*x + 6*B**2*b**3*c*d**2*i
**2*x**2 - 12*B**2*b**3*d**3*i**2*x**3)*log(e*(a + b*x)/(c + d*x))/(72*a**5
*b**3*d*g**5 - 72*a**4*b**4*c*g**5 + 288*a**4*b**4*d*g**5*x - 288*a**3*b**5
*c*g**5*x + 432*a**3*b**5*d*g**5*x**2 - 432*a**2*b**6*c*g**5*x**2 + 288*a**
2*b**6*d*g**5*x**3 - 288*a*b**7*c*g**5*x**3 + 72*a*b**7*d*g**5*x**4 - 72*b*
**8*c*g**5*x**4) + (-72*A**2*a**3*d**3*i**2 - 72*A**2*a**2*b*c*d**2*i**2 - 7
2*A**2*a*b**2*c**2*d*i**2 + 216*A**2*b**3*c**3*i**2 - 84*A*B*a**3*d**3*i**2
- 84*A*B*a**2*b*c*d**2*i**2 - 84*A*B*a*b**2*c**2*d*i**2 + 108*A*B*b**3*c**
3*i**2 - 37*B**2*a**3*d**3*i**2 - 37*B**2*a**2*b*c*d**2*i**2 - 37*B**2*a*b*
**2*c**2*d*i**2 + 27*B**2*b**3*c**3*i**2 + x**3*(-144*A*B*b**3*d**3*i**2 - 8
4*B**2*b**3*d**3*i**2) + x**2*(-432*A**2*a*b**2*d**3*i**2 + 432*A**2*b**3*c
```

$$\begin{aligned}
& *d^{**2}i^{**2} - 504*A*B*a*b^{**2}d^{**3}i^{**2} + 72*A*B*b^{**3}c*d^{**2}i^{**2} - 222*B^{**2}* \\
& a*b^{**2}d^{**3}i^{**2} - 30*B^{**2}b^{**3}c*d^{**2}i^{**2}) + x*(-288*A^{**2}a^{**2}b*d^{**3}i^{**} \\
& 2 - 288*A^{**2}a*b^{**2}c*d^{**2}i^{**2} + 576*A^{**2}b^{**3}c^{**2}d*i^{**2} - 336*A*B*a^{**2}* \\
& b*d^{**3}i^{**2} - 336*A*B*a*b^{**2}c*d^{**2}i^{**2} + 240*A*B*b^{**3}c^{**2}d*i^{**2} - 148*B \\
& **2*a^{**2}b*d^{**3}i^{**2} - 148*B^{**2}a*b^{**2}c*d^{**2}i^{**2} + 44*B^{**2}b^{**3}c^{**2}d*i* \\
& *2))/ (864*a^{**5}b^{**3}d*g^{**5} - 864*a^{**4}b^{**4}c*g^{**5} + x^{**4}(864*a*b^{**7}d*g^{**5} \\
& - 864*b^{**8}c*g^{**5}) + x^{**3}(3456*a^{**2}b^{**6}d*g^{**5} - 3456*a*b^{**7}c*g^{**5}) + x \\
& **2(5184*a^{**3}b^{**5}d*g^{**5} - 5184*a^{**2}b^{**6}c*g^{**5}) + x(3456*a^{**4}b^{**4}d*g \\
& **5 - 3456*a^{**3}b^{**5}c*g^{**5}))
\end{aligned}$$

$$3.73 \quad \int \frac{(ci+dx)^2 \left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)^2}{(ag+bgx)^6} dx$$

Optimal. Leaf size=463

$$\frac{b^2 i^2 (c+dx)^5 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)^2}{5g^6 (a+bx)^5 (bc-ad)^3} - \frac{2b^2 B i^2 (c+dx)^5 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{25g^6 (a+bx)^5 (bc-ad)^3} - \frac{d^2 i^2 (c+dx)^3 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{3g^6 (a+bx)^3 (bc-ad)^3}$$

[Out] $-2/27*B^2*d^2*i^2*(d*x+c)^3/(-a*d+b*c)^3/g^6/(b*x+a)^3+1/16*b*B^2*d*i^2*(d*x+c)^4/(-a*d+b*c)^3/g^6/(b*x+a)^4-2/125*b^2*B^2*i^2*(d*x+c)^5/(-a*d+b*c)^3/g^6/(b*x+a)^5-2/9*B*d^2*i^2*(d*x+c)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^3/g^6/(b*x+a)^3+1/4*b*B*d*i^2*(d*x+c)^4*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^3/g^6/(b*x+a)^4-2/25*b^2*B*i^2*(d*x+c)^5*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^3/g^6/(b*x+a)^5-1/3*d^2*i^2*(d*x+c)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/(-a*d+b*c)^3/g^6/(b*x+a)^3+1/2*b*d*i^2*(d*x+c)^4*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/(-a*d+b*c)^3/g^6/(b*x+a)^4-1/5*b^2*i^2*(d*x+c)^5*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/(-a*d+b*c)^3/g^6/(b*x+a)^5$

Rubi [C] time = 4.22, antiderivative size = 1009, normalized size of antiderivative = 2.18, number of steps used = 116, number of rules used = 11, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}} = 0.262$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{B^2 i^2 \log^2(a+bx)d^5}{30b^3(bc-ad)^3g^6} + \frac{B^2 i^2 \log^2(c+dx)d^5}{30b^3(bc-ad)^3g^6} - \frac{47B^2 i^2 \log(a+bx)d^5}{900b^3(bc-ad)^3g^6} - \frac{B i^2 \log(a+bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right) d^5}{15b^3(bc-ad)^3g^6} + \frac{47B}{90}$$

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x]])^2)/(a*g + b*g*x)^6, x]

[Out] $(-2*B^2*(b*c - a*d)^2*i^2)/(125*b^3*g^6*(a + b*x)^5) - (7*B^2*d*(b*c - a*d)*i^2)/(400*b^3*g^6*(a + b*x)^4) + (43*B^2*d^2*i^2)/(2700*b^3*g^6*(a + b*x)^3) - (13*B^2*d^3*i^2)/(1800*b^3*(b*c - a*d)*g^6*(a + b*x)^2) - (47*B^2*d^4*i^2)/(900*b^3*(b*c - a*d)^2*g^6*(a + b*x)) - (47*B^2*d^5*i^2*Log[a + b*x])/(900*b^3*(b*c - a*d)^3*g^6) + (B^2*d^5*i^2*Log[a + b*x]^2)/(30*b^3*(b*c - a*d)^3*g^6) - (2*B*(b*c - a*d)^2*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(25*b^3*g^6*(a + b*x)^5) - (3*B*d*(b*c - a*d)*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(20*b^3*g^6*(a + b*x)^4) - (B*d^2*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(45*b^3*g^6*(a + b*x)^3) + (B*d^3*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(30*b^3*(b*c - a*d)*g^6*(a + b*x)^2) - (B*d^4*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(15*b^3*(b*c - a*d)^2*g^6*(a + b*x)) - (B*d^5*i^2$

$$2 \log[a + bx] \cdot (A + B \log[(e \cdot (a + bx)) / (c + dx)]) / (15b^3(bc - ad)^3 g^6) - ((bc - ad)^2 i^2 (A + B \log[(e \cdot (a + bx)) / (c + dx)])^2) / (5b^3 g^6 (a + bx)^5) - (d(bc - ad) i^2 (A + B \log[(e \cdot (a + bx)) / (c + dx)])^2) / (2b^3 g^6 (a + bx)^4) - (d^2 i^2 (A + B \log[(e \cdot (a + bx)) / (c + dx)])^2) / (3b^3 g^6 (a + bx)^3) + (47B^2 d^5 i^2 \log[c + dx]) / (900b^3 (bc - ad)^3 g^6) - (B^2 d^5 i^2 \log[-((d \cdot (a + bx)) / (bc - ad))] \log[c + dx]) / (15b^3 (bc - ad)^3 g^6) + (B d^5 i^2 (A + B \log[(e \cdot (a + bx)) / (c + dx)]) \log[c + dx]) / (15b^3 (bc - ad)^3 g^6) + (B^2 d^5 i^2 \log[c + dx]^2) / (30b^3 (bc - ad)^3 g^6) - (B^2 d^5 i^2 \log[a + bx] \log[(b \cdot (c + dx)) / (bc - ad)]) / (15b^3 (bc - ad)^3 g^6) - (B^2 d^5 i^2 \text{PolyLog}[2, -((d \cdot (a + bx)) / (bc - ad))]) / (15b^3 (bc - ad)^3 g^6) - (B^2 d^5 i^2 \text{PolyLog}[2, (b \cdot (c + dx)) / (bc - ad)]) / (15b^3 (bc - ad)^3 g^6)$$

Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 44

```
Int[((a_) + (b_)*(x_))^(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Int[ExpandIntegrand[(a + bx)^m*(c + dx)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_) + Log[(c_)*(x_)]^(n_))*(b_)/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)]*(b_))^(p_)*((f_) + (g_)*(x_))^(q_), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_)*((d_) + (e_)*(x_))^(n_)]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))]*(b_))/((f_) + (g_)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x]
```

], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2418

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]

Rule 2524

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]

Rule 2525

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]

Rule 2528

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]

Rubi steps

$$\begin{aligned}
\int \frac{(73c + 73dx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{(ag + bgx)^6} dx &= \int \left(\frac{5329(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^2 g^6 (a + bx)^6} + \frac{10658d(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2 g^6 (a + bx)^6} \right) dx \\
&= \frac{(5329d^2) \int \frac{\left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{(a+bx)^4} dx}{b^2 g^6} + \frac{(10658d(bc - ad)) \int \frac{\left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{(a+bx)^5} dx}{b^2 g^6} \\
&= -\frac{5329(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{5b^3 g^6 (a + bx)^5} - \frac{5329d(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{2b^3 g^6 (a + bx)^5} \\
&= -\frac{5329(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{5b^3 g^6 (a + bx)^5} - \frac{5329d(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{2b^3 g^6 (a + bx)^5} \\
&= -\frac{5329(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{5b^3 g^6 (a + bx)^5} - \frac{5329d(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{2b^3 g^6 (a + bx)^5} \\
&= -\frac{5329(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{5b^3 g^6 (a + bx)^5} - \frac{5329d(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{2b^3 g^6 (a + bx)^5} \\
&= -\frac{10658B(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{25b^3 g^6 (a + bx)^5} - \frac{15987Bd(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{20b^3 g^6 (a + bx)^5} \\
&= -\frac{10658B(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{25b^3 g^6 (a + bx)^5} - \frac{15987Bd(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{20b^3 g^6 (a + bx)^5} \\
&= -\frac{10658B(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{25b^3 g^6 (a + bx)^5} - \frac{15987Bd(bc - ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{20b^3 g^6 (a + bx)^5} \\
&= -\frac{10658B^2(bc - ad)^2}{125b^3 g^6 (a + bx)^5} - \frac{37303B^2d(bc - ad)}{400b^3 g^6 (a + bx)^4} + \frac{229147B^2d^2}{2700b^3 g^6 (a + bx)^3} - \\
&= -\frac{10658B^2(bc - ad)^2}{125b^3 g^6 (a + bx)^5} - \frac{37303B^2d(bc - ad)}{400b^3 g^6 (a + bx)^4} + \frac{229147B^2d^2}{2700b^3 g^6 (a + bx)^3} - \\
&= -\frac{10658B^2(bc - ad)^2}{125b^3 g^6 (a + bx)^5} - \frac{37303B^2d(bc - ad)}{400b^3 g^6 (a + bx)^4} + \frac{229147B^2d^2}{2700b^3 g^6 (a + bx)^3} - \\
&= -\frac{10658B^2(bc - ad)^2}{125b^3 g^6 (a + bx)^5} - \frac{37303B^2d(bc - ad)}{400b^3 g^6 (a + bx)^4} + \frac{229147B^2d^2}{2700b^3 g^6 (a + bx)^3} -
\end{aligned}$$

Mathematica [C] time = 4.70, size = 2220, normalized size = 4.79

Result too large to show

Antiderivative was successfully verified.

[In] Integrate[(((c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))^2)/(a*g + b*g*x)^6,x]

[Out]
$$-1/54000*(i^2*(10800*(b*c - a*d)^5*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))^2 + 27000*d*(b*c - a*d)^4*(a + b*x)*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))^2 - 18000*d^2*(-(b*c) + a*d)^3*(a + b*x)^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))^2 + 1000*B*d^2*(a + b*x)^2*(12*(b*c - a*d)^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)])) - 18*d*(b*c - a*d)^2*(a + b*x)*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]) + 36*d^2*(b*c - a*d)*(a + b*x)^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]) + 36*d^3*(a + b*x)^3*\text{Log}[a + b*x]*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]) - 36*d^3*(a + b*x)^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)])*\text{Log}[c + d*x] + 36*B*d^2*(a + b*x)^2*(b*c - a*d + d*(a + b*x)*\text{Log}[a + b*x] - d*(a + b*x)*\text{Log}[c + d*x]) - 9*B*d*(a + b*x)*((b*c - a*d)^2 + 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d^2*(a + b*x)^2*\text{Log}[a + b*x] + 2*d^2*(a + b*x)^2*\text{Log}[c + d*x]) + 2*B*(2*(b*c - a*d)^3 - 3*d*(b*c - a*d)^2*(a + b*x) + 6*d^2*(b*c - a*d)*(a + b*x)^2 + 6*d^3*(a + b*x)^3*\text{Log}[a + b*x] - 6*d^3*(a + b*x)^3*\text{Log}[c + d*x]) - 18*B*d^3*(a + b*x)^3*(\text{Log}[a + b*x]*(\text{Log}[a + b*x] - 2*\text{Log}[(b*(c + d*x))/(b*c - a*d)]) - 2*\text{PolyLog}[2, (d*(a + b*x))/(-(b*c) + a*d)]) + 18*B*d^3*(a + b*x)^3*((2*\text{Log}[(d*(a + b*x))/(-(b*c) + a*d)] - \text{Log}[c + d*x])*\text{Log}[c + d*x] + 2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]) + 375*B*d*(a + b*x)*(36*(b*c - a*d)^4*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]) + 48*d*(-(b*c) + a*d)^3*(a + b*x)*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]) + 72*d^2*(b*c - a*d)^2*(a + b*x)^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]) + 144*d^3*(-(b*c) + a*d)*(a + b*x)^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]) - 144*d^4*(a + b*x)^4*\text{Log}[a + b*x]*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]) + 144*d^4*(a + b*x)^4*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)])*\text{Log}[c + d*x] - 144*B*d^3*(a + b*x)^3*(b*c - a*d + d*(a + b*x)*\text{Log}[a + b*x] - d*(a + b*x)*\text{Log}[c + d*x]) + 36*B*d^2*(a + b*x)^2*((b*c - a*d)^2 + 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d^2*(a + b*x)^2*\text{Log}[a + b*x] + 2*d^2*(a + b*x)^2*\text{Log}[c + d*x]) - 8*B*d*(a + b*x)*(2*(b*c - a*d)^3 - 3*d*(b*c - a*d)^2*(a + b*x) + 6*d^2*(b*c - a*d)*(a + b*x)^2 + 6*d^3*(a + b*x)^3*\text{Log}[a + b*x] - 6*d^3*(a + b*x)^3*\text{Log}[c + d*x]) + 3*B*(3*(b*c - a*d)^4 + 4*d*(-(b*c) + a*d)^3*(a + b*x) + 6*d^2*(b*c - a*d)^2*(a + b*x)^2 + 12*d^3*(-(b*c) + a*d)*(a + b*x)^3 - 12*d^4*(a + b*x)^4*\text{Log}[a + b*x] + 12*d^4*(a + b*x)^4*\text{Log}[c + d*x]) + 72*B*d^4*(a + b*x)^4*(\text{Log}[a + b*x]*(\text{Log}[a + b*x] - 2*\text{Log}[(b*(c + d*x))/(b*c - a*d)]) - 2*\text{PolyLog}[2, (d*(a + b*x))/(-(b*c) + a*d)]) - 72*B*d^4*(a + b*x)^4*((2*\text{Log}[(d*(a + b*x))/(-(b*c) + a*d)] - \text{Log}[c + d*x])*\text{Log}[c + d*x] + 2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]) + 6*B*(-225*a*B*d*(b*c - a*d)^4 + 144*B*(b*c - a*d)^5 - 225*b*B*d*(b*c - a*d)^4*x + 300*a*B*d^2*(b*c - a*d)^3*(a + b*x) - 180*B*d*(b*c - a*d)^4*(a + b*x) + 300*b*B*d^2*(b*c - a*d)^3*x*(a$$

$$\begin{aligned}
& + b*x) - 450*a*B*d^3*(b*c - a*d)^2*(a + b*x)^2 + 640*B*d^2*(b*c - a*d)^3*(a + b*x)^2 - 450*b*B*d^3*(b*c - a*d)^2*x*(a + b*x)^2 + 900*a*B*d^4*(b*c - a*d)*(a + b*x)^3 - 1860*B*d^3*(b*c - a*d)^2*(a + b*x)^3 + 900*b*B*d^4*(b*c - a*d)*x*(a + b*x)^3 + 3600*b*B*c*d^4*(a + b*x)^4 - 3600*a*B*d^5*(a + b*x)^4 + 3720*B*d^4*(b*c - a*d)*(a + b*x)^4 + 900*a*B*d^5*(a + b*x)^4*\text{Log}[a + b*x] + 900*b*B*d^5*x*(a + b*x)^4*\text{Log}[a + b*x] + 7320*B*d^5*(a + b*x)^5*\text{Log}[a + b*x] + 720*(b*c - a*d)^5*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]) - 900*d*(b*c - a*d)^4*(a + b*x)*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]) + 1200*d^2*(b*c - a*d)^3*(a + b*x)^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]) - 1800*d^3*(b*c - a*d)^2*(a + b*x)^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]) + 3600*d^4*(b*c - a*d)*(a + b*x)^4*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]) + 3600*d^5*(a + b*x)^5*\text{Log}[a + b*x]*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]) - 900*a*B*d^5*(a + b*x)^4*\text{Log}[c + d*x] - 900*b*B*d^5*x*(a + b*x)^4*\text{Log}[c + d*x] - 7320*B*d^5*(a + b*x)^5*\text{Log}[c + d*x] - 3600*d^5*(a + b*x)^5*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)])*\text{Log}[c + d*x] - 1800*B*d^5*(a + b*x)^5*(\text{Log}[a + b*x]*(\text{Log}[a + b*x] - 2*\text{Log}[(b*(c + d*x))/(b*c - a*d)]) - 2*\text{PolyLog}[2, (d*(a + b*x))/(-(b*c) + a*d)]) + 1800*B*d^5*(a + b*x)^5*((2*\text{Log}[(d*(a + b*x))/(-(b*c) + a*d)] - \text{Log}[c + d*x])*\text{Log}[c + d*x] + 2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])))/((b^3*(b*c - a*d)^3*g^6*(a + b*x)^5)
\end{aligned}$$

fricas [B] time = 0.68, size = 1323, normalized size = 2.86

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^6,x, algorithm="fricas")

[Out]
$$\begin{aligned}
& -1/54000*(60*((60*A*B + 47*B^2)*b^5*c*d^4 - (60*A*B + 47*B^2)*a*b^4*d^5)*i^2*x^4 - 30*((60*A*B - 13*B^2)*b^5*c^2*d^3 - 50*(12*A*B + 7*B^2)*a*b^4*c*d^4 + 3*(180*A*B + 121*B^2)*a^2*b^3*d^5)*i^2*x^3 + 10*(2*(900*A^2 + 60*A*B - 43*B^2)*b^5*c^3*d^2 - 75*(72*A^2 + 12*A*B - 5*B^2)*a*b^4*c^2*d^3 + 600*(9*A^2 + 6*A*B + 2*B^2)*a^2*b^3*c*d^4 - (1800*A^2 + 2820*A*B + 1489*B^2)*a^3*b^2*d^5)*i^2*x^2 + 5*(27*(200*A^2 + 60*A*B + 7*B^2)*b^5*c^4*d - 100*(144*A^2 + 60*A*B + 11*B^2)*a*b^4*c^3*d^2 + 1200*(9*A^2 + 6*A*B + 2*B^2)*a^2*b^3*c^2*d^3 - (1800*A^2 + 2820*A*B + 1489*B^2)*a^4*b*d^5)*i^2*x + (432*(25*A^2 + 10*A*B + 2*B^2)*b^5*c^5 - 3375*(8*A^2 + 4*A*B + B^2)*a*b^4*c^4*d + 2000*(9*A^2 + 6*A*B + 2*B^2)*a^2*b^3*c^3*d^2 - (1800*A^2 + 2820*A*B + 1489*B^2)*a^5*d^5)*i^2 + 1800*(B^2*b^5*d^5*i^2*x^5 + 5*B^2*a*b^4*d^5*i^2*x^4 + 10*B^2*a^2*b^3*d^5*i^2*x^3 + 10*(B^2*b^5*c^3*d^2 - 3*B^2*a*b^4*c^2*d^3 + 3*B^2*a^2*b^3*c*d^4)*i^2*x^2 + 5*(3*B^2*b^5*c^4*d - 8*B^2*a*b^4*c^3*d^2 + 6*B^2*a^2*b^3*c^2*d^3)*i^2*x + (6*B^2*b^5*c^5 - 15*B^2*a*b^4*c^4*d + 10*B^2*a^2*b^3*c^3*d^2)*i^2)*log((b*e*x + a*e)/(d*x + c))^2 + 60*((60*A*B + 47*B^2)*b^5*d^5*i^2*x^5 + 5*(12*B^2*b^5*c*d^4 + 5*(12*A*B + 7*B^2)*a*b^4*d^5)*i^2*x^4 - 10*(3*B^2*b^5*c^2*d^3 - 30*B^2*a*b^4*c*d^4 - 20*(3*A*B + B^2)*a^2*b^3*d^5)*i^2*x^3
\end{aligned}$$

$3 + 10*(2*(30*A*B + B^2)*b^5*c^3*d^2 - 15*(12*A*B + B^2)*a*b^4*c^2*d^3 + 60*(3*A*B + B^2)*a^2*b^3*c*d^4)*i^2*x^2 + 5*(9*(20*A*B + 3*B^2)*b^5*c^4*d - 20*(24*A*B + 5*B^2)*a*b^4*c^3*d^2 + 120*(3*A*B + B^2)*a^2*b^3*c^2*d^3)*i^2*x + (72*(5*A*B + B^2)*b^5*c^5 - 225*(4*A*B + B^2)*a*b^4*c^4*d + 200*(3*A*B + B^2)*a^2*b^3*c^3*d^2)*i^2)*\log((b*e*x + a*e)/(d*x + c)))/((b^11*c^3 - 3*a*b^10*c^2*d + 3*a^2*b^9*c*d^2 - a^3*b^8*d^3)*g^6*x^5 + 5*(a*b^10*c^3 - 3*a^2*b^9*c^2*d + 3*a^3*b^8*c*d^2 - a^4*b^7*d^3)*g^6*x^4 + 10*(a^2*b^9*c^3 - 3*a^3*b^8*c^2*d + 3*a^4*b^7*c*d^2 - a^5*b^6*d^3)*g^6*x^3 + 10*(a^3*b^8*c^3 - 3*a^4*b^7*c^2*d + 3*a^5*b^6*c*d^2 - a^6*b^5*d^3)*g^6*x^2 + 5*(a^4*b^7*c^3 - 3*a^5*b^6*c^2*d + 3*a^6*b^5*c*d^2 - a^7*b^4*d^3)*g^6*x + (a^5*b^6*c^3 - 3*a^6*b^5*c^2*d + 3*a^7*b^4*c*d^2 - a^8*b^3*d^3)*g^6)$

giac [A] time = 3.09, size = 709, normalized size = 1.53

$$\left(10800 B^2 b^2 e^6 \log\left(\frac{bx+ae}{dx+c}\right)^2 - \frac{27000 (bx+ae) B^2 b d e^5 \log\left(\frac{bx+ae}{dx+c}\right)^2}{dx+c} + \frac{18000 (bx+ae)^2 B^2 d^2 e^4 \log\left(\frac{bx+ae}{dx+c}\right)^2}{(dx+c)^2} + 21600 A B b^2 e^6 \log\left(\frac{bx+ae}{dx+c}\right) \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^6,x, algorithm="giac")

[Out] 1/54000*(10800*B^2*b^2*e^6*log((b*x*e + a*e)/(d*x + c))^2 - 27000*(b*x*e + a*e)*B^2*b*d*e^5*log((b*x*e + a*e)/(d*x + c))^2/(d*x + c) + 18000*(b*x*e + a*e)^2*B^2*d^2*e^4*log((b*x*e + a*e)/(d*x + c))^2/(d*x + c)^2 + 21600*A*B*b^2*e^6*log((b*x*e + a*e)/(d*x + c)) + 4320*B^2*b^2*e^6*log((b*x*e + a*e)/(d*x + c)) - 54000*(b*x*e + a*e)*A*B*b*d*e^5*log((b*x*e + a*e)/(d*x + c))/(d*x + c) - 13500*(b*x*e + a*e)*B^2*b*d*e^5*log((b*x*e + a*e)/(d*x + c))/(d*x + c) + 36000*(b*x*e + a*e)^2*A*B*d^2*e^4*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 + 12000*(b*x*e + a*e)^2*B^2*d^2*e^4*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 + 10800*A^2*b^2*e^6 + 4320*A*B*b^2*e^6 + 864*B^2*b^2*e^6 - 27000*(b*x*e + a*e)*A^2*b*d*e^5/(d*x + c) - 13500*(b*x*e + a*e)*A*B*b*d*e^5/(d*x + c) - 3375*(b*x*e + a*e)*B^2*b*d*e^5/(d*x + c) + 18000*(b*x*e + a*e)^2*A^2*d^2*e^4/(d*x + c)^2 + 12000*(b*x*e + a*e)^2*A*B*d^2*e^4/(d*x + c)^2 + 4000*(b*x*e + a*e)^2*B^2*d^2*e^4/(d*x + c)^2)*(b*c/((b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))/((b*x*e + a*e)^5*b^2*c^2*g^6/(d*x + c)^5 - 2*(b*x*e + a*e)^5*a*b*c*d*g^6/(d*x + c)^5 + (b*x*e + a*e)^5*a^2*d^2*g^6/(d*x + c)^5)

maple [B] time = 0.05, size = 2761, normalized size = 5.96

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{int}((d*i*x+c*i)^2*(B*\ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^6, x)$

[Out]
$$\begin{aligned} & -2/3*d^2*e^3*i^2/(a*d-b*c)^4/g^6*A*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e) \\ &)^3*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*c-d^2*e^4*i^2/(a*d-b*c)^4/g^6*A*B*b/(\\ & 1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+ \\ & d*e^4*i^2/(a*d-b*c)^4/g^6*A*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4 \\ & *\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+2/5*d*e^5*i^2/(a*d-b*c)^4/g^6*A*B*b^2/(1 \\ & /((d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+1 \\ & /3*d^3*e^3*i^2/(a*d-b*c)^4/g^6*A^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^ \\ & 3*a+2/27*d^3*e^3*i^2/(a*d-b*c)^4/g^6*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b \\ & /d*e)^3*a-2/125*e^5*i^2/(a*d-b*c)^4/g^6*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b* \\ & c/d*e+b/d*e)^5*c-1/5*e^5*i^2/(a*d-b*c)^4/g^6*A^2*b^3/(1/(d*x+c)*a*e-1/(d*x+ \\ & c)*b*c/d*e+b/d*e)^5*c-1/3*d^2*e^3*i^2/(a*d-b*c)^4/g^6*B^2/(1/(d*x+c)*a*e-1/ \\ & (d*x+c)*b*c/d*e+b/d*e)^3*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b*c+1/3*d^3*e^3* \\ & i^2/(a*d-b*c)^4/g^6*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*\ln(b/d*e+ \\ & (a*d-b*c)/(d*x+c)/d*e)^2*a+1/2*d*e^4*i^2/(a*d-b*c)^4/g^6*A^2*b^2/(1/(d*x+c) \\ & *a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*c+1/5*d*e^5*i^2/(a*d-b*c)^4/g^6*A^2*b^2/(1/ \\ & (d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*a+2/9*d^3*e^3*i^2/(a*d-b*c)^4/g^6*A* \\ & B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*a-2/25*e^5*i^2/(a*d-b*c)^4/g^6* \\ & B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*\ln(b/d*e+(a*d-b*c)/(d*x+c \\ &)/d*e)*c+2/25*d*e^5*i^2/(a*d-b*c)^4/g^6*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b* \\ & c/d*e+b/d*e)^5*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+2/3*d^3*e^3*i^2/(a*d-b*c)^ \\ & 4/g^6*A*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*\ln(b/d*e+(a*d-b*c)/(d*x \\ & +c)/d*e)*a-2/9*d^2*e^3*i^2/(a*d-b*c)^4/g^6*A*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c \\ & /d*e+b/d*e)^3*b*c-1/4*d^2*e^4*i^2/(a*d-b*c)^4/g^6*A*B*b/(1/(d*x+c)*a*e-1/(d \\ & *x+c)*b*c/d*e+b/d*e)^4*a-1/2*d^2*e^4*i^2/(a*d-b*c)^4/g^6*B^2*b/(1/(d*x+c)*a \\ & *e-1/(d*x+c)*b*c/d*e+b/d*e)^4*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a+1/2*d*e^4 \\ & *i^2/(a*d-b*c)^4/g^6*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*\ln(b \\ & /d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c-1/4*d^2*e^4*i^2/(a*d-b*c)^4/g^6*B^2*b/(1/(d \\ & *x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+1/4* \\ & d*e^4*i^2/(a*d-b*c)^4/g^6*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4 \\ & *\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+1/5*d*e^5*i^2/(a*d-b*c)^4/g^6*B^2*b^2/(1 \\ & /((d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a \\ & -2/25*e^5*i^2/(a*d-b*c)^4/g^6*A*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d* \\ & e)^5*c-2/27*d^2*e^3*i^2/(a*d-b*c)^4/g^6*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d* \\ & e+b/d*e)^3*b*c+2/125*d*e^5*i^2/(a*d-b*c)^4/g^6*B^2*b^2/(1/(d*x+c)*a*e-1/(d* \\ & x+c)*b*c/d*e+b/d*e)^5*a-1/16*d^2*e^4*i^2/(a*d-b*c)^4/g^6*B^2*b/(1/(d*x+c)*a \\ & *e-1/(d*x+c)*b*c/d*e+b/d*e)^4*a+1/16*d*e^4*i^2/(a*d-b*c)^4/g^6*B^2*b^2/(1/(\\ & d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*c-1/3*d^2*e^3*i^2/(a*d-b*c)^4/g^6*A^2 \\ & /((1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*b*c-1/2*d^2*e^4*i^2/(a*d-b*c)^4/ \\ & g^6*A^2*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*a+2/9*d^3*e^3*i^2/(a*d- \\ & b*c)^4/g^6*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*\ln(b/d*e+(a*d-b*c) \\ & /((d*x+c)/d*e)*a-1/5*e^5*i^2/(a*d-b*c)^4/g^6*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c) \end{aligned}$$

$$\begin{aligned} &) * b * c / d * e + b / d * e)^5 * \ln(b / d * e + (a * d - b * c) / (d * x + c) / d * e)^2 * c + 1 / 4 * d * e^4 * i^2 / (a * d - b \\ & * c)^4 / g^6 * A * B * b^2 / (1 / (d * x + c) * a * e - 1 / (d * x + c) * b * c / d * e + b / d * e)^4 * c + 2 / 25 * d * e^5 * i^ \\ & 2 / (a * d - b * c)^4 / g^6 * A * B * b^2 / (1 / (d * x + c) * a * e - 1 / (d * x + c) * b * c / d * e + b / d * e)^5 * a - 2 / 5 * e \\ & ^5 * i^2 / (a * d - b * c)^4 / g^6 * A * B * b^3 / (1 / (d * x + c) * a * e - 1 / (d * x + c) * b * c / d * e + b / d * e)^5 * \ln \\ & (b / d * e + (a * d - b * c) / (d * x + c) / d * e) * c - 2 / 9 * d^2 * e^3 * i^2 / (a * d - b * c)^4 / g^6 * B^2 / (1 / (d * x \\ & + c) * a * e - 1 / (d * x + c) * b * c / d * e + b / d * e)^3 * \ln(b / d * e + (a * d - b * c) / (d * x + c) / d * e) * b * c \end{aligned}$$

maxima [B] time = 12.03, size = 10880, normalized size = 23.50

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^6,x, algorithm="maxima")

[Out]
$$\begin{aligned} & -1/10*(5*b*x + a)*B^2*c*d*i^2*\log(b*e*x/(d*x + c) + a*e/(d*x + c))^2/(b^7*g \\ & ^6*x^5 + 5*a*b^6*g^6*x^4 + 10*a^2*b^5*g^6*x^3 + 10*a^3*b^4*g^6*x^2 + 5*a^4* \\ & b^3*g^6*x + a^5*b^2*g^6) - 1/30*(10*b^2*x^2 + 5*a*b*x + a^2)*B^2*d^2*i^2*lo \\ & g(b*e*x/(d*x + c) + a*e/(d*x + c))^2/(b^8*g^6*x^5 + 5*a*b^7*g^6*x^4 + 10*a^ \\ & 2*b^6*g^6*x^3 + 10*a^3*b^5*g^6*x^2 + 5*a^4*b^4*g^6*x + a^5*b^3*g^6) - 1/900 \\ & 0*(60*((60*b^4*d^4*x^4 + 12*b^4*c^4 - 63*a*b^3*c^3*d + 137*a^2*b^2*c^2*d^2 \\ & - 163*a^3*b*c*d^3 + 137*a^4*d^4 - 30*(b^4*c*d^3 - 9*a*b^3*d^4)*x^3 + 10*(2* \\ & b^4*c^2*d^2 - 13*a*b^3*c*d^3 + 47*a^2*b^2*d^4)*x^2 - 5*(3*b^4*c^3*d - 17*a* \\ & b^3*c^2*d^2 + 43*a^2*b^2*c*d^3 - 77*a^3*b*d^4)*x)/(b^10*c^4 - 4*a*b^9*c^3* \\ & d + 6*a^2*b^8*c^2*d^2 - 4*a^3*b^7*c*d^3 + a^4*b^6*d^4)*g^6*x^5 + 5*(a*b^9*c \\ & ^4 - 4*a^2*b^8*c^3*d + 6*a^3*b^7*c^2*d^2 - 4*a^4*b^6*c*d^3 + a^5*b^5*d^4)*g \\ & ^6*x^4 + 10*(a^2*b^8*c^4 - 4*a^3*b^7*c^3*d + 6*a^4*b^6*c^2*d^2 - 4*a^5*b^5* \\ & c*d^3 + a^6*b^4*d^4)*g^6*x^3 + 10*(a^3*b^7*c^4 - 4*a^4*b^6*c^3*d + 6*a^5*b^ \\ & 5*c^2*d^2 - 4*a^6*b^4*c*d^3 + a^7*b^3*d^4)*g^6*x^2 + 5*(a^4*b^6*c^4 - 4*a^5 \\ & *b^5*c^3*d + 6*a^6*b^4*c^2*d^2 - 4*a^7*b^3*c*d^3 + a^8*b^2*d^4)*g^6*x + (a^ \\ & 5*b^5*c^4 - 4*a^6*b^4*c^3*d + 6*a^7*b^3*c^2*d^2 - 4*a^8*b^2*c*d^3 + a^9*b*d \\ & ^4)*g^6) + 60*d^5*\log(b*x + a)/((b^6*c^5 - 5*a*b^5*c^4*d + 10*a^2*b^4*c^3*d \\ & ^2 - 10*a^3*b^3*c^2*d^3 + 5*a^4*b^2*c*d^4 - a^5*b*d^5)*g^6) - 60*d^5*\log(d* \\ & x + c)/((b^6*c^5 - 5*a*b^5*c^4*d + 10*a^2*b^4*c^3*d^2 - 10*a^3*b^3*c^2*d^3 \\ & + 5*a^4*b^2*c*d^4 - a^5*b*d^5)*g^6))*\log(b*e*x/(d*x + c) + a*e/(d*x + c)) + \\ & (144*b^5*c^5 - 1125*a*b^4*c^4*d + 4000*a^2*b^3*c^3*d^2 - 9000*a^3*b^2*c^2* \\ & d^3 + 18000*a^4*b*c*d^4 - 12019*a^5*d^5 + 8220*(b^5*c*d^4 - a*b^4*d^5)*x^4 \\ & - 30*(77*b^5*c^2*d^3 - 1250*a*b^4*c*d^4 + 1173*a^2*b^3*d^5)*x^3 + 10*(94*b^ \\ & 5*c^3*d^2 - 975*a*b^4*c^2*d^3 + 6600*a^2*b^3*c*d^4 - 5719*a^3*b^2*d^5)*x^2 \\ & - 1800*(b^5*d^5*x^5 + 5*a*b^4*d^5*x^4 + 10*a^2*b^3*d^5*x^3 + 10*a^3*b^2*d^5 \\ & *x^2 + 5*a^4*b*d^5*x + a^5*d^5)*\log(b*x + a)^2 - 1800*(b^5*d^5*x^5 + 5*a*b^ \\ & 4*d^5*x^4 + 10*a^2*b^3*d^5*x^3 + 10*a^3*b^2*d^5*x^2 + 5*a^4*b*d^5*x + a^5*d \\ & ^5)*\log(d*x + c)^2 - 5*(81*b^5*c^4*d - 700*a*b^4*c^3*d^2 + 3000*a^2*b^3*c^2 \\ & *d^3 - 10800*a^3*b^2*c*d^4 + 8419*a^4*b*d^5)*x + 8220*(b^5*d^5*x^5 + 5*a*b^ \\ & 4*d^5*x^4 + 10*a^2*b^3*d^5*x^3 + 10*a^3*b^2*d^5*x^2 + 5*a^4*b*d^5*x + a^5*d \end{aligned}$$

$$\begin{aligned}
&^5) * \log(b*x + a) - 60*(137*b^5*d^5*x^5 + 685*a*b^4*d^5*x^4 + 1370*a^2*b^3*d^5*x^3 + 1370*a^3*b^2*d^5*x^2 + 685*a^4*b*d^5*x + 137*a^5*d^5 - 60*(b^5*d^5 \\
&*x^5 + 5*a*b^4*d^5*x^4 + 10*a^2*b^3*d^5*x^3 + 10*a^3*b^2*d^5*x^2 + 5*a^4*b*d^5*x + a^5*d^5) * \log(b*x + a) * \log(d*x + c) / (a^5*b^6*c^5*g^6 - 5*a^6*b^5*c \\
&^4*d*g^6 + 10*a^7*b^4*c^3*d^2*g^6 - 10*a^8*b^3*c^2*d^3*g^6 + 5*a^9*b^2*c*d^4*g^6 - a^10*b*d^5*g^6 + (b^11*c^5*g^6 - 5*a*b^10*c^4*d*g^6 + 10*a^2*b^9*c^ \\
&3*d^2*g^6 - 10*a^3*b^8*c^2*d^3*g^6 + 5*a^4*b^7*c*d^4*g^6 - a^5*b^6*d^5*g^6) \\
&*x^5 + 5*(a*b^10*c^5*g^6 - 5*a^2*b^9*c^4*d*g^6 + 10*a^3*b^8*c^3*d^2*g^6 - 10*a^4*b^7*c^2*d^3*g^6 + 5*a^5*b^6*c*d^4*g^6 - a^6*b^5*d^5*g^6) * x^4 + 10*(a^ \\
&2*b^9*c^5*g^6 - 5*a^3*b^8*c^4*d*g^6 + 10*a^4*b^7*c^3*d^2*g^6 - 10*a^5*b^6*c^2*d^3*g^6 + 5*a^6*b^5*c*d^4*g^6 - a^7*b^4*d^5*g^6) * x^3 + 10*(a^3*b^8*c^5*g \\
&^6 - 5*a^4*b^7*c^4*d*g^6 + 10*a^5*b^6*c^3*d^2*g^6 - 10*a^6*b^5*c^2*d^3*g^6 \\
&+ 5*a^7*b^4*c*d^4*g^6 - a^8*b^3*d^5*g^6) * x^2 + 5*(a^4*b^7*c^5*g^6 - 5*a^5*b^6*c^4*d*g^6 + 10*a^6*b^5*c^3*d^2*g^6 - 10*a^7*b^4*c^2*d^3*g^6 + 5*a^8*b^3*c \\
&d^4*g^6 - a^9*b^2*d^5*g^6) * x) * B^2*c^2*i^2 - 1/18000*(60*((27*a*b^4*c^4 - \\
&148*a^2*b^3*c^3*d + 352*a^3*b^2*c^2*d^2 - 548*a^4*b*c*d^3 + 77*a^5*d^4 - 6 \\
&0*(5*b^5*c*d^3 - a*b^4*d^4) * x^4 + 30*(5*b^5*c^2*d^2 - 46*a*b^4*c*d^3 + 9*a^ \\
&2*b^3*d^4) * x^3 - 10*(10*b^5*c^3*d - 67*a*b^4*c^2*d^2 + 248*a^2*b^3*c*d^3 - \\
&47*a^3*b^2*d^4) * x^2 + 5*(15*b^5*c^4 - 88*a*b^4*c^3*d + 232*a^2*b^3*c^2*d^2 \\
&- 428*a^3*b^2*c*d^3 + 77*a^4*b*d^4) * x) / ((b^11*c^4 - 4*a*b^10*c^3*d + 6*a^2*b^ \\
&9*c^2*d^2 - 4*a^3*b^8*c*d^3 + a^4*b^7*d^4) * g^6 * x^5 + 5*(a*b^10*c^4 - 4*a^ \\
&2*b^9*c^3*d + 6*a^3*b^8*c^2*d^2 - 4*a^4*b^7*c*d^3 + a^5*b^6*d^4) * g^6 * x^4 + \\
&10*(a^2*b^9*c^4 - 4*a^3*b^8*c^3*d + 6*a^4*b^7*c^2*d^2 - 4*a^5*b^6*c*d^3 + a \\
&^6*b^5*d^4) * g^6 * x^3 + 10*(a^3*b^8*c^4 - 4*a^4*b^7*c^3*d + 6*a^5*b^6*c^2*d^2 \\
&- 4*a^6*b^5*c*d^3 + a^7*b^4*d^4) * g^6 * x^2 + 5*(a^4*b^7*c^4 - 4*a^5*b^6*c^3*d \\
&+ 6*a^6*b^5*c^2*d^2 - 4*a^7*b^4*c*d^3 + a^8*b^3*d^4) * g^6 * x + (a^5*b^6*c^4 \\
&- 4*a^6*b^5*c^3*d + 6*a^7*b^4*c^2*d^2 - 4*a^8*b^3*c*d^3 + a^9*b^2*d^4) * g^6 \\
&) - 60*(5*b*c*d^4 - a*d^5) * \log(b*x + a) / ((b^7*c^5 - 5*a*b^6*c^4*d + 10*a^2*b^ \\
&5*c^3*d^2 - 10*a^3*b^4*c^2*d^3 + 5*a^4*b^3*c*d^4 - a^5*b^2*d^5) * g^6) + 60 \\
&*(5*b*c*d^4 - a*d^5) * \log(d*x + c) / ((b^7*c^5 - 5*a*b^6*c^4*d + 10*a^2*b^5*c^ \\
&3*d^2 - 10*a^3*b^4*c^2*d^3 + 5*a^4*b^3*c*d^4 - a^5*b^2*d^5) * g^6) * \log(b*e*x \\
&/ (d*x + c) + a*e / (d*x + c)) + (549*a*b^5*c^5 - 4625*a^2*b^4*c^4*d + 19000*a^ \\
&3*b^3*c^3*d^2 - 63000*a^4*b^2*c^2*d^3 + 51875*a^5*b*c*d^4 - 3799*a^6*d^5 - \\
&60*(625*b^6*c^2*d^3 - 702*a*b^5*c*d^4 + 77*a^2*b^4*d^5) * x^4 + 30*(325*b^6*c^ \\
&3*d^2 - 5667*a*b^5*c^2*d^3 + 5975*a^2*b^4*c*d^4 - 633*a^3*b^3*d^5) * x^3 - \\
&10*(350*b^6*c^4*d - 3949*a*b^5*c^3*d^2 + 29475*a^2*b^4*c^2*d^3 - 28775*a^3*b^ \\
&3*c*d^4 + 2899*a^4*b^2*d^5) * x^2 + 1800*(5*a^5*b*c*d^4 - a^6*d^5 + (5*b^6*c \\
&d^4 - a*b^5*d^5) * x^5 + 5*(5*a*b^5*c*d^4 - a^2*b^4*d^5) * x^4 + 10*(5*a^2*b^ \\
&4*c*d^4 - a^3*b^3*d^5) * x^3 + 10*(5*a^3*b^3*c*d^4 - a^4*b^2*d^5) * x^2 + 5*(5* \\
&a^4*b^2*c*d^4 - a^5*b*d^5) * x) * \log(b*x + a)^2 + 1800*(5*a^5*b*c*d^4 - a^6*d^ \\
&5 + (5*b^6*c*d^4 - a*b^5*d^5) * x^5 + 5*(5*a*b^5*c*d^4 - a^2*b^4*d^5) * x^4 + 1 \\
&0*(5*a^2*b^4*c*d^4 - a^3*b^3*d^5) * x^3 + 10*(5*a^3*b^3*c*d^4 - a^4*b^2*d^5) * \\
&x^2 + 5*(5*a^4*b^2*c*d^4 - a^5*b*d^5) * x) * \log(d*x + c)^2 + 5*(225*b^6*c^5 - \\
&2201*a*b^5*c^4*d + 10900*a^2*b^4*c^3*d^2 - 46200*a^3*b^3*c^2*d^3 + 41075*a^ \\
&4*b^2*c*d^4 - 3799*a^5*b*d^5) * x - 60*(625*a^5*b*c*d^4 - 77*a^6*d^5 + (625*b
\end{aligned}$$

$$\begin{aligned}
& ^6*c*d^4 - 77*a*b^5*d^5)*x^5 + 5*(625*a*b^5*c*d^4 - 77*a^2*b^4*d^5)*x^4 + 1 \\
& 0*(625*a^2*b^4*c*d^4 - 77*a^3*b^3*d^5)*x^3 + 10*(625*a^3*b^3*c*d^4 - 77*a^4 \\
& *b^2*d^5)*x^2 + 5*(625*a^4*b^2*c*d^4 - 77*a^5*b*d^5)*x*\log(b*x + a) + 60*(\\
& 625*a^5*b*c*d^4 - 77*a^6*d^5 + (625*b^6*c*d^4 - 77*a*b^5*d^5)*x^5 + 5*(625* \\
& a*b^5*c*d^4 - 77*a^2*b^4*d^5)*x^4 + 10*(625*a^2*b^4*c*d^4 - 77*a^3*b^3*d^5) \\
& *x^3 + 10*(625*a^3*b^3*c*d^4 - 77*a^4*b^2*d^5)*x^2 + 5*(625*a^4*b^2*c*d^4 - \\
& 77*a^5*b*d^5)*x - 60*(5*a^5*b*c*d^4 - a^6*d^5 + (5*b^6*c*d^4 - a*b^5*d^5)* \\
& x^5 + 5*(5*a*b^5*c*d^4 - a^2*b^4*d^5)*x^4 + 10*(5*a^2*b^4*c*d^4 - a^3*b^3*d \\
& ^5)*x^3 + 10*(5*a^3*b^3*c*d^4 - a^4*b^2*d^5)*x^2 + 5*(5*a^4*b^2*c*d^4 - a^5 \\
& *b*d^5)*x)*\log(b*x + a))*\log(d*x + c))/(a^5*b^7*c^5*g^6 - 5*a^6*b^6*c^4*d*g \\
& ^6 + 10*a^7*b^5*c^3*d^2*g^6 - 10*a^8*b^4*c^2*d^3*g^6 + 5*a^9*b^3*c*d^4*g^6 \\
& - a^10*b^2*d^5*g^6 + (b^12*c^5*g^6 - 5*a*b^11*c^4*d*g^6 + 10*a^2*b^10*c^3*d \\
& ^2*g^6 - 10*a^3*b^9*c^2*d^3*g^6 + 5*a^4*b^8*c*d^4*g^6 - a^5*b^7*d^5*g^6)*x^ \\
& 5 + 5*(a*b^11*c^5*g^6 - 5*a^2*b^10*c^4*d*g^6 + 10*a^3*b^9*c^3*d^2*g^6 - 10* \\
& a^4*b^8*c^2*d^3*g^6 + 5*a^5*b^7*c*d^4*g^6 - a^6*b^6*d^5*g^6)*x^4 + 10*(a^2* \\
& b^10*c^5*g^6 - 5*a^3*b^9*c^4*d*g^6 + 10*a^4*b^8*c^3*d^2*g^6 - 10*a^5*b^7*c^ \\
& 2*d^3*g^6 + 5*a^6*b^6*c*d^4*g^6 - a^7*b^5*d^5*g^6)*x^3 + 10*(a^3*b^9*c^5*g^ \\
& 6 - 5*a^4*b^8*c^4*d*g^6 + 10*a^5*b^7*c^3*d^2*g^6 - 10*a^6*b^6*c^2*d^3*g^6 + \\
& 5*a^7*b^5*c*d^4*g^6 - a^8*b^4*d^5*g^6)*x^2 + 5*(a^4*b^8*c^5*g^6 - 5*a^5*b^ \\
& 7*c^4*d*g^6 + 10*a^6*b^6*c^3*d^2*g^6 - 10*a^7*b^5*c^2*d^3*g^6 + 5*a^8*b^4*c \\
& *d^4*g^6 - a^9*b^3*d^5*g^6)*x)*B^2*c*d*i^2 - 1/54000*(60*((47*a^2*b^4*c^4 \\
& - 278*a^3*b^3*c^3*d + 822*a^4*b^2*c^2*d^2 - 278*a^5*b*c*d^3 + 47*a^6*d^4 + \\
& 60*(10*b^6*c^2*d^2 - 5*a*b^5*c*d^3 + a^2*b^4*d^4)*x^4 - 30*(10*b^6*c^3*d - \\
& 95*a*b^5*c^2*d^2 + 46*a^2*b^4*c*d^3 - 9*a^3*b^3*d^4)*x^3 + 10*(20*b^6*c^4 - \\
& 140*a*b^5*c^3*d + 537*a^2*b^4*c^2*d^2 - 248*a^3*b^3*c*d^3 + 47*a^4*b^2*d^4 \\
&)*x^2 + 5*(35*a*b^5*c^4 - 218*a^2*b^4*c^3*d + 702*a^3*b^3*c^2*d^2 - 278*a^4 \\
& *b^2*c*d^3 + 47*a^5*b*d^4)*x)/((b^12*c^4 - 4*a*b^11*c^3*d + 6*a^2*b^10*c^2* \\
& d^2 - 4*a^3*b^9*c*d^3 + a^4*b^8*d^4)*g^6*x^5 + 5*(a*b^11*c^4 - 4*a^2*b^10*c \\
& ^3*d + 6*a^3*b^9*c^2*d^2 - 4*a^4*b^8*c*d^3 + a^5*b^7*d^4)*g^6*x^4 + 10*(a^2 \\
& *b^10*c^4 - 4*a^3*b^9*c^3*d + 6*a^4*b^8*c^2*d^2 - 4*a^5*b^7*c*d^3 + a^6*b^6 \\
& *d^4)*g^6*x^3 + 10*(a^3*b^9*c^4 - 4*a^4*b^8*c^3*d + 6*a^5*b^7*c^2*d^2 - 4*a \\
& ^6*b^6*c*d^3 + a^7*b^5*d^4)*g^6*x^2 + 5*(a^4*b^8*c^4 - 4*a^5*b^7*c^3*d + 6* \\
& a^6*b^6*c^2*d^2 - 4*a^7*b^5*c*d^3 + a^8*b^4*d^4)*g^6*x + (a^5*b^7*c^4 - 4*a \\
& ^6*b^6*c^3*d + 6*a^7*b^5*c^2*d^2 - 4*a^8*b^4*c*d^3 + a^9*b^3*d^4)*g^6) + 60 \\
& *(10*b^2*c^2*d^3 - 5*a*b*c*d^4 + a^2*d^5)*\log(b*x + a)/((b^8*c^5 - 5*a*b^7* \\
& c^4*d + 10*a^2*b^6*c^3*d^2 - 10*a^3*b^5*c^2*d^3 + 5*a^4*b^4*c*d^4 - a^5*b^3 \\
& *d^5)*g^6) - 60*(10*b^2*c^2*d^3 - 5*a*b*c*d^4 + a^2*d^5)*\log(d*x + c)/((b^8 \\
& *c^5 - 5*a*b^7*c^4*d + 10*a^2*b^6*c^3*d^2 - 10*a^3*b^5*c^2*d^3 + 5*a^4*b^4* \\
& c*d^4 - a^5*b^3*d^5)*g^6))*\log(b*e*x/(d*x + c) + a*e/(d*x + c)) + (1489*a^2 \\
& *b^5*c^5 - 14375*a^3*b^4*c^4*d + 85000*a^4*b^3*c^3*d^2 - 85000*a^5*b^2*c^2* \\
& d^3 + 14375*a^6*b*c*d^4 - 1489*a^7*d^5 + 60*(1100*b^7*c^3*d^2 - 1425*a*b^6* \\
& c^2*d^3 + 372*a^2*b^5*c*d^4 - 47*a^3*b^4*d^5)*x^4 - 30*(500*b^7*c^4*d - 982 \\
& 5*a*b^6*c^3*d^2 + 11937*a^2*b^5*c^2*d^3 - 2975*a^3*b^4*c*d^4 + 363*a^4*b^3* \\
& d^5)*x^3 + 10*(400*b^7*c^5 - 5450*a*b^6*c^4*d + 49189*a^2*b^5*c^3*d^2 - 555 \\
& 25*a^3*b^4*c^2*d^3 + 12875*a^4*b^3*c*d^4 - 1489*a^5*b^2*d^5)*x^2 - 1800*(10
\end{aligned}$$

$$\begin{aligned}
& *a^5*b^2*c^2*d^3 - 5*a^6*b*c*d^4 + a^7*d^5 + (10*b^7*c^2*d^3 - 5*a*b^6*c*d^4 \\
& + a^2*b^5*d^5)*x^5 + 5*(10*a*b^6*c^2*d^3 - 5*a^2*b^5*c*d^4 + a^3*b^4*d^5) \\
& *x^4 + 10*(10*a^2*b^5*c^2*d^3 - 5*a^3*b^4*c*d^4 + a^4*b^3*d^5)*x^3 + 10*(10 \\
& *a^3*b^4*c^2*d^3 - 5*a^4*b^3*c*d^4 + a^5*b^2*d^5)*x^2 + 5*(10*a^4*b^3*c^2*d^3 \\
& - 5*a^5*b^2*c*d^4 + a^6*b*d^5)*x*\log(b*x + a)^2 - 1800*(10*a^5*b^2*c^2*d^3 \\
& - 5*a^6*b*c*d^4 + a^7*d^5 + (10*b^7*c^2*d^3 - 5*a*b^6*c*d^4 + a^2*b^5*d^5)*x^5 \\
& + 5*(10*a*b^6*c^2*d^3 - 5*a^2*b^5*c*d^4 + a^3*b^4*d^5)*x^4 + 10*(10 \\
& *a^2*b^5*c^2*d^3 - 5*a^3*b^4*c*d^4 + a^4*b^3*d^5)*x^3 + 10*(10*a^3*b^4*c^2*d^3 \\
& - 5*a^4*b^3*c*d^4 + a^5*b^2*d^5)*x^2 + 5*(10*a^4*b^3*c^2*d^3 - 5*a^5*b^2*c*d^4 \\
& + a^6*b*d^5)*x*\log(d*x + c)^2 + 5*(925*a*b^6*c^5 - 9911*a^2*b^5*c^4*d \\
& + 67900*a^3*b^4*c^3*d^2 - 71800*a^4*b^3*c^2*d^3 + 14375*a^5*b^2*c*d^4 - \\
& 1489*a^6*b*d^5)*x + 60*(1100*a^5*b^2*c^2*d^3 - 325*a^6*b*c*d^4 + 47*a^7*d^5 \\
& + (1100*b^7*c^2*d^3 - 325*a*b^6*c*d^4 + 47*a^2*b^5*d^5)*x^5 + 5*(1100*a*b^6*c^2*d^3 \\
& - 325*a^2*b^5*c*d^4 + 47*a^3*b^4*d^5)*x^4 + 10*(1100*a^2*b^5*c^2*d^3 \\
& - 325*a^3*b^4*c*d^4 + 47*a^4*b^3*d^5)*x^3 + 10*(1100*a^3*b^4*c^2*d^3 - \\
& 325*a^4*b^3*c*d^4 + 47*a^5*b^2*d^5)*x^2 + 5*(1100*a^4*b^3*c^2*d^3 - 325*a^5*b^2*c*d^4 \\
& + 47*a^6*b*d^5)*x*\log(b*x + a) - 60*(1100*a^5*b^2*c^2*d^3 - 325*a^6*b*c*d^4 \\
& + 47*a^7*d^5 + (1100*b^7*c^2*d^3 - 325*a*b^6*c*d^4 + 47*a^2*b^5*d^5)*x^5 \\
& + 5*(1100*a*b^6*c^2*d^3 - 325*a^2*b^5*c*d^4 + 47*a^3*b^4*d^5)*x^4 + 10*(1100*a^2*b^5*c^2*d^3 \\
& - 325*a^3*b^4*c*d^4 + 47*a^4*b^3*d^5)*x^3 + 10*(1100*a^3*b^4*c^2*d^3 - 325*a^4*b^3*c*d^4 \\
& + 47*a^5*b^2*d^5)*x^2 + 5*(1100*a^4*b^3*c^2*d^3 - 325*a^5*b^2*c*d^4 + 47*a^6*b*d^5)*x \\
& - 60*(10*a^5*b^2*c^2*d^3 - 5*a^6*b*c*d^4 + a^7*d^5 + (10*b^7*c^2*d^3 - 5*a*b^6*c*d^4 + a^2*b^5*d^5)*x^5 \\
& + 5*(10*a*b^6*c^2*d^3 - 5*a^2*b^5*c*d^4 + a^3*b^4*d^5)*x^4 + 10*(10*a^2*b^5*c^2*d^3 \\
& - 5*a^3*b^4*c*d^4 + a^4*b^3*d^5)*x^3 + 10*(10*a^3*b^4*c^2*d^3 - 5*a^4*b^3*c*d^4 \\
& + a^5*b^2*d^5)*x^2 + 5*(10*a^4*b^3*c^2*d^3 - 5*a^5*b^2*c*d^4 + a^6*b*d^5)*x*\log(b*x + a))*\log(d*x + c))/(a^5*b^8*c^5*g^6 - 5*a^6*b^7*c^4*d*g^6 + 10*a^7*b^6*c^3*d^2*g^6 - 10*a^8*b^5*c^2*d^3*g^6 + 5*a^9*b^4*c*d^4*g^6 - a^10*b^3*d^5*g^6 + (b^13*c^5*g^6 - 5*a*b^12*c^4*d*g^6 + 10*a^2*b^11*c^3*d^2*g^6 - 10*a^3*b^10*c^2*d^3*g^6 + 5*a^4*b^9*c*d^4*g^6 - a^5*b^8*d^5*g^6)*x^5 + 5*(a*b^12*c^5*g^6 - 5*a^2*b^11*c^4*d*g^6 + 10*a^3*b^10*c^3*d^2*g^6 - 10*a^4*b^9*c^2*d^3*g^6 + 5*a^5*b^8*c*d^4*g^6 - a^6*b^7*d^5*g^6)*x^4 + 10*(a^2*b^11*c^5*g^6 - 5*a^3*b^10*c^4*d*g^6 + 10*a^4*b^9*c^3*d^2*g^6 - 10*a^5*b^8*c^2*d^3*g^6 + 5*a^6*b^7*c*d^4*g^6 - a^7*b^6*d^5*g^6)*x^3 + 10*(a^3*b^10*c^5*g^6 - 5*a^4*b^9*c^4*d*g^6 + 10*a^5*b^8*c^3*d^2*g^6 - 10*a^6*b^7*c^2*d^3*g^6 + 5*a^7*b^6*c*d^4*g^6 - a^8*b^5*d^5*g^6)*x^2 + 5*(a^4*b^9*c^5*g^6 - 5*a^5*b^8*c^4*d*g^6 + 10*a^6*b^7*c^3*d^2*g^6 - 10*a^7*b^6*c^2*d^3*g^6 + 5*a^8*b^5*c*d^4*g^6 - a^9*b^4*d^5*g^6)*x))B^2*d^2*i^2 - 1/900*A*B*d^2*i^2*(60*(10*b^2*x^2 + 5*a*b*x + a^2)*\log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^8*g^6*x^5 + 5*a*b^7*g^6*x^4 + 10*a^2*b^6*g^6*x^3 + 10*a^3*b^5*g^6*x^2 + 5*a^4*b^4*g^6*x + a^5*b^3*g^6) + (47*a^2*b^4*c^4 - 278*a^3*b^3*c^3*d + 82*2*a^4*b^2*c^2*d^2 - 278*a^5*b*c*d^3 + 47*a^6*d^4 + 60*(10*b^6*c^2*d^2 - 5*a*b^5*c*d^3 + a^2*b^4*d^4)*x^4 - 30*(10*b^6*c^3*d - 95*a*b^5*c^2*d^2 + 46*a^2*b^4*c*d^3 - 9*a^3*b^3*d^4)*x^3 + 10*(20*b^6*c^4 - 140*a*b^5*c^3*d + 537*a^2*b^4*c^2*d^2 - 248*a^3*b^3*c*d^3 + 47*a^4*b^2*d^4)*x^2 + 5*(35*a*b^5*c^4
\end{aligned}$$

$$\begin{aligned}
& - 218*a^2*b^4*c^3*d + 702*a^3*b^3*c^2*d^2 - 278*a^4*b^2*c*d^3 + 47*a^5*b*d^4)*x)/((b^12*c^4 - 4*a*b^11*c^3*d + 6*a^2*b^10*c^2*d^2 - 4*a^3*b^9*c*d^3 + \\
& a^4*b^8*d^4)*g^6*x^5 + 5*(a*b^11*c^4 - 4*a^2*b^10*c^3*d + 6*a^3*b^9*c^2*d^2 - 4*a^4*b^8*c*d^3 + a^5*b^7*d^4)*g^6*x^4 + 10*(a^2*b^10*c^4 - 4*a^3*b^9*c^3*d + 6*a^4*b^8*c^2*d^2 - 4*a^5*b^7*c*d^3 + a^6*b^6*d^4)*g^6*x^3 + 10*(a^3*b^9*c^4 - 4*a^4*b^8*c^3*d + 6*a^5*b^7*c^2*d^2 - 4*a^6*b^6*c*d^3 + a^7*b^5*d^4)*g^6*x^2 + 5*(a^4*b^8*c^4 - 4*a^5*b^7*c^3*d + 6*a^6*b^6*c^2*d^2 - 4*a^7*b^5*c*d^3 + a^8*b^4*d^4)*g^6*x + (a^5*b^7*c^4 - 4*a^6*b^6*c^3*d + 6*a^7*b^5*c^2*d^2 - 4*a^8*b^4*c*d^3 + a^9*b^3*d^4)*g^6) + 60*(10*b^2*c^2*d^3 - 5*a*b*c*d^4 + a^2*d^5)*log(b*x + a)/((b^8*c^5 - 5*a*b^7*c^4*d + 10*a^2*b^6*c^3*d^2 - 10*a^3*b^5*c^2*d^3 + 5*a^4*b^4*c*d^4 - a^5*b^3*d^5)*g^6) - 60*(10*b^2*c^2*d^3 - 5*a*b*c*d^4 + a^2*d^5)*log(d*x + c)/((b^8*c^5 - 5*a*b^7*c^4*d + 10*a^2*b^6*c^3*d^2 - 10*a^3*b^5*c^2*d^3 + 5*a^4*b^4*c*d^4 - a^5*b^3*d^5)*g^6) - 1/300*A*B*c*d*i^2*(60*(5*b*x + a)*log(b*e*x/(d*x + c) + a*e/(d*x + c)))/(b^7*g^6*x^5 + 5*a*b^6*g^6*x^4 + 10*a^2*b^5*g^6*x^3 + 10*a^3*b^4*g^6*x^2 + 5*a^4*b^3*g^6*x + a^5*b^2*g^6) + (27*a*b^4*c^4 - 148*a^2*b^3*c^3*d + 352*a^3*b^2*c^2*d^2 - 548*a^4*b*c*d^3 + 77*a^5*d^4 - 60*(5*b^5*c*d^3 - a*b^4*d^4)*x^4 + 30*(5*b^5*c^2*d^2 - 46*a*b^4*c*d^3 + 9*a^2*b^3*d^4)*x^3 - 10*(10*b^5*c^3*d - 67*a*b^4*c^2*d^2 + 248*a^2*b^3*c*d^3 - 47*a^3*b^2*d^4)*x^2 + 5*(15*b^5*c^4 - 88*a*b^4*c^3*d + 232*a^2*b^3*c^2*d^2 - 428*a^3*b^2*c*d^3 + 77*a^4*b*d^4)*x)/((b^11*c^4 - 4*a*b^10*c^3*d + 6*a^2*b^9*c^2*d^2 - 4*a^3*b^8*c*d^3 + a^4*b^7*d^4)*g^6*x^5 + 5*(a*b^10*c^4 - 4*a^2*b^9*c^3*d + 6*a^3*b^8*c^2*d^2 - 4*a^4*b^7*c*d^3 + a^5*b^6*d^4)*g^6*x^4 + 10*(a^2*b^9*c^4 - 4*a^3*b^8*c^3*d + 6*a^4*b^7*c^2*d^2 - 4*a^5*b^6*c*d^3 + a^6*b^5*d^4)*g^6*x^3 + 10*(a^3*b^8*c^4 - 4*a^4*b^7*c^3*d + 6*a^5*b^6*c^2*d^2 - 4*a^6*b^5*c*d^3 + a^7*b^4*d^4)*g^6*x^2 + 5*(a^4*b^7*c^4 - 4*a^5*b^6*c^3*d + 6*a^6*b^5*c^2*d^2 - 4*a^7*b^4*c*d^3 + a^8*b^3*d^4)*g^6*x + (a^5*b^6*c^4 - 4*a^6*b^5*c^3*d + 6*a^7*b^4*c^2*d^2 - 4*a^8*b^3*c*d^3 + a^9*b^2*d^4)*g^6) - 60*(5*b*c*d^4 - a*d^5)*log(b*x + a)/((b^7*c^5 - 5*a*b^6*c^4*d + 10*a^2*b^5*c^3*d^2 - 10*a^3*b^4*c^2*d^3 + 5*a^4*b^3*c*d^4 - a^5*b^2*d^5)*g^6) + 60*(5*b*c*d^4 - a*d^5)*log(d*x + c)/((b^7*c^5 - 5*a*b^6*c^4*d + 10*a^2*b^5*c^3*d^2 - 10*a^3*b^4*c^2*d^3 + 5*a^4*b^3*c*d^4 - a^5*b^2*d^5)*g^6) - 1/150*A*B*c^2*i^2*((60*b^4*d^4*x^4 + 12*b^4*c^4 - 63*a*b^3*c^3*d + 137*a^2*b^2*c^2*d^2 - 163*a^3*b*c*d^3 + 137*a^4*d^4 - 30*(b^4*c*d^3 - 9*a*b^3*d^4)*x^3 + 10*(2*b^4*c^2*d^2 - 13*a*b^3*c*d^3 + 47*a^2*b^2*d^4)*x^2 - 5*(3*b^4*c^3*d - 17*a*b^3*c^2*d^2 + 43*a^2*b^2*c*d^3 - 77*a^3*b*d^4)*x)/((b^10*c^4 - 4*a*b^9*c^3*d + 6*a^2*b^8*c^2*d^2 - 4*a^3*b^7*c*d^3 + a^4*b^6*d^4)*g^6*x^5 + 5*(a*b^9*c^4 - 4*a^2*b^8*c^3*d + 6*a^3*b^7*c^2*d^2 - 4*a^4*b^6*c*d^3 + a^5*b^5*d^4)*g^6*x^4 + 10*(a^2*b^8*c^4 - 4*a^3*b^7*c^3*d + 6*a^4*b^6*c^2*d^2 - 4*a^5*b^5*c*d^3 + a^6*b^4*d^4)*g^6*x^3 + 10*(a^3*b^7*c^4 - 4*a^4*b^6*c^3*d + 6*a^5*b^5*c^2*d^2 - 4*a^6*b^4*c*d^3 + a^7*b^3*d^4)*g^6*x^2 + 5*(a^4*b^6*c^4 - 4*a^5*b^5*c^3*d + 6*a^6*b^4*c^2*d^2 - 4*a^7*b^3*c*d^3 + a^8*b^2*d^4)*g^6*x + (a^5*b^5*c^4 - 4*a^6*b^4*c^3*d + 6*a^7*b^3*c^2*d^2 - 4*a^8*b^2*c*d^3 + a^9*b*d^4)*g^6) + 60*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^6*g^6*x^5 + 5*a*b^5*g^6*x^4 + 10*a^2*b^4*g^6*x^3 + 10*a^3*b^3*g^6*x^2 + 5*a^4*b^2*g^6*x + a^5*b*g^6) + 60*d^5*log(b*x
\end{aligned}$$

$$\begin{aligned}
& + a)/((b^6*c^5 - 5*a*b^5*c^4*d + 10*a^2*b^4*c^3*d^2 - 10*a^3*b^3*c^2*d^3 + \\
& 5*a^4*b^2*c*d^4 - a^5*b*d^5)*g^6) - 60*d^5*\log(d*x + c)/((b^6*c^5 - 5*a*b^5* \\
& 5*c^4*d + 10*a^2*b^4*c^3*d^2 - 10*a^3*b^3*c^2*d^3 + 5*a^4*b^2*c*d^4 - a^5*b* \\
& *d^5)*g^6)) - 1/5*B^2*c^2*i^2*\log(b*e*x/(d*x + c) + a*e/(d*x + c))^2/(b^6*g \\
& ^6*x^5 + 5*a*b^5*g^6*x^4 + 10*a^2*b^4*g^6*x^3 + 10*a^3*b^3*g^6*x^2 + 5*a^4* \\
& b^2*g^6*x + a^5*b*g^6) - 1/10*(5*b*x + a)*A^2*c*d*i^2/(b^7*g^6*x^5 + 5*a*b^6* \\
& g^6*x^4 + 10*a^2*b^5*g^6*x^3 + 10*a^3*b^4*g^6*x^2 + 5*a^4*b^3*g^6*x + a^5* \\
& *b^2*g^6) - 1/30*(10*b^2*x^2 + 5*a*b*x + a^2)*A^2*d^2*i^2/(b^8*g^6*x^5 + 5* \\
& a*b^7*g^6*x^4 + 10*a^2*b^6*g^6*x^3 + 10*a^3*b^5*g^6*x^2 + 5*a^4*b^4*g^6*x + \\
& a^5*b^3*g^6) - 1/5*A^2*c^2*i^2/(b^6*g^6*x^5 + 5*a*b^5*g^6*x^4 + 10*a^2*b^4* \\
& *g^6*x^3 + 10*a^3*b^3*g^6*x^2 + 5*a^4*b^2*g^6*x + a^5*b*g^6)
\end{aligned}$$

mupad [B] time = 12.77, size = 3434, normalized size = 7.42

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{int}(((c*i + d*i*x)^2*(A + B*\log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x)^6, x)$

[Out]
$$\begin{aligned}
& ((1800*A^2*a^4*d^4*i^2 + 10800*A^2*b^4*c^4*i^2 + 1489*B^2*a^4*d^4*i^2 + 864 \\
& *B^2*b^4*c^4*i^2 + 2820*A*B*a^4*d^4*i^2 + 4320*A*B*b^4*c^4*i^2 - 16200*A^2* \\
& a*b^3*c^3*d*i^2 + 1800*A^2*a^3*b*c*d^3*i^2 - 2511*B^2*a*b^3*c^3*d*i^2 + 148 \\
& 9*B^2*a^3*b*c*d^3*i^2 + 1800*A^2*a^2*b^2*c^2*d^2*i^2 + 1489*B^2*a^2*b^2*c^2 \\
& *d^2*i^2 + 2820*A*B*a^2*b^2*c^2*d^2*i^2 - 9180*A*B*a*b^3*c^3*d*i^2 + 2820*A \\
& *B*a^3*b*c*d^3*i^2)/(60*(a*d - b*c)) + (x^3*(363*B^2*a*b^3*d^4*i^2 + 13*B^2 \\
& *b^4*c*d^3*i^2 + 540*A*B*a*b^3*d^4*i^2 - 60*A*B*b^4*c*d^3*i^2))/(2*(a*d - b \\
& *c)) + (x*(1800*A^2*a^3*b*d^4*i^2 + 1489*B^2*a^3*b*d^4*i^2 + 5400*A^2*b^4*c \\
& ^3*d*i^2 + 189*B^2*b^4*c^3*d*i^2 - 9000*A^2*a*b^3*c^2*d^2*i^2 + 1800*A^2*a^ \\
& 2*b^2*c*d^3*i^2 - 911*B^2*a*b^3*c^2*d^2*i^2 + 1489*B^2*a^2*b^2*c*d^3*i^2 + \\
& 2820*A*B*a^3*b*d^4*i^2 + 1620*A*B*b^4*c^3*d*i^2 - 4380*A*B*a*b^3*c^2*d^2*i^ \\
& 2 + 2820*A*B*a^2*b^2*c*d^3*i^2))/(12*(a*d - b*c)) + (x^2*(1800*A^2*a^2*b^2* \\
& d^4*i^2 + 1489*B^2*a^2*b^2*d^4*i^2 + 1800*A^2*b^4*c^2*d^2*i^2 - 86*B^2*b^4* \\
& c^2*d^2*i^2 - 3600*A^2*a*b^3*c*d^3*i^2 + 289*B^2*a*b^3*c*d^3*i^2 + 2820*A*B \\
& *a^2*b^2*d^4*i^2 + 120*A*B*b^4*c^2*d^2*i^2 - 780*A*B*a*b^3*c*d^3*i^2))/(6*(\\
& a*d - b*c)) + (d*x^4*(47*B^2*b^4*d^3*i^2 + 60*A*B*b^4*d^3*i^2))/(a*d - b*c) \\
&)/(x*(4500*a^4*b^5*c*g^6 - 4500*a^5*b^4*d*g^6) - x^4*(4500*a^2*b^7*d*g^6 - \\
& 4500*a*b^8*c*g^6) + x^5*(900*b^9*c*g^6 - 900*a*b^8*d*g^6) + x^2*(9000*a^3*b \\
& ^6*c*g^6 - 9000*a^4*b^5*d*g^6) + x^3*(9000*a^2*b^7*c*g^6 - 9000*a^3*b^6*d*g \\
& ^6) + 900*a^5*b^4*c*g^6 - 900*a^6*b^3*d*g^6) - \log((e*(a + b*x))/(c + d*x)) \\
& ^2*((x*(b*((B^2*c*d*i^2)/(10*b^3*g^6) + (B^2*a*d^2*i^2)/(30*b^4*g^6)) + (2* \\
& B^2*c*d*i^2)/(5*b^2*g^6) + (2*B^2*a*d^2*i^2)/(15*b^3*g^6)) + a*((B^2*c*d*i^ \\
& 2)/(10*b^3*g^6) + (B^2*a*d^2*i^2)/(30*b^4*g^6)) + (B^2*c^2*i^2)/(5*b^2*g^6) \\
& + (B^2*d^2*i^2*x^2)/(3*b^2*g^6)))/(5*a^4*x + a^5/b + b^4*x^5 + 10*a^3*b*x^2 \\
& + 5*a*b^3*x^4 + 10*a^2*b^2*x^3) - (B^2*d^5*i^2)/(30*b^3*g^6*(a^3*d^3 - b^3
\end{aligned}$$

$$\begin{aligned}
& *c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2))) - (\log((e*(a + b*x))/(c + d*x))*(a* \\
& ((B*i^2*(6*A*b*c - B*a*d + B*b*c))/(30*b^4*g^6) + (A*B*a*d*i^2)/(15*b^4*g^6 \\
&)) + x*(b*((B*i^2*(6*A*b*c - B*a*d + B*b*c))/(30*b^4*g^6) + (A*B*a*d*i^2)/(\\
& 15*b^4*g^6)) + (2*B*i^2*(6*A*b*c - B*a*d + B*b*c))/(15*b^3*g^6) + (B^2*d^5* \\
& i^2*((10*a^4*d^4 + b^4*c^4 + 15*a^2*b^2*c^2*d^2 - 6*a*b^3*c^3*d - 20*a^3*b* \\
& c*d^3)/(5*d^5) + b*(a*(a*((5*a^2*d^2 + b^2*c^2 - 6*a*b*c*d)/(20*b*d^3) + (a \\
& *(a*d - b*c))/(5*b*d^2)) + (10*a^3*d^3 - b^3*c^3 + 6*a*b^2*c^2*d - 15*a^2*b \\
& *c*d^2)/(30*b*d^4)) + (10*a^4*d^4 + b^4*c^4 + 15*a^2*b^2*c^2*d^2 - 6*a*b^3* \\
& c^3*d - 20*a^3*b*c*d^3)/(20*b*d^5)) + a*(b*(a*((5*a^2*d^2 + b^2*c^2 - 6*a*b \\
& *c*d)/(20*b*d^3) + (a*(a*d - b*c))/(5*b*d^2)) + (10*a^3*d^3 - b^3*c^3 + 6*a \\
& *b^2*c^2*d - 15*a^2*b*c*d^2)/(30*b*d^4)) + a*(b*((5*a^2*d^2 + b^2*c^2 - 6*a \\
& *b*c*d)/(20*b*d^3) + (a*(a*d - b*c))/(5*b*d^2)) + (5*a^2*d^2 + b^2*c^2 - 6* \\
& a*b*c*d)/(10*d^3) + (2*a*(a*d - b*c))/(5*d^2)) + (10*a^3*d^3 - b^3*c^3 + 6* \\
& a*b^2*c^2*d - 15*a^2*b*c*d^2)/(10*d^4))))/(15*b^3*g^6*(a^3*d^3 - b^3*c^3 + \\
& 3*a*b^2*c^2*d - 3*a^2*b*c*d^2)) + (4*A*B*a*d*i^2)/(15*b^3*g^6) + x^2*((2*A \\
& *B*d*i^2)/(3*b^2*g^6) + (B^2*d^5*i^2*(a*(b*(b*((5*a^2*d^2 + b^2*c^2 - 6*a*b \\
& *c*d)/(20*b*d^3) + (a*(a*d - b*c))/(5*b*d^2)) + (5*a^2*d^2 + b^2*c^2 - 6*a* \\
& b*c*d)/(10*d^3) + (2*a*(a*d - b*c))/(5*d^2)) - a*((b^2*c - a*b*d)/(5*d^2) - \\
& (2*b*(a*d - b*c))/(5*d^2)) + (3*(b^3*c^2 + 5*a^2*b*d^2 - 6*a*b^2*c*d))/(20 \\
& *d^3)) - (b^4*c^3 - 10*a^3*b*d^3 + 15*a^2*b^2*c*d^2 - 6*a*b^3*c^2*d)/(5*d^4 \\
&) + b*(b*(a*((5*a^2*d^2 + b^2*c^2 - 6*a*b*c*d)/(20*b*d^3) + (a*(a*d - b*c)) \\
& / (5*b*d^2)) + (10*a^3*d^3 - b^3*c^3 + 6*a*b^2*c^2*d - 15*a^2*b*c*d^2)/(30*b \\
& *d^4)) + a*(b*((5*a^2*d^2 + b^2*c^2 - 6*a*b*c*d)/(20*b*d^3) + (a*(a*d - b*c \\
&))/(5*b*d^2)) + (5*a^2*d^2 + b^2*c^2 - 6*a*b*c*d)/(10*d^3) + (2*a*(a*d - b* \\
& c))/(5*d^2)) + (10*a^3*d^3 - b^3*c^3 + 6*a*b^2*c^2*d - 15*a^2*b*c*d^2)/(10* \\
& d^4))))/(15*b^3*g^6*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2))) + \\
& (B*i^2*(6*A*b^2*c^2 - B*a^2*d^2 + B*b^2*c^2))/(15*b^4*d*g^6) + (B^2*d^5*i^ \\
& 2*(a*(a*(a*((5*a^2*d^2 + b^2*c^2 - 6*a*b*c*d)/(20*b*d^3) + (a*(a*d - b*c)) \\
& / (5*b*d^2)) + (10*a^3*d^3 - b^3*c^3 + 6*a*b^2*c^2*d - 15*a^2*b*c*d^2)/(30*b* \\
& d^4)) + (10*a^4*d^4 + b^4*c^4 + 15*a^2*b^2*c^2*d^2 - 6*a*b^3*c^3*d - 20*a^3 \\
& *b*c*d^3)/(20*b*d^5)) + (5*a^5*d^5 - b^5*c^5 - 15*a^2*b^3*c^3*d^2 + 20*a^3* \\
& b^2*c^2*d^3 + 6*a*b^4*c^4*d - 15*a^4*b*c*d^4)/(5*b*d^6)))/(15*b^3*g^6*(a^3* \\
& d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2)) + (B^2*d^5*i^2*x^3*((b^4*c^ \\
& 2 + 5*a^2*b^2*d^2 - 6*a*b^3*c*d)/(5*d^3) + b*(b*(b*((5*a^2*d^2 + b^2*c^2 - \\
& 6*a*b*c*d)/(20*b*d^3) + (a*(a*d - b*c))/(5*b*d^2)) + (5*a^2*d^2 + b^2*c^2 - \\
& 6*a*b*c*d)/(10*d^3) + (2*a*(a*d - b*c))/(5*d^2)) - a*((b^2*c - a*b*d)/(5*d \\
& ^2) - (2*b*(a*d - b*c))/(5*d^2)) + (3*(b^3*c^2 + 5*a^2*b*d^2 - 6*a*b^2*c*d) \\
&)/(20*d^3)) - a*(b*((b^2*c - a*b*d)/(5*d^2) - (2*b*(a*d - b*c))/(5*d^2)) + \\
& (b^3*c - a*b^2*d)/(5*d^2)))/(15*b^3*g^6*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d \\
& - 3*a^2*b*c*d^2)) - (B^2*d^5*i^2*x^4*(b*(b*((b^2*c - a*b*d)/(5*d^2) - (2*b \\
& *(a*d - b*c))/(5*d^2)) + (b^3*c - a*b^2*d)/(5*d^2)) + (b^4*c - a*b^3*d)/(5* \\
& d^2)))/(15*b^3*g^6*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2)))/ \\
& ((5*a^4*x)/d + a^5/(b*d) + (b^4*x^5)/d + (10*a^3*b*x^2)/d + (5*a*b^3*x^4)/d \\
& + (10*a^2*b^2*x^3)/d) - (B*d^5*i^2*atan((B*d^5*i^2*(60*A + 47*B)*(900*b^6*c \\
& ^3*g^6 + 900*a^3*b^3*d^3*g^6 - 900*a*b^5*c^2*d*g^6 - 900*a^2*b^4*c*d^2*g^6)
\end{aligned}$$

$$\frac{1}{(900b^3g^6(47B^2d^5i^2 + 60ABd^5i^2)(ad - bc)^3 + (Bd^6i^2x(60A + 47B)(b^5c^2g^6 + a^2b^3d^2g^6 - 2ab^4cdg^6)2i) / (b^2g^6(47B^2d^5i^2 + 60ABd^5i^2)(ad - bc)^3))(60A + 47B)1i) / (450b^3g^6(ad - bc)^3)}$$

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)**6,x)

[Out] Timed out

$$3.74 \quad \int (ag+bgx)^3 (ci+dix)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 dx$$

Optimal. Leaf size=1089

$$\frac{B^2 g^3 i^3 \log \left(\frac{a+bx}{c+dx} \right) (bc-ad)^7}{210b^4 d^4} - \frac{B g^3 i^3 \log \left(\frac{bc-ad}{b(c+dx)} \right) \left(6A + 11B + 6B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) (bc-ad)^7}{420b^4 d^4} - \frac{11B^2 g^3 i^3 \log(c+dx)}{420b^4 d^4}$$

[Out] $5/84*B^2*(-a*d+b*c)^6*g^3*i^3*x/b^3/d^3+1/140*B^2*(-a*d+b*c)^3*g^3*i^3*(b*x+a)^4/b^4-29/840*B^2*(-a*d+b*c)^5*g^3*i^3*(d*x+c)^2/b^2/d^4+47/1260*B^2*(-a*d+b*c)^4*g^3*i^3*(d*x+c)^3/b^4-13/420*B^2*(-a*d+b*c)^3*g^3*i^3*(d*x+c)^4/d^4+1/105*b*B^2*(-a*d+b*c)^2*g^3*i^3*(d*x+c)^5/d^4-1/210*B^2*(-a*d+b*c)^7*g^3*i^3*\ln((b*x+a)/(d*x+c))/b^4/d^4-1/210*B*(-a*d+b*c)^4*g^3*i^3*(b*x+a)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^4/d^3+1/140*B*(-a*d+b*c)^3*g^3*i^3*(b*x+a)^4*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^4-1/35*B*(-a*d+b*c)^2*g^3*i^3*(b*x+a)^4*(d*x+c)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^3+2/21*B*(-a*d+b*c)^4*g^3*i^3*(d*x+c)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^4-3/14*B*(-a*d+b*c)^3*g^3*i^3*(d*x+c)^4*(A+B*\ln(e*(b*x+a)/(d*x+c)))/d^4+6/35*b*B*(-a*d+b*c)^2*g^3*i^3*(d*x+c)^5*(A+B*\ln(e*(b*x+a)/(d*x+c)))/d^4-1/21*b^2*B*(-a*d+b*c)*g^3*i^3*(d*x+c)^6*(A+B*\ln(e*(b*x+a)/(d*x+c)))/d^4+1/140*(-a*d+b*c)^3*g^3*i^3*(b*x+a)^4*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/b^4+1/35*(-a*d+b*c)^2*g^3*i^3*(b*x+a)^4*(d*x+c)*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/b^3+1/14*(-a*d+b*c)*g^3*i^3*(b*x+a)^4*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/b^2+1/7*g^3*i^3*(b*x+a)^4*(d*x+c)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/b+1/420*B*(-a*d+b*c)^5*g^3*i^3*(b*x+a)^2*(3*A+B+3*B*\ln(e*(b*x+a)/(d*x+c)))/b^4/d^2-1/420*B*(-a*d+b*c)^6*g^3*i^3*(b*x+a)*(6*A+5*B+6*B*\ln(e*(b*x+a)/(d*x+c)))/b^4/d^3-1/420*B*(-a*d+b*c)^7*g^3*i^3*\ln((-a*d+b*c)/b/(d*x+c))*(6*A+11*B+6*B*\ln(e*(b*x+a)/(d*x+c)))/b^4/d^4-11/420*B^2*(-a*d+b*c)^7*g^3*i^3*\ln(d*x+c)/b^4/d^4-1/70*B^2*(-a*d+b*c)^7*g^3*i^3*\text{polylog}(2,d*(b*x+a)/b/(d*x+c))/b^4/d^4$

Rubi [A] time = 4.27, antiderivative size = 896, normalized size of antiderivative = 0.82, number of steps used = 122, number of rules used = 13, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}} = 0.310$, Rules used = {2528, 2525, 12, 2486, 31, 43, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$\frac{B^2 g^3 i^3 \log^2(c+dx)(bc-ad)^7}{140b^4 d^4} - \frac{B^2 g^3 i^3 \log \left(-\frac{d(a+bx)}{bc-ad} \right) \log(c+dx)(bc-ad)^7}{70b^4 d^4} + \frac{B g^3 i^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) \log(c+dx)}{70b^4 d^4}$$

Antiderivative was successfully verified.

[In] Int[(a*g + b*g*x)^3*(c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2, x]

```
[Out] -(A*B*(b*c - a*d)^6*g^3*i^3*x)/(70*b^3*d^3) + (B^2*(b*c - a*d)^6*g^3*i^3*x)
/(70*b^3*d^3) - (3*B^2*(b*c - a*d)^5*g^3*i^3*(a + b*x)^2)/(280*b^4*d^2) + (
11*B^2*(b*c - a*d)^4*g^3*i^3*(a + b*x)^3)/(1260*b^4*d) + (B^2*(b*c - a*d)^3
*g^3*i^3*(a + b*x)^4)/(42*b^4) + (B^2*d*(b*c - a*d)^2*g^3*i^3*(a + b*x)^5)/
(105*b^4) - (B^2*(b*c - a*d)^6*g^3*i^3*(a + b*x)*Log[(e*(a + b*x))/(c + d*x
)])/(70*b^4*d^3) + (B*(b*c - a*d)^5*g^3*i^3*(a + b*x)^2*(A + B*Log[(e*(a +
b*x))/(c + d*x)]))/(140*b^4*d^2) - (B*(b*c - a*d)^4*g^3*i^3*(a + b*x)^3*(A
+ B*Log[(e*(a + b*x))/(c + d*x)]))/(210*b^4*d) - (17*B*(b*c - a*d)^3*g^3*i^
3*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(140*b^4) - (B*d*(b*c -
a*d)^2*g^3*i^3*(a + b*x)^5*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(7*b^4) -
(B*d^2*(b*c - a*d)*g^3*i^3*(a + b*x)^6*(A + B*Log[(e*(a + b*x))/(c + d*x]
)))/(21*b^4) + ((b*c - a*d)^3*g^3*i^3*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(
c + d*x]])^2)/(4*b^4) + (3*d*(b*c - a*d)^2*g^3*i^3*(a + b*x)^5*(A + B*Log[(
e*(a + b*x))/(c + d*x]])^2)/(5*b^4) + (d^2*(b*c - a*d)*g^3*i^3*(a + b*x)^6*
(A + B*Log[(e*(a + b*x))/(c + d*x]])^2)/(2*b^4) + (d^3*g^3*i^3*(a + b*x)^7*
(A + B*Log[(e*(a + b*x))/(c + d*x]])^2)/(7*b^4) - (B^2*(b*c - a*d)^7*g^3*i^
3*Log[-((d*(a + b*x))/(b*c - a*d))*Log[c + d*x]]/(70*b^4*d^4) + (B*(b*c -
a*d)^7*g^3*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x]])*Log[c + d*x]]/(70*b^4*d
^4) + (B^2*(b*c - a*d)^7*g^3*i^3*Log[c + d*x]^2)/(140*b^4*d^4) - (B^2*(b*c
- a*d)^7*g^3*i^3*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]/(70*b^4*d^4)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(n_), x_Symbol] := Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && (!IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)]^(n_.))*(b_.)/(x_), x_Symbol] := Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
```

$(x)^{q}$, x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_)*((d_) + (e_)*(x_)^(n_))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))])*(b_)/((f_) + (g_)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_)^(n_))])*(b_)/((f_) + (g_)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2418

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_)^(n_))])*(b_)^(p_)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]

Rule 2486

Int[Log[(e_)*((f_)*((a_) + (b_)*(x_)^(p_))*((c_) + (d_)*(x_)^(q_))^(r_))^(s_), x_Symbol] := Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s, x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]

Rule 2524

Int[((a_) + Log[(c_)*(RFx_)^(p_)]*(b_))^(n_)/((d_) + (e_)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]

Rule 2525

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_.))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int (74c + 74dx)^3 (ag + bgx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 dx &= \int \left(\frac{(-bc + ad)^3 g^3 (74c + 74dx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{d^3} \right) dx \\
&= \frac{(b^3 g^3) \int (74c + 74dx)^6 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 dx}{405224d^3} \\
&= -\frac{101306(bc - ad)^3 g^3 (c + dx)^4 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{d^4} \\
&= -\frac{101306(bc - ad)^3 g^3 (c + dx)^4 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{d^4} \\
&= -\frac{101306(bc - ad)^3 g^3 (c + dx)^4 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{d^4} \\
&= -\frac{101306(bc - ad)^3 g^3 (c + dx)^4 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{d^4} \\
&= -\frac{101306(bc - ad)^3 g^3 (c + dx)^4 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{d^4} \\
&= \frac{202612AB(bc - ad)^6 g^3 x}{35b^3 d^3} + \frac{101306B(bc - ad)^5 g^3 (c + dx)}{35b^3 d^3} \\
&= \frac{202612AB(bc - ad)^6 g^3 x}{35b^3 d^3} + \frac{202612B^2(bc - ad)^6 g^3 (c + dx)}{35b^4 d^3} \\
&= \frac{202612AB(bc - ad)^6 g^3 x}{35b^3 d^3} + \frac{202612B^2(bc - ad)^6 g^3 (c + dx)}{35b^4 d^3} \\
&= \frac{202612AB(bc - ad)^6 g^3 x}{35b^3 d^3} + \frac{202612B^2(bc - ad)^6 g^3 x}{35b^3 d^3} \\
&= \frac{202612AB(bc - ad)^6 g^3 x}{35b^3 d^3} + \frac{202612B^2(bc - ad)^6 g^3 x}{35b^3 d^3} \\
&= \frac{202612AB(bc - ad)^6 g^3 x}{35b^3 d^3} + \frac{202612B^2(bc - ad)^6 g^3 x}{35b^3 d^3} \\
&= \frac{202612AB(bc - ad)^6 g^3 x}{35b^3 d^3} + \frac{202612B^2(bc - ad)^6 g^3 x}{35b^3 d^3} \\
&= \frac{202612AB(bc - ad)^6 g^3 x}{35b^3 d^3} + \frac{202612B^2(bc - ad)^6 g^3 x}{35b^3 d^3}
\end{aligned}$$

Mathematica [B] time = 3.60, size = 2330, normalized size = 2.14

Result too large to show

Antiderivative was successfully verified.

[In] Integrate[(a*g + b*g*x)^3*(c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2,x]

[Out] (g^3*i^3*(35*(b*c - a*d)^3*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 + 84*d*(b*c - a*d)^2*(a + b*x)^5*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 + 70*d^2*(b*c - a*d)*(a + b*x)^6*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 + 20*d^3*(a + b*x)^7*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 - (35*B*(b*c - a*d)^4*(6*A*b*d*(b*c - a*d)^2*x + 6*B*d*(b*c - a*d)^2*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)] + 3*d^2*(-(b*c) + a*d)*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 2*d^3*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 6*B*(b*c - a*d)^3*Log[c + d*x] - 6*(b*c - a*d)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x] + B*(b*c - a*d)*(2*b*d*(b*c - a*d)*x - d^2*(a + b*x)^2 - 2*(b*c - a*d)^2*Log[c + d*x]) + 3*B*(b*c - a*d)^2*(b*d*x + (-(b*c) + a*d)*Log[c + d*x]) + 3*B*(b*c - a*d)^3*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(3*d^4) + (7*B*(b*c - a*d)^3*(24*A*b*d*(b*c - a*d)^3*x + 24*B*d*(b*c - a*d)^3*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)] - 12*d^2*(b*c - a*d)^2*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 8*d^3*(b*c - a*d)*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 6*d^4*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 24*B*(b*c - a*d)^4*Log[c + d*x] - 24*(b*c - a*d)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x] + 4*B*(b*c - a*d)^2*(2*b*d*(b*c - a*d)*x - d^2*(a + b*x)^2 - 2*(b*c - a*d)^2*Log[c + d*x]) + B*(b*c - a*d)*(6*b*d*(b*c - a*d)^2*x + 3*d^2*(-(b*c) + a*d)*(a + b*x)^2 + 2*d^3*(a + b*x)^3 - 6*(b*c - a*d)^3*Log[c + d*x]) + 12*B*(b*c - a*d)^3*(b*d*x + (-(b*c) + a*d)*Log[c + d*x]) + 12*B*(b*c - a*d)^4*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/d^4 - (7*B*(b*c - a*d)^2*(24*b^2*B*c*d*(b*c - a*d)^3*x + 120*A*b*d*(b*c - a*d)^4*x + 130*b*B*d*(b*c - a*d)^4*x + 24*a*b*B*d^2*(-(b*c) + a*d)^3*x - 12*b*B*c*d^2*(b*c - a*d)^2*(a + b*x)^2 + 12*a*B*d^3*(b*c - a*d)^2*(a + b*x)^2 + 35*B*d^2*(-(b*c) + a*d)^3*(a + b*x)^2 + 8*b*B*c*d^3*(b*c - a*d)*(a + b*x)^3 + 10*B*d^3*(b*c - a*d)^2*(a + b*x)^3 + 8*a*B*d^4*(-(b*c) + a*d)*(a + b*x)^3 - 6*b*B*c*d^4*(a + b*x)^4 + 6*a*B*d^5*(a + b*x)^4 + 120*B*d*(b*c - a*d)^4*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)] + 60*d^2*(-(b*c) + a*d)^3*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 40*d^3*(b*c - a*d)^2*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 30*d^4*(-(b*c) + a*d)*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 24*d^5*(a + b*x)^5*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 24*b*B*c*(b*c - a*d)^4*Log[c + d*x] + 24*a*B*d*(b*c - a*d)^4*Log[c + d*x] - 250*B*(b*c - a*d)^5*Log[c + d*x] - 120*(b*c - a*d)^5*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x] + 60*B*(b*c - a*d)^5*((2*

$$\begin{aligned} & \text{Log}[(d*(a + b*x))/(-(b*c) + a*d)] - \text{Log}[c + d*x]) * \text{Log}[c + d*x] + 2 * \text{PolyLog}[\\ & 2, (b*(c + d*x))/(b*c - a*d)])) / (6*d^4) + (B*(b*c - a*d)*(60*b^2*B*c*d*(b* \\ & c - a*d)^4*x - 60*a*b*B*d^2*(b*c - a*d)^4*x + 360*A*b*d*(b*c - a*d)^5*x + 4 \\ & 62*b*B*d*(b*c - a*d)^5*x - 30*b*B*c*d^2*(b*c - a*d)^3*(a + b*x)^2 + 30*a*B* \\ & d^3*(b*c - a*d)^3*(a + b*x)^2 - 141*B*d^2*(b*c - a*d)^4*(a + b*x)^2 + 20*b* \\ & B*c*d^3*(b*c - a*d)^2*(a + b*x)^3 - 20*a*B*d^4*(b*c - a*d)^2*(a + b*x)^3 + \\ & 54*B*d^3*(b*c - a*d)^3*(a + b*x)^3 - 15*b*B*c*d^4*(b*c - a*d)*(a + b*x)^4 + \\ & 15*a*B*d^5*(b*c - a*d)*(a + b*x)^4 - 18*B*d^4*(b*c - a*d)^2*(a + b*x)^4 + \\ & 12*b*B*c*d^5*(a + b*x)^5 - 12*a*B*d^6*(a + b*x)^5 + 360*B*d*(b*c - a*d)^5*(\\ & a + b*x)*\text{Log}[(e*(a + b*x))/(c + d*x)] - 180*d^2*(b*c - a*d)^4*(a + b*x)^2*(\\ & A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]) + 120*d^3*(b*c - a*d)^3*(a + b*x)^3*(A \\ & + B*\text{Log}[(e*(a + b*x))/(c + d*x)]) - 90*d^4*(b*c - a*d)^2*(a + b*x)^4*(A + B \\ & *\text{Log}[(e*(a + b*x))/(c + d*x)]) + 72*d^5*(b*c - a*d)*(a + b*x)^5*(A + B*\text{Log}[\\ & (e*(a + b*x))/(c + d*x)]) - 60*d^6*(a + b*x)^6*(A + B*\text{Log}[(e*(a + b*x))/(c \\ & + d*x)]) - 60*b*B*c*(b*c - a*d)^5*\text{Log}[c + d*x] + 60*a*B*d*(b*c - a*d)^5*\text{Log} \\ & [c + d*x] - 822*B*(b*c - a*d)^6*\text{Log}[c + d*x] - 360*(b*c - a*d)^6*(A + B*\text{Log} \\ & [(e*(a + b*x))/(c + d*x)])*\text{Log}[c + d*x] + 180*B*(b*c - a*d)^6*((2*\text{Log}[(d*(a \\ & + b*x))/(-(b*c) + a*d)] - \text{Log}[c + d*x]) * \text{Log}[c + d*x] + 2*\text{PolyLog}[2, (b*(c \\ & + d*x))/(b*c - a*d)])) / (9*d^4)) / (140*b^4) \end{aligned}$$

fricas [F] time = 0.91, size = 0, normalized size = 0.00

$$\text{integral} \left(A^2 b^3 d^3 g^3 i^3 x^6 + A^2 a^3 c^3 g^3 i^3 + 3 \left(A^2 b^3 c d^2 + A^2 a b^2 d^3 \right) g^3 i^3 x^5 + 3 \left(A^2 b^3 c^2 d + 3 A^2 a b^2 c d^2 + A^2 a^2 b d^3 \right) g^3 \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorithm="fricas")

[Out] integral(A^2*b^3*d^3*g^3*i^3*x^6 + A^2*a^3*c^3*g^3*i^3 + 3*(A^2*b^3*c*d^2 + A^2*a*b^2*d^3)*g^3*i^3*x^5 + 3*(A^2*b^3*c^2*d + 3*A^2*a*b^2*c*d^2 + A^2*a^2*b*d^3)*g^3*i^3*x^4 + (A^2*b^3*c^3 + 9*A^2*a*b^2*c^2*d + 9*A^2*a^2*b*c*d^2 + A^2*a^3*d^3)*g^3*i^3*x^3 + 3*(A^2*a*b^2*c^3 + 3*A^2*a^2*b*c^2*d + A^2*a^3*c*d^2)*g^3*i^3*x^2 + 3*(A^2*a^2*b*c^3 + A^2*a^3*c^2*d)*g^3*i^3*x + (B^2*b^3*d^3*g^3*i^3*x^6 + B^2*a^3*c^3*g^3*i^3 + 3*(B^2*b^3*c*d^2 + B^2*a*b^2*d^3)*g^3*i^3*x^5 + 3*(B^2*b^3*c^2*d + 3*B^2*a*b^2*c*d^2 + B^2*a^2*b*d^3)*g^3*i^3*x^4 + (B^2*b^3*c^3 + 9*B^2*a*b^2*c^2*d + 9*B^2*a^2*b*c*d^2 + B^2*a^3*d^3)*g^3*i^3*x^3 + 3*(B^2*a*b^2*c^3 + 3*B^2*a^2*b*c^2*d + B^2*a^3*c*d^2)*g^3*i^3*x^2 + 3*(B^2*a^2*b*c^3 + B^2*a^3*c^2*d)*g^3*i^3*x)*log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*B*b^3*d^3*g^3*i^3*x^6 + A*B*a^3*c^3*g^3*i^3 + 3*(A*B*b^3*c*d^2 + A*B*a*b^2*d^3)*g^3*i^3*x^5 + 3*(A*B*b^3*c^2*d + 3*A*B*a*b^2*c*d^2 + A*B*a^2*b*d^3)*g^3*i^3*x^4 + (A*B*b^3*c^3 + 9*A*B*a*b^2*c^2*d + 9*A*B*a^2*b*c*d^2 + A*B*a^3*d^3)*g^3*i^3*x^3 + 3*(A*B*a*b^2*c^3 + 3*A*B*a^2*b*c^2*d + A*B*a^3*c*d^2)*g^3*i^3*x^2 + 3*(A*B*a^2*b*c^3 + A*B*a^3*c^2*d)*g^3*i^3*x)*log((b*e*x + a*e)/(d*x + c)), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorithm="giac")

[Out] Timed out

maple [F] time = 2.03, size = 0, normalized size = 0.00

$$\int (bgx + ag)^3 (dix + ci)^3 \left(B \ln \left(\frac{(bx + a)e}{dx + c} \right) + A \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)^3*(d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)^2,x)

[Out] int((b*g*x+a*g)^3*(d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)^2,x)

maxima [B] time = 3.44, size = 6921, normalized size = 6.36

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorithm="maxima")

[Out]
$$\begin{aligned} & 1/7*A^2*b^3*d^3*g^3*i^3*x^7 + 1/2*A^2*b^3*c*d^2*g^3*i^3*x^6 + 1/2*A^2*a*b^2 \\ & *d^3*g^3*i^3*x^6 + 3/5*A^2*b^3*c^2*d*g^3*i^3*x^5 + 9/5*A^2*a*b^2*c*d^2*g^3*i^3 \\ & *x^5 + 3/5*A^2*a^2*b*d^3*g^3*i^3*x^5 + 1/4*A^2*b^3*c^3*g^3*i^3*x^4 + 9/4 \\ & *A^2*a*b^2*c^2*d*g^3*i^3*x^4 + 9/4*A^2*a^2*b*c*d^2*g^3*i^3*x^4 + 1/4*A^2*a^3 \\ & *d^3*g^3*i^3*x^4 + A^2*a*b^2*c^3*g^3*i^3*x^3 + 3*A^2*a^2*b*c^2*d*g^3*i^3*x^3 \\ & + A^2*a^3*c*d^2*g^3*i^3*x^3 + 3/2*A^2*a^2*b*c^3*g^3*i^3*x^2 + 3/2*A^2*a^3 \\ & *c^2*d*g^3*i^3*x^2 + 2*(x*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + a*log(b*x \\ & + a)/b - c*log(d*x + c)/d)*A*B*a^3*c^3*g^3*i^3 + 3*(x^2*log(b*e*x/(d*x + c) \\ &) + a*e/(d*x + c)) - a^2*log(b*x + a)/b^2 + c^2*log(d*x + c)/d^2 - (b*c - a \\ & *d)*x/(b*d))*A*B*a^2*b*c^3*g^3*i^3 + (2*x^3*log(b*e*x/(d*x + c) + a*e/(d*x \\ & + c)) + 2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d \\ & ^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*A*B*a*b^2*c^3*g^3*i^3 + 1/12* \\ & (6*x^4*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 6*a^4*log(b*x + a)/b^4 + 6*c^4 \\ & *log(d*x + c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3) \\ & *x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*A*B*b^3*c^3*g^3*i^3 + 3*(x^2 \end{aligned}$$

$$\begin{aligned}
& ^3i^3 - 21a^5b^2c^2d^5g^3i^3 + 7a^6b^2cd^6g^3i^3 - a^7d^7g^3i^3 \\
& ^3i^3) * (\log(b*x + a) * \log((b*d*x + a*d)/(b*c - a*d) + 1) + \operatorname{dilog}(-(b*d*x + a*d) \\
& / (b*c - a*d))) * B^2 / (b^4*d^4) + 1/2520 * (360*B^2*b^7*d^7g^3i^3*x^7*\log(e)^2 \\
& + 60 * ((21*g^3i^3*\log(e)^2 - 2*g^3i^3*\log(e)) * b^7*c*d^6 + (21*g^3i^3*\log \\
& (e)^2 + 2*g^3i^3*\log(e)) * a*b^6*d^7) * B^2*x^6 + 24 * ((63*g^3i^3*\log(e)^2 - 1 \\
& 5*g^3i^3*\log(e) + g^3i^3) * b^7*c^2*d^5 + (189*g^3i^3*\log(e)^2 - 2*g^3i^3 \\
&) * a*b^6*c*d^6 + (63*g^3i^3*\log(e)^2 + 15*g^3i^3*\log(e) + g^3i^3) * a^2*b^5 \\
& *d^7) * B^2*x^5 + 6 * ((105*g^3i^3*\log(e)^2 - 51*g^3i^3*\log(e) + 10*g^3i^3) * \\
& b^7*c^3*d^4 + (945*g^3i^3*\log(e)^2 - 147*g^3i^3*\log(e) - 10*g^3i^3) * a*b^ \\
& 6*c^2*d^5 + (945*g^3i^3*\log(e)^2 + 147*g^3i^3*\log(e) - 10*g^3i^3) * a^2*b^ \\
& 5*c*d^6 + (105*g^3i^3*\log(e)^2 + 51*g^3i^3*\log(e) + 10*g^3i^3) * a^3*b^4*d \\
& ^7) * B^2*x^4 - 2 * ((6*g^3i^3*\log(e) - 11*g^3i^3) * b^7*c^4*d^3 - 4 * (315*g^3i \\
& ^3*\log(e)^2 - 147*g^3i^3*\log(e) + 19*g^3i^3) * a*b^6*c^3*d^4 - 6 * (630*g^3i \\
& ^3*\log(e)^2 - 29*g^3i^3) * a^2*b^5*c^2*d^5 - 4 * (315*g^3i^3*\log(e)^2 + 147*g \\
& ^3i^3*\log(e) + 19*g^3i^3) * a^3*b^4*c*d^6 - (6*g^3i^3*\log(e) + 11*g^3i^3) \\
& * a^4*b^3*d^7) * B^2*x^3 + 3 * (3 * (2*g^3i^3*\log(e) - 3*g^3i^3) * b^7*c^5*d^2 - (\\
& 42*g^3i^3*\log(e) - 67*g^3i^3) * a*b^6*c^4*d^3 + 2 * (630*g^3i^3*\log(e)^2 - 2 \\
& 52*g^3i^3*\log(e) - 29*g^3i^3) * a^2*b^5*c^3*d^4 + 2 * (630*g^3i^3*\log(e)^2 + \\
& 252*g^3i^3*\log(e) - 29*g^3i^3) * a^3*b^4*c^2*d^5 + (42*g^3i^3*\log(e) + 67 \\
& *g^3i^3) * a^4*b^3*c*d^6 - 3 * (2*g^3i^3*\log(e) + 3*g^3i^3) * a^5*b^2*d^7) * B^2 \\
& *x^2 - 6 * (6 * (g^3i^3*\log(e) - g^3i^3) * b^7*c^6*d - 3 * (14*g^3i^3*\log(e) - 1 \\
& 5*g^3i^3) * a*b^6*c^5*d^2 + 2 * (63*g^3i^3*\log(e) - 73*g^3i^3) * a^2*b^5*c^4*d \\
& ^3 - 2 * (210*g^3i^3*\log(e)^2 - 107*g^3i^3) * a^3*b^4*c^3*d^4 - 2 * (63*g^3i^3 \\
& *\log(e) + 73*g^3i^3) * a^4*b^3*c^2*d^5 + 3 * (14*g^3i^3*\log(e) + 15*g^3i^3) * \\
& a^5*b^2*c*d^6 - 6 * (g^3i^3*\log(e) + g^3i^3) * a^6*b*d^7) * B^2*x + 18 * (20*B^2* \\
& b^7*d^7g^3i^3*x^7 + 140*B^2*a^3*b^4*c^3*d^4g^3i^3*x + 70 * (b^7*c*d^6g^3i^3 \\
& *i^3 + a*b^6*d^7g^3i^3) * B^2*x^6 + 84 * (b^7*c^2*d^5g^3i^3 + 3*a*b^6*c*d^6 \\
& *g^3i^3 + a^2*b^5*d^7g^3i^3) * B^2*x^5 + 35 * (b^7*c^3*d^4g^3i^3 + 9*a*b^6 \\
& *c^2*d^5g^3i^3 + 9*a^2*b^5*c*d^6g^3i^3 + a^3*b^4*d^7g^3i^3) * B^2*x^4 + \\
& 140 * (a*b^6*c^3*d^4g^3i^3 + 3*a^2*b^5*c^2*d^5g^3i^3 + a^3*b^4*c*d^6g^3i^3 \\
& *i^3) * B^2*x^3 + 210 * (a^2*b^5*c^3*d^4g^3i^3 + a^3*b^4*c^2*d^5g^3i^3) * B^2 \\
& *x^2 + (35*a^4*b^3*c^3*d^4g^3i^3 - 21*a^5*b^2*c^2*d^5g^3i^3 + 7*a^6*b^2*c \\
& *d^6g^3i^3 - a^7*d^7g^3i^3) * B^2) * \log(b*x + a)^2 + 18 * (20*B^2*b^7*d^7g^ \\
& 3i^3*x^7 + 140*B^2*a^3*b^4*c^3*d^4g^3i^3*x + 70 * (b^7*c*d^6g^3i^3 + a*b \\
& ^6*d^7g^3i^3) * B^2*x^6 + 84 * (b^7*c^2*d^5g^3i^3 + 3*a*b^6*c*d^6g^3i^3 + \\
& a^2*b^5*d^7g^3i^3) * B^2*x^5 + 35 * (b^7*c^3*d^4g^3i^3 + 9*a*b^6*c^2*d^5g \\
& ^3i^3 + 9*a^2*b^5*c*d^6g^3i^3 + a^3*b^4*d^7g^3i^3) * B^2*x^4 + 140 * (a*b^ \\
& 6*c^3*d^4g^3i^3 + 3*a^2*b^5*c^2*d^5g^3i^3 + a^3*b^4*c*d^6g^3i^3) * B^2* \\
& x^3 + 210 * (a^2*b^5*c^3*d^4g^3i^3 + a^3*b^4*c^2*d^5g^3i^3) * B^2*x^2 - (b^ \\
& 7*c^7g^3i^3 - 7*a*b^6*c^6*dg^3i^3 + 21*a^2*b^5*c^5*d^2g^3i^3 - 35*a^3 \\
& *b^4*c^4*d^3g^3i^3) * B^2) * \log(d*x + c)^2 + 6 * (120*B^2*b^7*d^7g^3i^3*x^7* \\
& \log(e) + 20 * ((21*g^3i^3*\log(e) - g^3i^3) * b^7*c*d^6 + (21*g^3i^3*\log(e) + \\
& g^3i^3) * a*b^6*d^7) * B^2*x^6 + 12 * (126*a*b^6*c*d^6g^3i^3*\log(e) + (42*g^3 \\
& i^3*\log(e) - 5*g^3i^3) * b^7*c^2*d^5 + (42*g^3i^3*\log(e) + 5*g^3i^3) * a^2* \\
& b^5*d^7) * B^2*x^5 + 3 * ((70*g^3i^3*\log(e) - 17*g^3i^3) * b^7*c^3*d^4 + 7 * (90*
\end{aligned}$$

```

g^3*i^3*log(e) - 7*g^3*i^3)*a*b^6*c^2*d^5 + 7*(90*g^3*i^3*log(e) + 7*g^3*i^
3)*a^2*b^5*c*d^6 + (70*g^3*i^3*log(e) + 17*g^3*i^3)*a^3*b^4*d^7)*B^2*x^4 +
2*(1260*a^2*b^5*c^2*d^5*g^3*i^3*log(e) - b^7*c^4*d^3*g^3*i^3 + a^4*b^3*d^7*
g^3*i^3 + 14*(30*g^3*i^3*log(e) - 7*g^3*i^3)*a*b^6*c^3*d^4 + 14*(30*g^3*i^3
*log(e) + 7*g^3*i^3)*a^3*b^4*c*d^6)*B^2*x^3 + 3*(b^7*c^5*d^2*g^3*i^3 - 7*a*
b^6*c^4*d^3*g^3*i^3 + 7*a^4*b^3*c*d^6*g^3*i^3 - a^5*b^2*d^7*g^3*i^3 + 84*(5
*g^3*i^3*log(e) - g^3*i^3)*a^2*b^5*c^3*d^4 + 84*(5*g^3*i^3*log(e) + g^3*i^3
)*a^3*b^4*c^2*d^5)*B^2*x^2 + 6*(140*a^3*b^4*c^3*d^4*g^3*i^3*log(e) - b^7*c^
6*d*g^3*i^3 + 7*a*b^6*c^5*d^2*g^3*i^3 - 21*a^2*b^5*c^4*d^3*g^3*i^3 + 21*a^4
*b^3*c^2*d^5*g^3*i^3 - 7*a^5*b^2*c*d^6*g^3*i^3 + a^6*b*d^7*g^3*i^3)*B^2*x -
(6*a^7*d^7*g^3*i^3*log(e) + 6*a*b^6*c^6*d*g^3*i^3 - 39*a^2*b^5*c^5*d^2*g^3
*i^3 + 107*a^3*b^4*c^4*d^3*g^3*i^3 - (210*g^3*i^3*log(e) + 107*g^3*i^3)*a^4
*b^3*c^3*d^4 + 3*(42*g^3*i^3*log(e) + 13*g^3*i^3)*a^5*b^2*c^2*d^5 - 6*(7*g^
3*i^3*log(e) + g^3*i^3)*a^6*b*c*d^6)*B^2)*log(b*x + a) - 6*(120*B^2*b^7*d^7
*g^3*i^3*x^7*log(e) + 20*((21*g^3*i^3*log(e) - g^3*i^3)*b^7*c*d^6 + (21*g^3
*i^3*log(e) + g^3*i^3)*a*b^6*d^7)*B^2*x^6 + 12*(126*a*b^6*c*d^6*g^3*i^3*log
(e) + (42*g^3*i^3*log(e) - 5*g^3*i^3)*b^7*c^2*d^5 + (42*g^3*i^3*log(e) + 5*
g^3*i^3)*a^2*b^5*d^7)*B^2*x^5 + 3*((70*g^3*i^3*log(e) - 17*g^3*i^3)*b^7*c^3
*d^4 + 7*(90*g^3*i^3*log(e) - 7*g^3*i^3)*a*b^6*c^2*d^5 + 7*(90*g^3*i^3*log(
e) + 7*g^3*i^3)*a^2*b^5*c*d^6 + (70*g^3*i^3*log(e) + 17*g^3*i^3)*a^3*b^4*d^
7)*B^2*x^4 + 2*(1260*a^2*b^5*c^2*d^5*g^3*i^3*log(e) - b^7*c^4*d^3*g^3*i^3 +
a^4*b^3*d^7*g^3*i^3 + 14*(30*g^3*i^3*log(e) - 7*g^3*i^3)*a*b^6*c^3*d^4 + 1
4*(30*g^3*i^3*log(e) + 7*g^3*i^3)*a^3*b^4*c*d^6)*B^2*x^3 + 3*(b^7*c^5*d^2*g
^3*i^3 - 7*a*b^6*c^4*d^3*g^3*i^3 + 7*a^4*b^3*c*d^6*g^3*i^3 - a^5*b^2*d^7*g^
3*i^3 + 84*(5*g^3*i^3*log(e) - g^3*i^3)*a^2*b^5*c^3*d^4 + 84*(5*g^3*i^3*log
(e) + g^3*i^3)*a^3*b^4*c^2*d^5)*B^2*x^2 + 6*(140*a^3*b^4*c^3*d^4*g^3*i^3*lo
g(e) - b^7*c^6*d*g^3*i^3 + 7*a*b^6*c^5*d^2*g^3*i^3 - 21*a^2*b^5*c^4*d^3*g^3
*i^3 + 21*a^4*b^3*c^2*d^5*g^3*i^3 - 7*a^5*b^2*c*d^6*g^3*i^3 + a^6*b*d^7*g^3
*i^3)*B^2*x + 6*(20*B^2*b^7*d^7*g^3*i^3*x^7 + 140*B^2*a^3*b^4*c^3*d^4*g^3*i
^3*x + 70*(b^7*c*d^6*g^3*i^3 + a*b^6*d^7*g^3*i^3)*B^2*x^6 + 84*(b^7*c^2*d^5
*g^3*i^3 + 3*a*b^6*c*d^6*g^3*i^3 + a^2*b^5*d^7*g^3*i^3)*B^2*x^5 + 35*(b^7*c
^3*d^4*g^3*i^3 + 9*a*b^6*c^2*d^5*g^3*i^3 + 9*a^2*b^5*c*d^6*g^3*i^3 + a^3*b^
4*d^7*g^3*i^3)*B^2*x^4 + 140*(a*b^6*c^3*d^4*g^3*i^3 + 3*a^2*b^5*c^2*d^5*g^3
*i^3 + a^3*b^4*c*d^6*g^3*i^3)*B^2*x^3 + 210*(a^2*b^5*c^3*d^4*g^3*i^3 + a^3*
b^4*c^2*d^5*g^3*i^3)*B^2*x^2 + (35*a^4*b^3*c^3*d^4*g^3*i^3 - 21*a^5*b^2*c^2
*d^5*g^3*i^3 + 7*a^6*b*c*d^6*g^3*i^3 - a^7*d^7*g^3*i^3)*B^2)*log(b*x + a))*
log(d*x + c))/(b^4*d^4)

```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (ag + bgx)^3 (ci + dix)^3 \left(A + B \ln \left(\frac{e(a + bx)}{c + dx} \right) \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)^3*(c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x)))^2,
x)
```

```
[Out] int((a*g + b*g*x)^3*(c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x)))^2,
x)
```

```
sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00
```

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**3*(d*i*x+c*i)**3*(A+B*ln(e*(b*x+a)/(d*x+c)))**2,x)
```

```
[Out] Timed out
```

$$3.75 \quad \int (ag+bgx)^2(ci+dix)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 dx$$

Optimal. Leaf size=908

$$\frac{B^2 g^2 i^3 \log \left(\frac{a+bx}{c+dx} \right) (bc-ad)^6}{36b^4 d^3} + \frac{B g^2 i^3 \log \left(\frac{bc-ad}{b(c+dx)} \right) \left(2A + 3B + 2B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) (bc-ad)^6}{60b^4 d^3} + \frac{11B^2 g^2 i^3 \log(c+dx)}{180b^4 d^3}$$

[Out] $-7/180*B^2*(-a*d+b*c)^5*g^2*i^3*x/b^3/d^2-7/360*B^2*(-a*d+b*c)^4*g^2*i^3*(d*x+c)^2/b^2/d^3-1/60*B^2*(-a*d+b*c)^3*g^2*i^3*(d*x+c)^3/b/d^3+1/60*B^2*(-a*d+b*c)^2*g^2*i^3*(d*x+c)^4/d^3+1/36*B^2*(-a*d+b*c)^6*g^2*i^3*\ln((b*x+a)/(d*x+c))/b^4/d^3-1/60*B*(-a*d+b*c)^4*g^2*i^3*(b*x+a)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^4/d-1/30*B*(-a*d+b*c)^3*g^2*i^3*(b*x+a)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^4-1/10*B*(-a*d+b*c)^4*g^2*i^3*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^2/d^3+1/45*B*(-a*d+b*c)^3*g^2*i^3*(d*x+c)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b/d^3+7/60*B*(-a*d+b*c)^2*g^2*i^3*(d*x+c)^4*(A+B*\ln(e*(b*x+a)/(d*x+c)))/d^3-1/15*b*B*(-a*d+b*c)*g^2*i^3*(d*x+c)^5*(A+B*\ln(e*(b*x+a)/(d*x+c)))/d^3+1/60*(-a*d+b*c)^3*g^2*i^3*(b*x+a)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/b^4+1/20*(-a*d+b*c)^2*g^2*i^3*(b*x+a)^3*(d*x+c)*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/b^3+1/10*(-a*d+b*c)*g^2*i^3*(b*x+a)^3*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/b^2+1/6*g^2*i^3*(b*x+a)^3*(d*x+c)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/b+1/60*B*(-a*d+b*c)^5*g^2*i^3*(b*x+a)*(2*A+B+2*B*\ln(e*(b*x+a)/(d*x+c)))/b^4/d^2+1/60*B*(-a*d+b*c)^6*g^2*i^3*\ln((-a*d+b*c)/b/(d*x+c))*(2*A+3*B+2*B*\ln(e*(b*x+a)/(d*x+c)))/b^4/d^3+11/180*B^2*(-a*d+b*c)^6*g^2*i^3*\ln(d*x+c)/b^4/d^3+1/30*B^2*(-a*d+b*c)^6*g^2*i^3*polylog(2,d*(b*x+a)/b/(d*x+c))/b^4/d^3$

Rubi [A] time = 3.02, antiderivative size = 825, normalized size of antiderivative = 0.91, number of steps used = 86, number of rules used = 13, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}} = 0.310$, Rules used = {2528, 2525, 12, 2486, 31, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 43}

$$\frac{B^2 g^2 i^3 \log^2(a+bx)(bc-ad)^6}{60b^4 d^3} - \frac{B^2 g^2 i^3 \log(a+bx)(bc-ad)^6}{45b^4 d^3} - \frac{B g^2 i^3 \log(a+bx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right) (bc-ad)^6}{30b^4 d^3}$$

Antiderivative was successfully verified.

[In] Int[(a*g + b*g*x)^2*(c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2, x]

[Out] $-(A*B*(b*c - a*d)^5*g^2*i^3*x)/(30*b^3*d^2) - (B^2*(b*c - a*d)^5*g^2*i^3*x)/(45*b^3*d^2) - (7*B^2*(b*c - a*d)^4*g^2*i^3*(c + d*x)^2)/(360*b^2*d^3) - (B^2*(b*c - a*d)^3*g^2*i^3*(c + d*x)^3)/(60*b*d^3) + (B^2*(b*c - a*d)^2*g^2*i^3*(c + d*x)^4)/(60*d^3) - (B^2*(b*c - a*d)^6*g^2*i^3*Log[a + b*x])/(45*b^3*d^2)$

$$4*d^3) + (B^2*(b*c - a*d)^6*g^2*i^3*Log[a + b*x]^2)/(60*b^4*d^3) - (B^2*(b*c - a*d)^5*g^2*i^3*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)]/(30*b^4*d^2) - (B*(b*c - a*d)^4*g^2*i^3*(c + d*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(60*b^2*d^3) - (B*(b*c - a*d)^3*g^2*i^3*(c + d*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(90*b*d^3) + (7*B*(b*c - a*d)^2*g^2*i^3*(c + d*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(60*d^3) - (b*B*(b*c - a*d)*g^2*i^3*(c + d*x)^5*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(15*d^3) - (B*(b*c - a*d)^6*g^2*i^3*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(30*b^4*d^3) + ((b*c - a*d)^2*g^2*i^3*(c + d*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x]])^2)/(4*d^3) - (2*b*(b*c - a*d)*g^2*i^3*(c + d*x)^5*(A + B*Log[(e*(a + b*x))/(c + d*x]])^2)/(5*d^3) + (b^2*g^2*i^3*(c + d*x)^6*(A + B*Log[(e*(a + b*x))/(c + d*x]])^2)/(6*d^3) + (B^2*(b*c - a*d)^6*g^2*i^3*Log[c + d*x])/(30*b^4*d^3) - (B^2*(b*c - a*d)^6*g^2*i^3*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)]/(30*b^4*d^3) - (B^2*(b*c - a*d)^6*g^2*i^3*PolyLog[2, -(d*(a + b*x))/(b*c - a*d)]/(30*b^4*d^3)$$

Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^-1, x_Symbol] := Simp[Log[RemoveContent[a + b*x, x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && (!IntegerQ[n] || (EqQ[c, 0] && LeQ[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)]^(n_.))*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_)^(p_.))*((c_.) + (d_.)*(x_)^(q_.))^(r_.)]^(s_.), x_Symbol] := Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_)^(m_.)), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
```

```
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunci
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int (75c + 75dx)^3 (ag + bgx)^2 \left(A + B \log \left(\frac{e(a + bx)}{c + dx} \right) \right)^2 dx &= \int \left(\frac{(-bc + ad)^2 g^2 (75c + 75dx)^3 \left(A + B \log \left(\frac{e(a + bx)}{c + dx} \right) \right)^2}{d^2} \right) dx \\
&= \frac{(b^2 g^2) \int (75c + 75dx)^5 \left(A + B \log \left(\frac{e(a + bx)}{c + dx} \right) \right)^2 dx}{5625 d^2} \\
&= \frac{421875 (bc - ad)^2 g^2 (c + dx)^4 \left(A + B \log \left(\frac{e(a + bx)}{c + dx} \right) \right)^2}{4d^3} \\
&= \frac{421875 (bc - ad)^2 g^2 (c + dx)^4 \left(A + B \log \left(\frac{e(a + bx)}{c + dx} \right) \right)^2}{4d^3} \\
&= \frac{421875 (bc - ad)^2 g^2 (c + dx)^4 \left(A + B \log \left(\frac{e(a + bx)}{c + dx} \right) \right)^2}{4d^3} \\
&= \frac{421875 (bc - ad)^2 g^2 (c + dx)^4 \left(A + B \log \left(\frac{e(a + bx)}{c + dx} \right) \right)^2}{4d^3} \\
&= -\frac{28125 AB (bc - ad)^5 g^2 x}{2b^3 d^2} - \frac{28125 B (bc - ad)^4 g^2 (c + dx)}{4d^3} \\
&= -\frac{28125 AB (bc - ad)^5 g^2 x}{2b^3 d^2} - \frac{28125 B^2 (bc - ad)^5 g^2 (a + dx)}{2b^4 d^2} \\
&= -\frac{28125 AB (bc - ad)^5 g^2 x}{2b^3 d^2} - \frac{28125 B^2 (bc - ad)^5 g^2 (a + dx)}{2b^4 d^2} \\
&= -\frac{28125 AB (bc - ad)^5 g^2 x}{2b^3 d^2} - \frac{9375 B^2 (bc - ad)^5 g^2 x}{b^3 d^2} \\
&= -\frac{28125 AB (bc - ad)^5 g^2 x}{2b^3 d^2} - \frac{9375 B^2 (bc - ad)^5 g^2 x}{b^3 d^2} \\
&= -\frac{28125 AB (bc - ad)^5 g^2 x}{2b^3 d^2} - \frac{9375 B^2 (bc - ad)^5 g^2 x}{b^3 d^2} \\
&= -\frac{28125 AB (bc - ad)^5 g^2 x}{2b^3 d^2} - \frac{9375 B^2 (bc - ad)^5 g^2 x}{b^3 d^2}
\end{aligned}$$

Mathematica [A] time = 1.38, size = 1555, normalized size = 1.71

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)^2*(c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2,x]
```

```
[Out] (g^2*i^3*(15*(b*c - a*d)^2*(c + d*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 - 24*b*(b*c - a*d)*(c + d*x)^5*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 + 10*b^2*(c + d*x)^6*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 - (5*B*(b*c - a*d)^3*(6*A*b*d*(b*c - a*d)^2*x - 3*B*(b*c - a*d)^2*(b*d*x + (b*c - a*d)*Log[a + b*x]) - B*(b*c - a*d)*(2*b*d*(b*c - a*d)*x + b^2*(c + d*x)^2 + 2*(b*c - a*d)^2*Log[a + b*x]) + 6*B*d*(b*c - a*d)^2*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)] + 3*b^2*(b*c - a*d)*(c + d*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 2*b^3*(c + d*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 6*(b*c - a*d)^3*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 6*B*(b*c - a*d)^3*Log[c + d*x] - 3*B*(b*c - a*d)^3*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)])))/b^4 + (2*B*(b*c - a*d)^2*(24*A*b*d*(b*c - a*d)^3*x - 12*B*(b*c - a*d)^3*(b*d*x + (b*c - a*d)*Log[a + b*x]) - 4*B*(b*c - a*d)^2*(2*b*d*(b*c - a*d)*x + b^2*(c + d*x)^2 + 2*(b*c - a*d)^2*Log[a + b*x]) - B*(b*c - a*d)*(6*b*d*(b*c - a*d)^2*x + 3*b^2*(b*c - a*d)*(c + d*x)^2 + 2*b^3*(c + d*x)^3 + 6*(b*c - a*d)^3*Log[a + b*x]) + 24*B*d*(b*c - a*d)^3*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)] + 12*b^2*(b*c - a*d)^2*(c + d*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 8*b^3*(b*c - a*d)*(c + d*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 6*b^4*(c + d*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 24*(b*c - a*d)^4*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 24*B*(b*c - a*d)^4*Log[c + d*x] - 12*B*(b*c - a*d)^4*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)])))/b^4 - (B*(b*c - a*d)*(120*A*b*d*(b*c - a*d)^4*x - 60*B*(b*c - a*d)^4*(b*d*x + (b*c - a*d)*Log[a + b*x]) - 20*B*(b*c - a*d)^3*(2*b*d*(b*c - a*d)*x + b^2*(c + d*x)^2 + 2*(b*c - a*d)^2*Log[a + b*x]) - 5*B*(b*c - a*d)^2*(6*b*d*(b*c - a*d)^2*x + 3*b^2*(b*c - a*d)*(c + d*x)^2 + 2*b^3*(c + d*x)^3 + 6*(b*c - a*d)^3*Log[a + b*x]) - 2*B*(b*c - a*d)*(12*b*d*(b*c - a*d)^3*x + 6*b^2*(b*c - a*d)^2*(c + d*x)^2 + 4*b^3*(b*c - a*d)*(c + d*x)^3 + 3*b^4*(c + d*x)^4 + 12*(b*c - a*d)^4*Log[a + b*x]) + 120*B*d*(b*c - a*d)^4*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)] + 60*b^2*(b*c - a*d)^3*(c + d*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 40*b^3*(b*c - a*d)^2*(c + d*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 30*b^4*(b*c - a*d)*(c + d*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 24*b^5*(c + d*x)^5*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 120*(b*c - a*d)^5*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 120*B*(b*c - a*d)^5*Log[c + d*x] - 60*B*(b*c - a*d)^5*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)])))/(6*b^4))/(60*d^3)
```

fricas [F] time = 1.38, size = 0, normalized size = 0.00

$$\text{integral} \left(A^2 b^2 d^3 g^2 i^3 x^5 + A^2 a^2 c^3 g^2 i^3 + (3 A^2 b^2 c d^2 + 2 A^2 a b d^3) g^2 i^3 x^4 + (3 A^2 b^2 c^2 d + 6 A^2 a b c d^2 + A^2 a^2 d^3) g^2 i^3 x^3 + (3 A^2 a^2 b c^2 d + 6 A^2 a^2 b c d^2 + A^2 a^2 d^3) g^2 i^3 x^2 + (3 A^2 a^2 b^2 c^2 d + 6 A^2 a^2 b^2 c d^2 + A^2 a^2 b^2 d^3) g^2 i^3 x + (3 A^2 a^2 b^2 c^2 d + 6 A^2 a^2 b^2 c d^2 + A^2 a^2 b^2 d^3) g^2 i^3 x^2 + (3 A^2 a^2 b^2 c^2 d + 6 A^2 a^2 b^2 c d^2 + A^2 a^2 b^2 d^3) g^2 i^3 x^3 + (3 A^2 a^2 b^2 c^2 d + 6 A^2 a^2 b^2 c d^2 + A^2 a^2 b^2 d^3) g^2 i^3 x^4 + (3 A^2 a^2 b^2 c^2 d + 6 A^2 a^2 b^2 c d^2 + A^2 a^2 b^2 d^3) g^2 i^3 x^5 + (3 A^2 a^2 b^2 c^2 d + 6 A^2 a^2 b^2 c d^2 + A^2 a^2 b^2 d^3) g^2 i^3 x^6 + (3 A^2 a^2 b^2 c^2 d + 6 A^2 a^2 b^2 c d^2 + A^2 a^2 b^2 d^3) g^2 i^3 x^7 + (3 A^2 a^2 b^2 c^2 d + 6 A^2 a^2 b^2 c d^2 + A^2 a^2 b^2 d^3) g^2 i^3 x^8 + (3 A^2 a^2 b^2 c^2 d + 6 A^2 a^2 b^2 c d^2 + A^2 a^2 b^2 d^3) g^2 i^3 x^9 + (3 A^2 a^2 b^2 c^2 d + 6 A^2 a^2 b^2 c d^2 + A^2 a^2 b^2 d^3) g^2 i^3 x^{10} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorithm="fricas")

[Out] integral(A^2*b^2*d^3*g^2*i^3*x^5 + A^2*a^2*c^3*g^2*i^3 + (3*A^2*b^2*c*d^2 + 2*A^2*a*b*d^3)*g^2*i^3*x^4 + (3*A^2*b^2*c^2*d + 6*A^2*a*b*c*d^2 + A^2*a^2*d^3)*g^2*i^3*x^3 + (A^2*b^2*c^3 + 6*A^2*a*b*c^2*d + 3*A^2*a^2*c*d^2)*g^2*i^3*x^2 + (2*A^2*a*b*c^3 + 3*A^2*a^2*c^2*d)*g^2*i^3*x + (B^2*b^2*d^3*g^2*i^3*x^5 + B^2*a^2*c^3*g^2*i^3 + (3*B^2*b^2*c*d^2 + 2*B^2*a*b*d^3)*g^2*i^3*x^4 + (3*B^2*b^2*c^2*d + 6*B^2*a*b*c*d^2 + B^2*a^2*d^3)*g^2*i^3*x^3 + (B^2*b^2*c^3 + 6*B^2*a*b*c^2*d + 3*B^2*a^2*c*d^2)*g^2*i^3*x^2 + (2*B^2*a*b*c^3 + 3*B^2*a^2*c^2*d)*g^2*i^3*x)*log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*B*b^2*d^3*g^2*i^3*x^5 + A*B*a^2*c^3*g^2*i^3 + (3*A*B*b^2*c*d^2 + 2*A*B*a*b*d^3)*g^2*i^3*x^4 + (3*A*B*b^2*c^2*d + 6*A*B*a*b*c*d^2 + A*B*a^2*d^3)*g^2*i^3*x^3 + (A*B*b^2*c^3 + 6*A*B*a*b*c^2*d + 3*A*B*a^2*c*d^2)*g^2*i^3*x^2 + (2*A*B*a*b*c^3 + 3*A*B*a^2*c^2*d)*g^2*i^3*x)*log((b*e*x + a*e)/(d*x + c)), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorithm="giac")

[Out] Timed out

maple [F] time = 2.81, size = 0, normalized size = 0.00

$$\int (bgx + ag)^2 (dix + ci)^3 \left(B \ln \left(\frac{(bx + a)e}{dx + c} \right) + A \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)^2*(d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)^2,x)

[Out] int((b*g*x+a*g)^2*(d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)^2,x)

maxima [B] time = 2.86, size = 5196, normalized size = 5.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorithm="maxima")

[Out] $\frac{1}{6}A^2b^2d^3g^2i^3x^6 + \frac{3}{5}A^2b^2c^2d^2g^2i^3x^5 + \frac{2}{5}A^2a^2b^2d^3g^2i^3x^5 + \frac{3}{4}A^2b^2c^2d^2g^2i^3x^4 + \frac{3}{2}A^2a^2b^2c^2d^2g^2i^3x^4 + \frac{1}{4}A^2a^2d^3g^2i^3x^4 + \frac{1}{3}A^2b^2c^3g^2i^3x^3 + 2A^2a^2b^2c^2d^2g^2i^3x^3 + A^2a^2c^2d^2g^2i^3x^3 + A^2a^2b^2c^3g^2i^3x^2 + \frac{3}{2}A^2a^2c^2d^2g^2i^3x^2 + 2(x \log(bex/(dx+c)) + aex/(dx+c)) + a \log(bx+a)/b - c \log(dx+c)/d) * ABa^2c^3g^2i^3 + 2(x^2 \log(bex/(dx+c)) + aex/(dx+c)) - a^2 \log(bx+a)/b^2 + c^2 \log(dx+c)/d^2 - (bc-ad)*x/(bd)) * ABa^2c^3g^2i^3 + \frac{1}{3}(2x^3 \log(bex/(dx+c)) + aex/(dx+c)) + 2a^3 \log(bx+a)/b^3 - 2c^3 \log(dx+c)/d^3 - ((b^2cd - abd^2)*x^2 - 2(b^2c^2 - a^2d^2)*x)/(b^2d^2)) * ABb^2c^3g^2i^3 + 3(x^2 \log(bex/(dx+c)) + aex/(dx+c)) - a^2 \log(bx+a)/b^2 + c^2 \log(dx+c)/d^2 - (bc-ad)*x/(bd)) * ABa^2c^2d^2g^2i^3 + 2(2x^3 \log(bex/(dx+c)) + aex/(dx+c)) + 2a^3 \log(bx+a)/b^3 - 2c^3 \log(dx+c)/d^3 - ((b^2cd - abd^2)*x^2 - 2(b^2c^2 - a^2d^2)*x)/(b^2d^2)) * ABa^2b^2c^2d^2g^2i^3 + \frac{1}{4}(6x^4 \log(bex/(dx+c)) + aex/(dx+c)) - 6a^4 \log(bx+a)/b^4 + 6c^4 \log(dx+c)/d^4 - (2(b^3cd^2 - ab^2d^3)*x^3 - 3(b^3c^2d - a^2bd^3)*x^2 + 6(b^3c^3 - a^3d^3)*x)/(b^3d^3)) * ABb^2c^2d^2g^2i^3 + (2x^3 \log(bex/(dx+c)) + aex/(dx+c)) + 2a^3 \log(bx+a)/b^3 - 2c^3 \log(dx+c)/d^3 - ((b^2cd - abd^2)*x^2 - 2(b^2c^2 - a^2d^2)*x)/(b^2d^2)) * ABa^2cd^2g^2i^3 + \frac{1}{2}(6x^4 \log(bex/(dx+c)) + aex/(dx+c)) - 6a^4 \log(bx+a)/b^4 + 6c^4 \log(dx+c)/d^4 - (2(b^3cd^2 - ab^2d^3)*x^3 - 3(b^3c^2d - a^2bd^3)*x^2 + 6(b^3c^3 - a^3d^3)*x)/(b^3d^3)) * ABa^2b^2cd^2g^2i^3 + \frac{1}{10}(12x^5 \log(bex/(dx+c)) + aex/(dx+c)) + 12a^5 \log(bx+a)/b^5 - 12c^5 \log(dx+c)/d^5 - (3(b^4cd^3 - ab^3d^4)*x^4 - 4(b^4c^2d^2 - a^2b^2d^4)*x^3 + 6(b^4c^3d - a^3bd^4)*x^2 - 12(b^4c^4 - a^4d^4)*x)/(b^4d^4)) * ABb^2cd^2g^2i^3 + \frac{1}{12}(6x^4 \log(bex/(dx+c)) + aex/(dx+c)) - 6a^4 \log(bx+a)/b^4 + 6c^4 \log(dx+c)/d^4 - (2(b^3cd^2 - ab^2d^3)*x^3 - 3(b^3c^2d - a^2bd^3)*x^2 + 6(b^3c^3 - a^3d^3)*x)/(b^3d^3)) * ABa^2d^3g^2i^3 + \frac{1}{15}(12x^5 \log(bex/(dx+c)) + aex/(dx+c)) + 12a^5 \log(bx+a)/b^5 - 12c^5 \log(dx+c)/d^5 - (3(b^4cd^3 - ab^3d^4)*x^4 - 4(b^4c^2d^2 - a^2b^2d^4)*x^3 + 6(b^4c^3d - a^3bd^4)*x^2 - 12(b^4c^4 - a^4d^4)*x)/(b^4d^4)) * ABa^2bd^3g^2i^3 + \frac{1}{180}(60x^6 \log(bex/(dx+c)) + aex/(dx+c)) - 60a^6 \log(bx+a)/b^6 + 60c^6 \log(dx+c)/d^6 - (12(b^5cd^4 - ab^4d^5)*x^5 - 15(b^5c^2d^3 - a^2b^3d^5)*x^4 + 20(b^5c^3d^2 - a^3b^2d^5)*x^3 - 30(b^5c^4d - a^4bd^5)*x^2 + 60(b^5c^5 - a^5d^5)*x)/(b^5d^5)) * ABb^2d^3g^2i^3 + A^2a^2c^3g^2i^3x - \frac{1}{180}(74a^3b^2c^3d^3g^2i^3 - 33a^4b^2c^2d^4g^2i^3 + 6a^5cd^5g^2i^3 + 2(3g^2i^3 \log(e) - g^2i^3)*b^5c^6 - 18(2g^2i^3 \log(e) - g^2i^3)*ab^4c^5d + 9(10g^2i^3 \log(e) - 7g^2i^3)*a$

$$\begin{aligned}
& ^2*b^3*c^4*d^2)*B^2*\log(d*x + c)/(b^3*d^3) - 1/30*(b^6*c^6*g^2*i^3 - 6*a*b^5*c^5*d*g^2*i^3 + 15*a^2*b^4*c^4*d^2*g^2*i^3 - 20*a^3*b^3*c^3*d^3*g^2*i^3 + \\
& 15*a^4*b^2*c^2*d^4*g^2*i^3 - 6*a^5*b*c*d^5*g^2*i^3 + a^6*d^6*g^2*i^3)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + \text{dilog}(-(b*d*x + a*d)/(b*c - a*d)))*B^2/(b^4*d^3) + 1/360*(60*B^2*b^6*d^6*g^2*i^3*x^6*\log(e)^2 + 24*((9*g^2*i^3*\log(e)^2 - g^2*i^3*\log(e))*b^6*c*d^5 + (6*g^2*i^3*\log(e)^2 + g^2*i^3*\log(e))*a*b^5*d^6)*B^2*x^5 + 6*((45*g^2*i^3*\log(e)^2 - 13*g^2*i^3*\log(e) + g^2*i^3)*b^6*c^2*d^4 + 2*(45*g^2*i^3*\log(e)^2 + 3*g^2*i^3*\log(e) - g^2*i^3)*a*b^5*c*d^5 + (15*g^2*i^3*\log(e)^2 + 7*g^2*i^3*\log(e) + g^2*i^3)*a^2*b^4*d^6)*B^2*x^4 + 2*((60*g^2*i^3*\log(e)^2 - 38*g^2*i^3*\log(e) + 9*g^2*i^3)*b^6*c^3*d^3 + 3*(120*g^2*i^3*\log(e)^2 - 14*g^2*i^3*\log(e) - 5*g^2*i^3)*a*b^5*c^2*d^4 + 3*(60*g^2*i^3*\log(e)^2 + 26*g^2*i^3*\log(e) + g^2*i^3)*a^2*b^4*c*d^5 + (2*g^2*i^3*\log(e) + 3*g^2*i^3)*a^3*b^3*d^6)*B^2*x^3 - ((6*g^2*i^3*\log(e) - 11*g^2*i^3)*b^6*c^4*d^2 - 2*(180*g^2*i^3*\log(e)^2 - 102*g^2*i^3*\log(e) + 5*g^2*i^3)*a*b^5*c^3*d^3 - 60*(9*g^2*i^3*\log(e)^2 + 3*g^2*i^3*\log(e) - g^2*i^3)*a^2*b^4*c^2*d^4 - 2*(18*g^2*i^3*\log(e) + 23*g^2*i^3)*a^3*b^3*c*d^5 + (6*g^2*i^3*\log(e) + 7*g^2*i^3)*a^4*b^2*d^6)*B^2*x^2 + 2*(2*(3*g^2*i^3*\log(e) - 4*g^2*i^3)*b^6*c^5*d - 3*(12*g^2*i^3*\log(e) - 17*g^2*i^3)*a*b^5*c^4*d^2 + (180*g^2*i^3*\log(e)^2 - 30*g^2*i^3*\log(e) - 97*g^2*i^3)*a^2*b^4*c^3*d^3 + (90*g^2*i^3*\log(e) + 77*g^2*i^3)*a^3*b^3*c^2*d^4 - 9*(4*g^2*i^3*\log(e) + 3*g^2*i^3)*a^4*b^2*c*d^5 + 2*(3*g^2*i^3*\log(e) + 2*g^2*i^3)*a^5*b*d^6)*B^2*x + 6*(10*B^2*b^6*d^6*g^2*i^3*x^6 + 60*B^2*a^2*b^4*c^3*d^3*g^2*i^3*x + 12*(3*b^6*c*d^5*g^2*i^3 + 2*a*b^5*d^6*g^2*i^3)*B^2*x^5 + 15*(3*b^6*c^2*d^4*g^2*i^3 + 6*a*b^5*c*d^5*g^2*i^3 + a^2*b^4*d^6*g^2*i^3)*B^2*x^4 + 20*(b^6*c^3*d^3*g^2*i^3 + 6*a*b^5*c^2*d^4*g^2*i^3 + 3*a^2*b^4*c*d^5*g^2*i^3)*B^2*x^3 + 30*(2*a*b^5*c^3*d^3*g^2*i^3 + 3*a^2*b^4*c^2*d^4*g^2*i^3)*B^2*x^2 + (20*a^3*b^3*c^3*d^3*g^2*i^3 - 15*a^4*b^2*c^2*d^4*g^2*i^3 + 6*a^5*b*c*d^5*g^2*i^3 - a^6*d^6*g^2*i^3)*B^2)*\log(b*x + a)^2 + 6*(10*B^2*b^6*d^6*g^2*i^3*x^6 + 60*B^2*a^2*b^4*c^3*d^3*g^2*i^3*x + 12*(3*b^6*c*d^5*g^2*i^3 + 2*a*b^5*d^6*g^2*i^3)*B^2*x^5 + 15*(3*b^6*c^2*d^4*g^2*i^3 + 6*a*b^5*c*d^5*g^2*i^3 + a^2*b^4*d^6*g^2*i^3)*B^2*x^4 + 20*(b^6*c^3*d^3*g^2*i^3 + 6*a*b^5*c^2*d^4*g^2*i^3 + 3*a^2*b^4*c*d^5*g^2*i^3)*B^2*x^3 + 30*(2*a*b^5*c^3*d^3*g^2*i^3 + 3*a^2*b^4*c^2*d^4*g^2*i^3)*B^2*x^2 + (b^6*c^6*g^2*i^3 - 6*a*b^5*c^5*d*g^2*i^3 + 15*a^2*b^4*c^4*d^2*g^2*i^3)*B^2)*\log(d*x + c)^2 + 2*(60*B^2*b^6*d^6*g^2*i^3*x^6*\log(e) + 12*((18*g^2*i^3*\log(e) - g^2*i^3)*b^6*c*d^5 + (12*g^2*i^3*\log(e) + g^2*i^3)*a*b^5*d^6)*B^2*x^5 + 3*((90*g^2*i^3*\log(e) - 13*g^2*i^3)*b^6*c^2*d^4 + 6*(30*g^2*i^3*\log(e) + g^2*i^3)*a*b^5*c*d^5 + (30*g^2*i^3*\log(e) + 7*g^2*i^3)*a^2*b^4*d^6)*B^2*x^4 + 2*(a^3*b^3*d^6*g^2*i^3 + (60*g^2*i^3*\log(e) - 19*g^2*i^3)*b^6*c^3*d^3 + 3*(120*g^2*i^3*\log(e) - 7*g^2*i^3)*a*b^5*c^2*d^4 + 3*(60*g^2*i^3*\log(e) + 13*g^2*i^3)*a^2*b^4*c*d^5)*B^2*x^3 - 3*(b^6*c^4*d^2*g^2*i^3 - 6*a^3*b^3*c*d^5*g^2*i^3 + a^4*b^2*d^6*g^2*i^3 - 2*(60*g^2*i^3*\log(e) - 17*g^2*i^3)*a*b^5*c^3*d^3 - 30*(6*g^2*i^3*\log(e) + g^2*i^3)*a^2*b^4*c^2*d^4)*B^2*x^2 + 6*(b^6*c^5*d*g^2*i^3 - 6*a*b^5*c^4*d^2*g^2*i^3 + 15*a^3*b^3*c^2*d^4*g^2*i^3 - 6*a^4*b^2*c*d^5*g^2*i^3 + a^5*b*d^6*g^2*i^3 + 5*(12*g^2*i^3*\log(e) - g^2*i^3)*a^2*b^4*c^3*d^3)*B^2*x + (6*a*b^5*c^5*d*g^2*i^3
\end{aligned}$$

```

- 33*a^2*b^4*c^4*d^2*g^2*i^3 + 2*(60*g^2*i^3*log(e) + 17*g^2*i^3)*a^3*b^3*c
^3*d^3 - 3*(30*g^2*i^3*log(e) + g^2*i^3)*a^4*b^2*c^2*d^4 + 6*(6*g^2*i^3*log
(e) - g^2*i^3)*a^5*b*c*d^5 - 2*(3*g^2*i^3*log(e) - g^2*i^3)*a^6*d^6)*B^2)*l
og(b*x + a) - 2*(60*B^2*b^6*d^6*g^2*i^3*x^6*log(e) + 12*((18*g^2*i^3*log(e)
- g^2*i^3)*b^6*c*d^5 + (12*g^2*i^3*log(e) + g^2*i^3)*a*b^5*d^6)*B^2*x^5 +
3*((90*g^2*i^3*log(e) - 13*g^2*i^3)*b^6*c^2*d^4 + 6*(30*g^2*i^3*log(e) + g^
2*i^3)*a*b^5*c*d^5 + (30*g^2*i^3*log(e) + 7*g^2*i^3)*a^2*b^4*d^6)*B^2*x^4 +
2*(a^3*b^3*d^6*g^2*i^3 + (60*g^2*i^3*log(e) - 19*g^2*i^3)*b^6*c^3*d^3 + 3*
(120*g^2*i^3*log(e) - 7*g^2*i^3)*a*b^5*c^2*d^4 + 3*(60*g^2*i^3*log(e) + 13*
g^2*i^3)*a^2*b^4*c*d^5)*B^2*x^3 - 3*(b^6*c^4*d^2*g^2*i^3 - 6*a^3*b^3*c*d^5*
g^2*i^3 + a^4*b^2*d^6*g^2*i^3 - 2*(60*g^2*i^3*log(e) - 17*g^2*i^3)*a*b^5*c^
3*d^3 - 30*(6*g^2*i^3*log(e) + g^2*i^3)*a^2*b^4*c^2*d^4)*B^2*x^2 + 6*(b^6*c
^5*d*g^2*i^3 - 6*a*b^5*c^4*d^2*g^2*i^3 + 15*a^3*b^3*c^2*d^4*g^2*i^3 - 6*a^4
*b^2*c*d^5*g^2*i^3 + a^5*b*d^6*g^2*i^3 + 5*(12*g^2*i^3*log(e) - g^2*i^3)*a^
2*b^4*c^3*d^3)*B^2*x + 6*(10*B^2*b^6*d^6*g^2*i^3*x^6 + 60*B^2*a^2*b^4*c^3*d
^3*g^2*i^3*x + 12*(3*b^6*c*d^5*g^2*i^3 + 2*a*b^5*d^6*g^2*i^3)*B^2*x^5 + 15*
(3*b^6*c^2*d^4*g^2*i^3 + 6*a*b^5*c*d^5*g^2*i^3 + a^2*b^4*d^6*g^2*i^3)*B^2*x
^4 + 20*(b^6*c^3*d^3*g^2*i^3 + 6*a*b^5*c^2*d^4*g^2*i^3 + 3*a^2*b^4*c*d^5*g^
2*i^3)*B^2*x^3 + 30*(2*a*b^5*c^3*d^3*g^2*i^3 + 3*a^2*b^4*c^2*d^4*g^2*i^3)*B
^2*x^2 + (20*a^3*b^3*c^3*d^3*g^2*i^3 - 15*a^4*b^2*c^2*d^4*g^2*i^3 + 6*a^5*b
*c*d^5*g^2*i^3 - a^6*d^6*g^2*i^3)*B^2)*log(b*x + a))*log(d*x + c))/(b^4*d^3
)

```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (ag + bgx)^2 (ci + dix)^3 \left(A + B \ln \left(\frac{e(a + bx)}{c + dx} \right) \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)^2*(c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x)))^2,
x)
```

```
[Out] int((a*g + b*g*x)^2*(c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x)))^2,
x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**2*(d*i*x+c*i)**3*(A+B*ln(e*(b*x+a)/(d*x+c)))**2,x)
```

```
[Out] Timed out
```

$$3.76 \quad \int (ag + bgx)(ci + dix)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 dx$$

Optimal. Leaf size=730

$$\frac{Bgi^3(bc - ad)^5 \log \left(\frac{bc-ad}{b(c+dx)} \right) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A + B \right)}{10b^4d^2} - \frac{Bgi^3(a + bx)(bc - ad)^4 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{10b^4d} + \frac{gi^3(a + bx)^2}{10b^4d^2}$$

[Out] $1/60*B^2*(-a*d+b*c)^4*g*i^3*x/b^3/d+1/30*B^2*(-a*d+b*c)^3*g*i^3*(d*x+c)^2/b^2/d^2+1/30*B^2*(-a*d+b*c)^2*g*i^3*(d*x+c)^3/b/d^2-1/12*B^2*(-a*d+b*c)^5*g*i^3*\ln((b*x+a)/(d*x+c))/b^4/d^2-1/10*B*(-a*d+b*c)^4*g*i^3*(b*x+a)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^4/d-1/10*B*(-a*d+b*c)^3*g*i^3*(b*x+a)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^4+3/20*B*(-a*d+b*c)^3*g*i^3*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^2/d^2+1/30*B*(-a*d+b*c)^2*g*i^3*(d*x+c)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b/d^2-1/10*B*(-a*d+b*c)*g*i^3*(d*x+c)^4*(A+B*\ln(e*(b*x+a)/(d*x+c)))/d^2+1/20*(-a*d+b*c)^3*g*i^3*(b*x+a)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/b^4+1/10*(-a*d+b*c)^2*g*i^3*(b*x+a)^2*(d*x+c)*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/b^3+3/20*(-a*d+b*c)*g*i^3*(b*x+a)^2*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/b^2+1/5*g*i^3*(b*x+a)^2*(d*x+c)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/b-1/10*B*(-a*d+b*c)^5*g*i^3*\ln(-a*d+b*c)/b/(d*x+c)*(A+B+B*\ln(e*(b*x+a)/(d*x+c)))/b^4/d^2-11/60*B^2*(-a*d+b*c)^5*g*i^3*\ln(d*x+c)/b^4/d^2-1/10*B^2*(-a*d+b*c)^5*g*i^3*pol ylog(2,d*(b*x+a)/b/(d*x+c))/b^4/d^2$

Rubi [A] time = 1.78, antiderivative size = 655, normalized size of antiderivative = 0.90, number of steps used = 54, number of rules used = 13, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.325$, Rules used = {2528, 2525, 12, 2486, 31, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 43}

$$\frac{B^2gi^3(bc - ad)^5 \text{PolyLog} \left(2, -\frac{d(a+bx)}{bc-ad} \right)}{10b^4d^2} + \frac{Bgi^3(bc - ad)^5 \log(a + bx) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{10b^4d^2} + \frac{Bgi^3(c + dx)^2(bc - ad)^2}{20b^4d^2}$$

Antiderivative was successfully verified.

[In] Int[(a*g + b*g*x)*(c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2,x]

[Out] $(A*B*(b*c - a*d)^4*g*i^3*x)/(10*b^3*d) + (B^2*(b*c - a*d)^4*g*i^3*x)/(60*b^3*d) + (B^2*(b*c - a*d)^3*g*i^3*(c + d*x)^2)/(30*b^2*d^2) + (B^2*(b*c - a*d)^2*g*i^3*(c + d*x)^3)/(30*b*d^2) + (B^2*(b*c - a*d)^5*g*i^3*\text{Log}[a + b*x])/(60*b^4*d^2) - (B^2*(b*c - a*d)^5*g*i^3*\text{Log}[a + b*x]^2)/(20*b^4*d^2) + (B^2*(b*c - a*d)^4*g*i^3*(a + b*x)*\text{Log}[(e*(a + b*x))/(c + d*x)])/(10*b^4*d) + (B*(b*c - a*d)^3*g*i^3*(c + d*x)^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(20*b^2*d^2) + (B*(b*c - a*d)^2*g*i^3*(c + d*x)^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(30*b*d^2) - (B*(b*c - a*d)*g*i^3*(c + d*x)^4*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(10*b^4*d^2)$

$$\frac{b*x)}{(c + d*x)))/((10*d^2) + (B*(b*c - a*d)^5*g*i^3*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)])))/(10*b^4*d^2) - ((b*c - a*d)*g*i^3*(c + d*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)]^2)/(4*d^2) + (b*g*i^3*(c + d*x)^5*(A + B*Log[(e*(a + b*x))/(c + d*x)]^2)/(5*d^2) - (B^2*(b*c - a*d)^5*g*i^3*Log[c + d*x]))/(10*b^4*d^2) + (B^2*(b*c - a*d)^5*g*i^3*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])))/(10*b^4*d^2) + (B^2*(b*c - a*d)^5*g*i^3*PolyLog[2, -((d*(a + b*x))/(b*c - a*d)))]/(10*b^4*d^2)$$

Rule 12

$$\text{Int}[(a_*)(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] \text{ ; FreeQ}[a, x] \ \&\& \ \text{!MatchQ}[u, (b_*)(v_)] \text{ ; FreeQ}[b, x]$$

Rule 31

$$\text{Int}[(a_*) + (b_*)(x_))^{(-1)}, x_Symbol] \rightarrow \text{Simp}[\text{Log}[\text{RemoveContent}[a + b*x, x]]/b, x] \text{ ; FreeQ}[\{a, b\}, x]$$

Rule 43

$$\text{Int}[(a_*) + (b_*)(x_))^{(m_*)}((c_*) + (d_*)(x_))^{(n_*)}, x_Symbol] \rightarrow \text{Int}[\text{ExpandIntegrand}[(a + b*x)^m*(c + d*x)^n, x], x] \text{ ; FreeQ}[\{a, b, c, d, n\}, x] \ \&\& \ \text{NeQ}[b*c - a*d, 0] \ \&\& \ \text{IGtQ}[m, 0] \ \&\& \ (\text{!IntegerQ}[n] \ || \ (\text{EqQ}[c, 0] \ \&\& \ \text{LeQ}[7*m + 4*n + 4, 0]) \ || \ \text{LtQ}[9*m + 5*(n + 1), 0] \ || \ \text{GtQ}[m + n + 2, 0])$$

Rule 2301

$$\text{Int}[(a_*) + \text{Log}[(c_*)(x_))^{(n_*)}](b_)/(x_), x_Symbol] \rightarrow \text{Simp}[(a + b*Log[c*x^n])^2/(2*b*n), x] \text{ ; FreeQ}[\{a, b, c, n\}, x]$$

Rule 2390

$$\text{Int}[(a_*) + \text{Log}[(c_*)((d_*) + (e_*)(x_))^{(n_*)}](b_))^{(p_*)}((f_*) + (g_*)(x_))^{(q_*)}, x_Symbol] \rightarrow \text{Dist}[1/e, \text{Subst}[\text{Int}[(f*x)/d]^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] \text{ ; FreeQ}[\{a, b, c, d, e, f, g, n, p, q\}, x] \ \&\& \ \text{EqQ}[e*f - d*g, 0]$$

Rule 2391

$$\text{Int}[\text{Log}[(c_*)((d_*) + (e_*)(x_))^{(n_*)})]/(x_), x_Symbol] \rightarrow -\text{Simp}[\text{PolyLog}[2, -(c*e*x^n)]/n, x] \text{ ; FreeQ}[\{c, d, e, n\}, x] \ \&\& \ \text{EqQ}[c*d, 1]$$

Rule 2393

$$\text{Int}[(a_*) + \text{Log}[(c_*)((d_*) + (e_*)(x_))](b_))/((f_*) + (g_*)(x_)), x_Symbol] \rightarrow \text{Dist}[1/g, \text{Subst}[\text{Int}[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x]$$

], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e^n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2418

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFX_), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFX, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFX, x] && IntegerQ[p]

Rule 2486

Int[Log[(e_.)*((f_.)*(a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]

Rule 2524

Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFX^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFX^p])^(n - 1)*D[RFX, x])/RFX, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFX, x] && IGtQ[n, 0]

Rule 2525

Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFX^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFX^p])^(n - 1)*D[RFX, x])/RFX, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFX, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]

Rule 2528

Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*RFX^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]

```
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int (76c + 76dx)^3 (ag + bgx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 dx &= \int \left(\frac{(-bc + ad)g(76c + 76dx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{d} \right) dx \\
&= \frac{(bg) \int (76c + 76dx)^4 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 dx}{76d} + \frac{(-bc + ad)g \int (76c + 76dx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 dx}{76d} \\
&= -\frac{109744(bc - ad)g(c + dx)^4 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{d^2} \\
&= -\frac{109744(bc - ad)g(c + dx)^4 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{d^2} \\
&= -\frac{109744(bc - ad)g(c + dx)^4 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{d^2} \\
&= -\frac{109744(bc - ad)g(c + dx)^4 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{d^2} \\
&= \frac{219488AB(bc - ad)^4 gx}{5b^3d} + \frac{109744B(bc - ad)^3 g(c + dx)}{5b^2d} \\
&= \frac{219488AB(bc - ad)^4 gx}{5b^3d} + \frac{219488B^2(bc - ad)^4 g(a + dx)}{5b^4d} \\
&= \frac{219488AB(bc - ad)^4 gx}{5b^3d} + \frac{219488B^2(bc - ad)^4 g(a + dx)}{5b^4d} \\
&= \frac{219488AB(bc - ad)^4 gx}{5b^3d} + \frac{109744B^2(bc - ad)^4 gx}{15b^3d} + \frac{109744B^2(bc - ad)^4 g(a + dx)}{15b^3d} \\
&= \frac{219488AB(bc - ad)^4 gx}{5b^3d} + \frac{109744B^2(bc - ad)^4 gx}{15b^3d} + \frac{109744B^2(bc - ad)^4 g(a + dx)}{15b^3d} \\
&= \frac{219488AB(bc - ad)^4 gx}{5b^3d} + \frac{109744B^2(bc - ad)^4 gx}{15b^3d} + \frac{109744B^2(bc - ad)^4 g(a + dx)}{15b^3d}
\end{aligned}$$

Mathematica [A] time = 0.74, size = 901, normalized size = 1.23

$$gi^3 \left(4b \left(A + B \log \left(\frac{e^{(a+bx)}}{c+dx} \right) \right)^2 (c+dx)^5 - 5(bc-ad) \left(A + B \log \left(\frac{e^{(a+bx)}}{c+dx} \right) \right)^2 (c+dx)^4 + \frac{5B(bc-ad)^2 \left(6 \log(a+bx) \left(A + B \log \left(\frac{e^{(a+bx)}}{c+dx} \right) \right) \right)}{20d^2} \right)$$

Antiderivative was successfully verified.

[In] Integrate[(a*g + b*g*x)*(c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x])^2,x]

[Out] (g*i^3*(-5*(b*c - a*d)*(c + d*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2 + 4*b*(c + d*x)^5*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2 + (5*B*(b*c - a*d)^2*(6*A*b*d*(b*c - a*d)^2*x - 3*B*(b*c - a*d)^2*(b*d*x + (b*c - a*d)*Log[a + b*x]) - B*(b*c - a*d)*(2*b*d*(b*c - a*d)*x + b^2*(c + d*x)^2 + 2*(b*c - a*d)^2*Log[a + b*x]) + 6*B*d*(b*c - a*d)^2*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)] + 3*b^2*(b*c - a*d)*(c + d*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x])) + 2*b^3*(c + d*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x])) + 6*(b*c - a*d)^3*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x])) - 6*B*(b*c - a*d)^3*Log[c + d*x] - 3*B*(b*c - a*d)^3*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d])) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)])))/(3*b^4) - (B*(b*c - a*d)*(24*A*b*d*(b*c - a*d)^3*x - 12*B*(b*c - a*d)^3*(b*d*x + (b*c - a*d)*Log[a + b*x]) - 4*B*(b*c - a*d)^2*(2*b*d*(b*c - a*d)*x + b^2*(c + d*x)^2 + 2*(b*c - a*d)^2*Log[a + b*x]) - B*(b*c - a*d)*(6*b*d*(b*c - a*d)^2*x + 3*b^2*(b*c - a*d)*(c + d*x)^2 + 2*b^3*(c + d*x)^3 + 6*(b*c - a*d)^3*Log[a + b*x]) + 24*B*d*(b*c - a*d)^3*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)] + 12*b^2*(b*c - a*d)^2*(c + d*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x])) + 8*b^3*(b*c - a*d)*(c + d*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x])) + 6*b^4*(c + d*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x])) + 24*(b*c - a*d)^4*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x])) - 24*B*(b*c - a*d)^4*Log[c + d*x] - 12*B*(b*c - a*d)^4*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d])) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)])))/(3*b^4))/(20*d^2)

fricas [F] time = 0.85, size = 0, normalized size = 0.00

$$\text{integral} \left(A^2 b d^3 g i^3 x^4 + A^2 a c^3 g i^3 + (3 A^2 b c d^2 + A^2 a d^3) g i^3 x^3 + 3 (A^2 b c^2 d + A^2 a c d^2) g i^3 x^2 + (A^2 b c^3 + 3 A^2 a c^2 d) g i^3 x + (A^2 a c^3 + 3 A^2 a c^2 d) g i^3 \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorith="fricas")

[Out] integral(A^2*b*d^3*g*i^3*x^4 + A^2*a*c^3*g*i^3 + (3*A^2*b*c*d^2 + A^2*a*d^3)*g*i^3*x^3 + 3*(A^2*b*c^2*d + A^2*a*c*d^2)*g*i^3*x^2 + (A^2*b*c^3 + 3*A^2*a*c^2*d)*g*i^3*x + (A^2*a*c^3 + 3*A^2*a*c^2*d)*g*i^3)

$a*c^2*d)*g*i^3*x + (B^2*b*d^3*g*i^3*x^4 + B^2*a*c^3*g*i^3 + (3*B^2*b*c*d^2 + B^2*a*d^3)*g*i^3*x^3 + 3*(B^2*b*c^2*d + B^2*a*c*d^2)*g*i^3*x^2 + (B^2*b*c^3 + 3*B^2*a*c^2*d)*g*i^3*x)*\log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*B*b*d^3*g*i^3*x^4 + A*B*a*c^3*g*i^3 + (3*A*B*b*c*d^2 + A*B*a*d^3)*g*i^3*x^3 + 3*(A*B*b*c^2*d + A*B*a*c*d^2)*g*i^3*x^2 + (A*B*b*c^3 + 3*A*B*a*c^2*d)*g*i^3*x)*\log((b*e*x + a*e)/(d*x + c)), x$

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorithm="giac")

[Out] Timed out

maple [F] time = 2.36, size = 0, normalized size = 0.00

$$\int (bgx + ag)(dix + ci)^3 \left(B \ln \left(\frac{(bx + a)e}{dx + c} \right) + A \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)*(d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)^2,x)

[Out] int((b*g*x+a*g)*(d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)^2,x)

maxima [B] time = 2.41, size = 3218, normalized size = 4.41

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorithm="maxima")

[Out] $\frac{1}{5}A^2*b*d^3*g*i^3*x^5 + \frac{3}{4}A^2*b*c*d^2*g*i^3*x^4 + \frac{1}{4}A^2*a*d^3*g*i^3*x^4 + A^2*b*c^2*d*g*i^3*x^3 + A^2*a*c*d^2*g*i^3*x^3 + \frac{1}{2}A^2*b*c^3*g*i^3*x^2 + \frac{3}{2}A^2*a*c^2*d*g*i^3*x^2 + 2*(x*\log(b*e*x/(d*x + c) + a*e/(d*x + c)) + a*\log(b*x + a)/b - c*\log(d*x + c)/d)*A*B*a*c^3*g*i^3 + (x^2*\log(b*e*x/(d*x + c) + a*e/(d*x + c)) - a^2*\log(b*x + a)/b^2 + c^2*\log(d*x + c)/d^2 - (b*c - a*d)*x/(b*d))*A*B*b*c^3*g*i^3 + 3*(x^2*\log(b*e*x/(d*x + c) + a*e/(d*x + c)) - a^2*\log(b*x + a)/b^2 + c^2*\log(d*x + c)/d^2 - (b*c - a*d)*x/(b*d))*A*B*a*c^2*d*g*i^3 + (2*x^3*\log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 2*a^3*\log(b*x + a)/b^3 - 2*c^3*\log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2$

$$\begin{aligned}
& 2 - a^2*d^2)*x)/(b^2*d^2))*A*B*b*c^2*d*g^i^3 + (2*x^3*log(b*e*x/(d*x + c) + \\
& a*e/(d*x + c)) + 2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c \\
& *d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*A*B*a*c*d^2*g^i^3 + \\
& 1/4*(6*x^4*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 6*a^4*log(b*x + a)/b^4 + \\
& 6*c^4*log(d*x + c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a \\
& ^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*A*B*b*c*d^2*g^i^3 + 1/1 \\
& 2*(6*x^4*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 6*a^4*log(b*x + a)/b^4 + 6* \\
& c^4*log(d*x + c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2* \\
& b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*A*B*a*d^3*g^i^3 + 1/30*(12 \\
& *x^5*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 12*a^5*log(b*x + a)/b^5 - 12*c^ \\
& 5*log(d*x + c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4*c^2*d^2 - a^2* \\
& b^2*d^4)*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 - a^4*d^4)*x)/(b \\
& ^4*d^4))*A*B*b*d^3*g^i^3 + A^2*a*c^3*g^i^3*x - 1/60*(47*a^2*b^2*c^3*d^2*g^i \\
& ^3 - 27*a^3*b*c^2*d^3*g^i^3 + 6*a^4*c*d^4*g^i^3 - (6*g^i^3*log(e) - 5*g^i^3 \\
&)*b^4*c^5 + (30*g^i^3*log(e) - 31*g^i^3)*a*b^3*c^4*d)*B^2*log(d*x + c)/(b^3 \\
& *d^2) + 1/10*(b^5*c^5*g^i^3 - 5*a*b^4*c^4*d*g^i^3 + 10*a^2*b^3*c^3*d^2*g^i^ \\
& 3 - 10*a^3*b^2*c^2*d^3*g^i^3 + 5*a^4*b*c*d^4*g^i^3 - a^5*d^5*g^i^3)*(log(b* \\
& x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d \\
&)))*B^2/(b^4*d^2) + 1/60*(12*B^2*b^5*d^5*g^i^3*x^5*log(e)^2 + 3*((15*g^i^3* \\
& log(e)^2 - 2*g^i^3*log(e))*b^5*c*d^4 + (5*g^i^3*log(e)^2 + 2*g^i^3*log(e))* \\
& a*b^4*d^5)*B^2*x^4 + 2*((30*g^i^3*log(e)^2 - 11*g^i^3*log(e) + g^i^3)*b^5*c \\
& ^2*d^3 + 2*(15*g^i^3*log(e)^2 + 5*g^i^3*log(e) - g^i^3)*a*b^4*c*d^4 + (g^i^ \\
& 3*log(e) + g^i^3)*a^2*b^3*d^5)*B^2*x^3 + ((30*g^i^3*log(e)^2 - 27*g^i^3*log \\
& (e) + 8*g^i^3)*b^5*c^3*d^2 + 3*(30*g^i^3*log(e)^2 + 5*g^i^3*log(e) - 6*g^i^ \\
& 3)*a*b^4*c^2*d^3 + 3*(5*g^i^3*log(e) + 4*g^i^3)*a^2*b^3*c*d^4 - (3*g^i^3*lo \\
& g(e) + 2*g^i^3)*a^3*b^2*d^5)*B^2*x^2 - ((6*g^i^3*log(e) - 11*g^i^3)*b^5*c^4 \\
& *d - 2*(30*g^i^3*log(e)^2 - 15*g^i^3*log(e) - 14*g^i^3)*a*b^4*c^3*d^2 - 12* \\
& (5*g^i^3*log(e) + 2*g^i^3)*a^2*b^3*c^2*d^3 + 2*(15*g^i^3*log(e) + 4*g^i^3)* \\
& a^3*b^2*c*d^4 - (6*g^i^3*log(e) + g^i^3)*a^4*b*d^5)*B^2*x + 3*(4*B^2*b^5*d^ \\
& 5*g^i^3*x^5 + 20*B^2*a*b^4*c^3*d^2*g^i^3*x + 5*(3*b^5*c*d^4*g^i^3 + a*b^4*d \\
& ^5*g^i^3)*B^2*x^4 + 20*(b^5*c^2*d^3*g^i^3 + a*b^4*c*d^4*g^i^3)*B^2*x^3 + 10 \\
& *(b^5*c^3*d^2*g^i^3 + 3*a*b^4*c^2*d^3*g^i^3)*B^2*x^2 + (10*a^2*b^3*c^3*d^2* \\
& g^i^3 - 10*a^3*b^2*c^2*d^3*g^i^3 + 5*a^4*b*c*d^4*g^i^3 - a^5*d^5*g^i^3)*B^2 \\
&)*log(b*x + a)^2 + 3*(4*B^2*b^5*d^5*g^i^3*x^5 + 20*B^2*a*b^4*c^3*d^2*g^i^3* \\
& x + 5*(3*b^5*c*d^4*g^i^3 + a*b^4*d^5*g^i^3)*B^2*x^4 + 20*(b^5*c^2*d^3*g^i^3 \\
& + a*b^4*c*d^4*g^i^3)*B^2*x^3 + 10*(b^5*c^3*d^2*g^i^3 + 3*a*b^4*c^2*d^3*g^i^ \\
& ^3)*B^2*x^2 - (b^5*c^5*g^i^3 - 5*a*b^4*c^4*d*g^i^3)*B^2)*log(d*x + c)^2 + (\\
& 24*B^2*b^5*d^5*g^i^3*x^5*log(e) + 6*((15*g^i^3*log(e) - g^i^3)*b^5*c*d^4 + \\
& (5*g^i^3*log(e) + g^i^3)*a*b^4*d^5)*B^2*x^4 + 2*(a^2*b^3*d^5*g^i^3 + (60*g* \\
& i^3*log(e) - 11*g^i^3)*b^5*c^2*d^3 + 10*(6*g^i^3*log(e) + g^i^3)*a*b^4*c*d^ \\
& 4)*B^2*x^3 + 3*(5*a^2*b^3*c*d^4*g^i^3 - a^3*b^2*d^5*g^i^3 + (20*g^i^3*log(e) \\
&) - 9*g^i^3)*b^5*c^3*d^2 + 5*(12*g^i^3*log(e) + g^i^3)*a*b^4*c^2*d^3)*B^2*x \\
& ^2 - 6*(b^5*c^4*d*g^i^3 - 10*a^2*b^3*c^2*d^3*g^i^3 + 5*a^3*b^2*c*d^4*g^i^3 \\
& - a^4*b*d^5*g^i^3 - 5*(4*g^i^3*log(e) - g^i^3)*a*b^4*c^3*d^2)*B^2*x - (6*a* \\
& b^4*c^4*d*g^i^3 - 3*(20*g^i^3*log(e) - g^i^3)*a^2*b^3*c^3*d^2 + (60*g^i^3*1
\end{aligned}$$

```
og(e) - 23*g*i^3)*a^3*b^2*c^2*d^3 - (30*g*i^3*log(e) - 19*g*i^3)*a^4*b*c*d^
4 + (6*g*i^3*log(e) - 5*g*i^3)*a^5*d^5)*B^2)*log(b*x + a) - (24*B^2*b^5*d^5
*g*i^3*x^5*log(e) + 6*((15*g*i^3*log(e) - g*i^3)*b^5*c*d^4 + (5*g*i^3*log(e)
) + g*i^3)*a*b^4*d^5)*B^2*x^4 + 2*(a^2*b^3*d^5*g*i^3 + (60*g*i^3*log(e) - 1
1*g*i^3)*b^5*c^2*d^3 + 10*(6*g*i^3*log(e) + g*i^3)*a*b^4*c*d^4)*B^2*x^3 + 3
*(5*a^2*b^3*c*d^4*g*i^3 - a^3*b^2*d^5*g*i^3 + (20*g*i^3*log(e) - 9*g*i^3)*b
^5*c^3*d^2 + 5*(12*g*i^3*log(e) + g*i^3)*a*b^4*c^2*d^3)*B^2*x^2 - 6*(b^5*c^
4*d*g*i^3 - 10*a^2*b^3*c^2*d^3*g*i^3 + 5*a^3*b^2*c*d^4*g*i^3 - a^4*b*d^5*g*
i^3 - 5*(4*g*i^3*log(e) - g*i^3)*a*b^4*c^3*d^2)*B^2*x + 6*(4*B^2*b^5*d^5*g*
i^3*x^5 + 20*B^2*a*b^4*c^3*d^2*g*i^3*x + 5*(3*b^5*c*d^4*g*i^3 + a*b^4*d^5*g
*i^3)*B^2*x^4 + 20*(b^5*c^2*d^3*g*i^3 + a*b^4*c*d^4*g*i^3)*B^2*x^3 + 10*(b^
5*c^3*d^2*g*i^3 + 3*a*b^4*c^2*d^3*g*i^3)*B^2*x^2 + (10*a^2*b^3*c^3*d^2*g*i^
3 - 10*a^3*b^2*c^2*d^3*g*i^3 + 5*a^4*b*c*d^4*g*i^3 - a^5*d^5*g*i^3)*B^2)*lo
g(b*x + a))*log(d*x + c))/(b^4*d^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (ag + bgx) (ci + dix)^3 \left(A + B \ln \left(\frac{e(a + bx)}{c + dx} \right) \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)*(c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x)))^2,x)
```

```
[Out] int((a*g + b*g*x)*(c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x)))^2, x
)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)**3*(A+B*ln(e*(b*x+a)/(d*x+c)))**2,x)
```

```
[Out] Timed out
```

$$3.77 \quad \int (ci + dix)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 dx$$

Optimal. Leaf size=420

$$\frac{Bi^3(bc - ad)^4 \log \left(1 - \frac{b(c+dx)}{d(a+bx)} \right) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{2b^4d} - \frac{Bi^3(a + bx)(bc - ad)^3 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{2b^4} - \frac{Bi^3(c + dx)^2(bc - ad)^2}{4b^2d}$$

[Out] $5/12*B^2*(-a*d+b*c)^3*i^3*x/b^3+1/12*B^2*(-a*d+b*c)^2*i^3*(d*x+c)^2/b^2/d+5/12*B^2*(-a*d+b*c)^4*i^3*\ln((b*x+a)/(d*x+c))/b^4/d-1/2*B^2*(-a*d+b*c)^3*i^3*(b*x+a)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^4-1/4*B^2*(-a*d+b*c)^2*i^3*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^2/d-1/6*B^2*(-a*d+b*c)*i^3*(d*x+c)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b/d+1/4*i^3*(d*x+c)^4*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/d+11/12*B^2*(-a*d+b*c)^4*i^3*\ln(d*x+c)/b^4/d+1/2*B^2*(-a*d+b*c)^4*i^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))*\ln(1-b*(d*x+c)/d/(b*x+a))/b^4/d-1/2*B^2*(-a*d+b*c)^4*i^3*\text{polylog}(2, b*(d*x+c)/d/(b*x+a))/b^4/d$

Rubi [A] time = 0.62, antiderivative size = 503, normalized size of antiderivative = 1.20, number of steps used = 24, number of rules used = 13, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}} = 0.406$, Rules used = {2525, 12, 2528, 2486, 31, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 43}

$$\frac{B^2i^3(bc - ad)^4 \text{PolyLog} \left(2, -\frac{d(a+bx)}{bc-ad} \right)}{2b^4d} - \frac{Bi^3(bc - ad)^4 \log(a + bx) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)}{2b^4d} - \frac{Bi^3(c + dx)^2(bc - ad)^2}{4b^2d}$$

Antiderivative was successfully verified.

[In] Int[(c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2,x]

[Out] $-(A*B*(b*c - a*d)^3*i^3*x)/(2*b^3) + (5*B^2*(b*c - a*d)^3*i^3*x)/(12*b^3) + (B^2*(b*c - a*d)^2*i^3*(c + d*x)^2)/(12*b^2*d) + (5*B^2*(b*c - a*d)^4*i^3*\text{Log}[a + b*x])/(12*b^4*d) + (B^2*(b*c - a*d)^4*i^3*\text{Log}[a + b*x]^2)/(4*b^4*d) - (B^2*(b*c - a*d)^3*i^3*(a + b*x)*\text{Log}[(e*(a + b*x))/(c + d*x])/(2*b^4) - (B*(b*c - a*d)^2*i^3*(c + d*x)^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]))/(4*b^2*d) - (B*(b*c - a*d)*i^3*(c + d*x)^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]))/(6*b*d) - (B*(b*c - a*d)^4*i^3*\text{Log}[a + b*x]*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]))/(2*b^4*d) + (i^3*(c + d*x)^4*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]))^2)/(4*d) + (B^2*(b*c - a*d)^4*i^3*\text{Log}[c + d*x])/(2*b^4*d) - (B^2*(b*c - a*d)^4*i^3*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)])/(2*b^4*d) - (B^2*(b*c - a*d)^4*i^3*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))])/(2*b^4*d)$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_) /; FreeQ[b, x]]

Rule 31

Int[((a_) + (b_)*(x_))⁽⁻¹⁾, x_Symbol] := Simp[Log[RemoveContent[a + b*x, x]]/b, x] /; FreeQ[{a, b}, x]

Rule 43

Int[((a_.) + (b_.)*(x_))^{(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)ⁿ, x], x] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && (!IntegerQ[n] || (EqQ[c, 0] && LeQ[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])}

Rule 2301

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*xⁿ])²/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^{(p_.)*((f_.) + (g_.)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*xⁿ])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]}

Rule 2391

Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*xⁿ)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)ⁿ]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)]

, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2418

Int[((a_.) + Log[(c_.)*((d_.) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]

Rule 2486

Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]^(s_.), x_Symbol] := Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s, x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]

Rule 2524

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]

Rule 2525

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]

Rule 2528

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]

Rubi steps

$$\begin{aligned}
\int (77c + 77dx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 dx &= \frac{456533(c+dx)^4 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{4d} - \frac{B \int \frac{35153041(bc-ad)(c+dx)^2}{15} dx}{15} \\
&= \frac{456533(c+dx)^4 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{4d} - \frac{(456533B(bc-ad))}{15} \\
&= \frac{456533(c+dx)^4 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{4d} - \frac{(456533B(bc-ad))}{15} \\
&= \frac{456533(c+dx)^4 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{4d} - \frac{(456533B(bc-ad))}{15} \\
&= -\frac{456533AB(bc-ad)^3x}{2b^3} - \frac{456533B(bc-ad)^2(c+dx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{4b^2d} \\
&= -\frac{456533AB(bc-ad)^3x}{2b^3} - \frac{456533B^2(bc-ad)^3(a+bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{2b^4} \\
&= -\frac{456533AB(bc-ad)^3x}{2b^3} - \frac{456533B^2(bc-ad)^3(a+bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{2b^4} \\
&= -\frac{456533AB(bc-ad)^3x}{2b^3} + \frac{2282665B^2(bc-ad)^3x}{12b^3} + \frac{456533B^2}{12b^3} \\
&= -\frac{456533AB(bc-ad)^3x}{2b^3} + \frac{2282665B^2(bc-ad)^3x}{12b^3} + \frac{456533B^2}{12b^3} \\
&= -\frac{456533AB(bc-ad)^3x}{2b^3} + \frac{2282665B^2(bc-ad)^3x}{12b^3} + \frac{456533B^2}{12b^3} \\
&= -\frac{456533AB(bc-ad)^3x}{2b^3} + \frac{2282665B^2(bc-ad)^3x}{12b^3} + \frac{456533B^2}{12b^3}
\end{aligned}$$

Mathematica [A] time = 0.31, size = 389, normalized size = 0.93

$$i^3 \left((c+dx)^4 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right)^2 - \frac{B(bc-ad) \left(2b^3(c+dx)^3 \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right) + 3b^2(c+dx)^2(bc-ad) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right) + 6(bc-ad)^3 \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{12b^3} \right)$$

Antiderivative was successfully verified.

[In] Integrate[(c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2,x]

[Out] (i^3*((c + d*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2 - (B*(b*c - a*d)*(6*A*b*d*(b*c - a*d)^2*x - 3*B*(b*c - a*d)^2*(b*d*x + (b*c - a*d)*Log[a + b*x]) - B*(b*c - a*d)*(2*b*d*(b*c - a*d)*x + b^2*(c + d*x)^2 + 2*(b*c - a*d)^2*Log[a + b*x]) + 6*B*d*(b*c - a*d)^2*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)] + 3*b^2*(b*c - a*d)*(c + d*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x])) + 2*b^3*(c + d*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x])) + 6*(b*c - a*d)^3*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x])) - 6*B*(b*c - a*d)^3*Log[c + d*x] - 3*B*(b*c - a*d)^3*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-b*c + a*d)])))/(3*b^4))/(4*d)

fricas [F] time = 0.64, size = 0, normalized size = 0.00

$$\text{integral} \left(A^2 d^3 i^3 x^3 + 3 A^2 c d^2 i^3 x^2 + 3 A^2 c^2 d i^3 x + A^2 c^3 i^3 + (B^2 d^3 i^3 x^3 + 3 B^2 c d^2 i^3 x^2 + 3 B^2 c^2 d i^3 x + B^2 c^3 i^3) \log \left(\frac{e(bx+a)}{c+dx} \right) \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorithm="fricas")

[Out] integral(A^2*d^3*i^3*x^3 + 3*A^2*c*d^2*i^3*x^2 + 3*A^2*c^2*d*i^3*x + A^2*c^3*i^3 + (B^2*d^3*i^3*x^3 + 3*B^2*c*d^2*i^3*x^2 + 3*B^2*c^2*d*i^3*x + B^2*c^3*i^3)*log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*B*d^3*i^3*x^3 + 3*A*B*c*d^2*i^3*x^2 + 3*A*B*c^2*d*i^3*x + A*B*c^3*i^3)*log((b*e*x + a*e)/(d*x + c)), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorithm="giac")

[Out] Timed out

maple [F] time = 1.97, size = 0, normalized size = 0.00

$$\int (dix + ci)^3 \left(B \ln \left(\frac{(bx+a)e}{dx+c} \right) + A \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.


```
*i^3 + a^3*b*d^4*i^3 + (4*i^3*log(e) - 3*i^3)*b^4*c^3*d)*B^2*x + 6*(B^2*b^4
*d^4*i^3*x^4 + 4*B^2*b^4*c*d^3*i^3*x^3 + 6*B^2*b^4*c^2*d^2*i^3*x^2 + 4*B^2*
b^4*c^3*d*i^3*x + (4*a*b^3*c^3*d*i^3 - 6*a^2*b^2*c^2*d^2*i^3 + 4*a^3*b*c*d^
3*i^3 - a^4*d^4*i^3)*B^2)*log(b*x + a))*log(d*x + c))/(b^4*d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (ci + dix)^3 \left(A + B \ln \left(\frac{e(a + bx)}{c + dx} \right) \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x)))^2,x)
```

```
[Out] int((c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x)))^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*(b*x+a)/(d*x+c)))**2,x)
```

```
[Out] Timed out
```

$$3.78 \quad \int \frac{(ci+dix)^3 \left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)^2}{ag+bgx} dx$$

Optimal. Leaf size=712

$$\frac{2Bi^3(bc-ad)^3 \text{Li}_2\left(\frac{b(c+dx)}{d(a+bx)}\right) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{b^4g} + \frac{di^3(a+bx)(bc-ad)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)^2}{b^4g} - \frac{5Bdi^3(a+bx)(b}{b^4g}$$

[Out] $1/3*B^2*d*(-a*d+b*c)^2*i^3*x/b^3/g+1/3*B^2*(-a*d+b*c)^3*i^3*\ln((b*x+a)/(d*x+c))/b^4/g-5/3*B*d*(-a*d+b*c)^2*i^3*(b*x+a)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^4/g-1/3*B*(-a*d+b*c)*i^3*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^2/g+2*B*(-a*d+b*c)^3*i^3*\ln((-a*d+b*c)/b/(d*x+c))*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^4/g+d*(-a*d+b*c)^2*i^3*(b*x+a)*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/b^4/g+1/2*(-a*d+b*c)*i^3*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/b^2/g+1/3*i^3*(d*x+c)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/b/g+2*B^2*(-a*d+b*c)^3*i^3*\ln(d*x+c)/b^4/g+5/3*B*(-a*d+b*c)^3*i^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))*\ln(1-b*(d*x+c)/d/(b*x+a))/b^4/g-(-a*d+b*c)^3*i^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2*\ln(1-b*(d*x+c)/d/(b*x+a))/b^4/g+2*B^2*(-a*d+b*c)^3*i^3*polylog(2,d*(b*x+a)/b/(d*x+c))/b^4/g-5/3*B^2*(-a*d+b*c)^3*i^3*polylog(2,b*(d*x+c)/d/(b*x+a))/b^4/g+2*B*(-a*d+b*c)^3*i^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))*polylog(2,b*(d*x+c)/d/(b*x+a))/b^4/g+2*B^2*(-a*d+b*c)^3*i^3*polylog(3,b*(d*x+c)/d/(b*x+a))/b^4/g$

Rubi [B] time = 5.69, antiderivative size = 1868, normalized size of antiderivative = 2.62, number of steps used = 106, number of rules used = 28, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}} = 0.667$, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2500, 2440, 2434, 2433, 2375, 2317, 2374, 6589, 2499, 2302, 30, 2396, 2525, 2486, 31, 43}

result too large to display

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2)/(a*g + b*g*x), x]

[Out] $(-5*A*B*d*(b*c - a*d)^2*i^3*x)/(3*b^3*g) + (B^2*d*(b*c - a*d)^2*i^3*x)/(3*b^3*g) + (B^2*(b*c - a*d)^3*i^3*\text{Log}[a + b*x])/(3*b^4*g) - (a*B^2*d*(b*c - a*d)^2*i^3*\text{Log}[a + b*x]^2)/(b^4*g) + (5*B^2*(b*c - a*d)^3*i^3*\text{Log}[a + b*x]^2)/(6*b^4*g) - (A*B*(b*c - a*d)^3*i^3*\text{Log}[g*(a + b*x)]^2)/(b^4*g) + (B^2*(b*c - a*d)^3*i^3*\text{Log}[g*(a + b*x)]^3)/(3*b^4*g) - (B^2*(b*c - a*d)^3*i^3*\text{Log}[a + b*x]^2*\text{Log}[-c - d*x])/(b^4*g) + (2*B^2*(b*c - a*d)^3*i^3*\text{Log}[a + b*x]*\text{Log}[g*(a + b*x)]*\text{Log}[-c - d*x])/(b^4*g) - (B^2*(b*c - a*d)^3*i^3*\text{Log}[g*(a + b*x)]^2*\text{Log}[-c - d*x])/(b^4*g) + (B^2*(b*c - a*d)^3*i^3*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[(c + d*x)^{-1}]^2)/(b^4*g) - (B^2*(b*c - a*d)^3*i^3*\text{Log}[g*$

$$\begin{aligned}
& (a + b*x)]*Log[(c + d*x)^{-1}]^2)/(b^4*g) - (5*B^2*d*(b*c - a*d)^2*i^3*(a + \\
& b*x)*Log[(e*(a + b*x))/(c + d*x)]/(3*b^4*g) - (B*(b*c - a*d)*i^3*(c + d*x) \\
&)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])/(3*b^2*g) + (2*a*B*d*(b*c - a*d)^ \\
& 2*i^3*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)])/(b^4*g) - (5*B*(b* \\
& c - a*d)^3*i^3*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)])/(3*b^4*g) \\
& + (d*(b*c - a*d)^2*i^3*x*(A + B*Log[(e*(a + b*x))/(c + d*x)]^2)/(b^3*g) + \\
& ((b*c - a*d)*i^3*(c + d*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]^2)/(2*b^ \\
& 2*g) + (i^3*(c + d*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]^2)/(3*b*g) + (\\
& 5*B^2*(b*c - a*d)^3*i^3*Log[c + d*x]/(3*b^4*g) + (2*B^2*c*(b*c - a*d)^2*i^ \\
& 3*Log[-((d*(a + b*x))/(b*c - a*d))*Log[c + d*x]/(b^3*g) - (2*B*c*(b*c - a \\
& *d)^2*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x]/(b^3*g) - (B^2 \\
& *c*(b*c - a*d)^2*i^3*Log[c + d*x]^2)/(b^3*g) + (2*a*B^2*d*(b*c - a*d)^2*i^3 \\
& *Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)]/(b^4*g) - (5*B^2*(b*c - a*d)^ \\
& 3*i^3*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)]/(3*b^4*g) + (B^2*(b*c - \\
& a*d)^3*i^3*Log[a + b*x]^2*Log[(b*(c + d*x))/(b*c - a*d)]/(b^4*g) + (B^2*(b \\
& *c - a*d)^3*i^3*Log[g*(a + b*x)]^2*Log[(b*(c + d*x))/(b*c - a*d)]/(b^4*g) \\
& + ((b*c - a*d)^3*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]^2*Log[a*g + b*g*x \\
&])/(b^4*g) + (2*A*B*(b*c - a*d)^3*i^3*Log[(b*(c + d*x))/(b*c - a*d)]*Log[a* \\
& g + b*g*x]/(b^4*g) - (2*B^2*(b*c - a*d)^3*i^3*(Log[a + b*x] + Log[(c + d*x) \\
&]^{-1}) - Log[(e*(a + b*x))/(c + d*x)]*Log[(b*(c + d*x))/(b*c - a*d)]*Log[\\
& a*g + b*g*x]/(b^4*g) - (B^2*(b*c - a*d)^3*i^3*Log[(e*(a + b*x))/(c + d*x)] \\
& *Log[a*g + b*g*x]^2)/(b^4*g) - (B^2*(b*c - a*d)^3*i^3*Log[(b*(c + d*x))/(b* \\
& c - a*d)]*Log[a*g + b*g*x]^2)/(b^4*g) + (2*a*B^2*d*(b*c - a*d)^2*i^3*PolyLo \\
& g[2, -((d*(a + b*x))/(b*c - a*d))]/(b^4*g) + (2*A*B*(b*c - a*d)^3*i^3*Poly \\
& Log[2, -((d*(a + b*x))/(b*c - a*d))]/(b^4*g) - (5*B^2*(b*c - a*d)^3*i^3*Po \\
& lyLog[2, -((d*(a + b*x))/(b*c - a*d))]/(3*b^4*g) + (2*B^2*(b*c - a*d)^3*i^ \\
& 3*Log[a + b*x]*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))]/(b^4*g) - (2*B^2*(\\
& b*c - a*d)^3*i^3*(Log[a + b*x] + Log[(c + d*x)^{-1}] - Log[(e*(a + b*x))/(c \\
& + d*x)]*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))]/(b^4*g) + (2*B^2*c*(b*c \\
& - a*d)^2*i^3*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]/(b^3*g) - (2*B^2*(b*c \\
& - a*d)^3*i^3*Log[(c + d*x)^{-1}]*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]/(b^ \\
& 4*g) - (2*B^2*(b*c - a*d)^3*i^3*PolyLog[3, -((d*(a + b*x))/(b*c - a*d))]/(\\
& b^4*g) - (2*B^2*(b*c - a*d)^3*i^3*PolyLog[3, (b*(c + d*x))/(b*c - a*d)]/(b \\
& ^4*g)
\end{aligned}$$

Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 30

```
Int[(x_)^(m_), x_Symbol] := Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```


Rule 31

Int[((a_) + (b_)*(x_))⁽⁻¹⁾, x_Symbol] := Simp[Log[RemoveContent[a + b*x, x]]/b, x] /; FreeQ[{a, b}, x]

Rule 43

Int[((a_) + (b_)*(x_))^{(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)ⁿ, x], x] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && (!IntegerQ[n] || (EqQ[c, 0] && LeQ[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])}

Rule 2301

Int[((a_) + Log[(c_)*(x_)^{(n_)]*(b_))/(x_), x_Symbol] := Simp[(a + b*Log[c*xⁿ])²/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]}

Rule 2302

Int[((a_) + Log[(c_)*(x_)^{(n_)]*(b_))^(p_)/(x_), x_Symbol] := Dist[1/(b*n), Subst[Int[x^p, x], x, a + b*Log[c*xⁿ]], x] /; FreeQ[{a, b, c, n, p}, x]}

Rule 2317

Int[((a_) + Log[(c_)*(x_)^{(n_)]*(b_))^(p_)/((d_) + (e_)*(x_)), x_Symbol] := Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*xⁿ])^p]/e, x] - Dist[(b*n*p)/e, Int[(Log[1 + (e*x)/d]*(a + b*Log[c*xⁿ])^(p - 1)]/x, x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]}

Rule 2374

Int[(Log[(d_)*((e_) + (f_)*(x_)^{(m_))])*((a_) + Log[(c_)*(x_)^{(n_)]*(b_))^(p_)/(x_), x_Symbol] := -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*xⁿ])^p]/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*xⁿ])^(p - 1)]/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0] && EqQ[d*e, 1]}}

Rule 2375

Int[(Log[(d_)*((e_) + (f_)*(x_)^{(m_))])^(r_)*((a_) + Log[(c_)*(x_)^{(n_)]*(b_))^(p_)/(x_), x_Symbol] := Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[c*xⁿ])^(p + 1)]/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m - 1)*(a + b*Log[c*xⁿ])^(p + 1)]/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,}}

$e, f, r, m, n\}, x] \&\& \text{IGtQ}[p, 0] \&\& \text{NeQ}[d*e, 1]$

Rule 2390

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_) + (e_.)*(x_.))^{(n_.)}]*(b_.))^{(p_.)}*((f_) + (g_.)*(x_.))^{(q_.)}, x_Symbol] := \text{Dist}[1/e, \text{Subst}[\text{Int}[(f*x)/d]^q*(a + b*\text{Log}[c*x^n])^p, x], x, d + e*x], x] /; \text{FreeQ}\{a, b, c, d, e, f, g, n, p, q\}, x] \&\& \text{EqQ}[e*f - d*g, 0]$

Rule 2391

$\text{Int}[\text{Log}[(c_.)*((d_) + (e_.)*(x_.))^{(n_.)}]]/(x_), x_Symbol] := -\text{Simp}[\text{PolyLog}[2, -(c*e*x^n)]/n, x] /; \text{FreeQ}\{c, d, e, n\}, x] \&\& \text{EqQ}[c*d, 1]$

Rule 2393

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_) + (e_.)*(x_.))]*(b_.)]/((f_.) + (g_.)*(x_.)), x_Symbol] := \text{Dist}[1/g, \text{Subst}[\text{Int}[(a + b*\text{Log}[1 + (c*e*x)/g]]/x, x], x, f + g*x], x] /; \text{FreeQ}\{a, b, c, d, e, f, g\}, x] \&\& \text{NeQ}[e*f - d*g, 0] \&\& \text{EqQ}[g + c*(e*f - d*g), 0]$

Rule 2394

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_) + (e_.)*(x_.))^{(n_.)}]*(b_.)]/((f_.) + (g_.)*(x_.)), x_Symbol] := \text{Simp}[(\text{Log}[(e*(f + g*x))/(e*f - d*g)]*(a + b*\text{Log}[c*(d + e*x)^n]))/g, x] - \text{Dist}[(b*e*n)/g, \text{Int}[\text{Log}[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; \text{FreeQ}\{a, b, c, d, e, f, g, n\}, x] \&\& \text{NeQ}[e*f - d*g, 0]$

Rule 2396

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_) + (e_.)*(x_.))^{(n_.)}]*(b_.))^{(p_.)}/((f_.) + (g_.)*(x_.)), x_Symbol] := \text{Simp}[(\text{Log}[(e*(f + g*x))/(e*f - d*g)]*(a + b*\text{Log}[c*(d + e*x)^n])^p)/g, x] - \text{Dist}[(b*e*n*p)/g, \text{Int}[(\text{Log}[(e*(f + g*x))/(e*f - d*g)]*(a + b*\text{Log}[c*(d + e*x)^n])^{(p-1)})/(d + e*x), x], x] /; \text{FreeQ}\{a, b, c, d, e, f, g, n, p\}, x] \&\& \text{NeQ}[e*f - d*g, 0] \&\& \text{IGtQ}[p, 1]$

Rule 2418

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_) + (e_.)*(x_.))^{(n_.)}]*(b_.))^{(p_.)}*(\text{RFx}_), x_Symbol] := \text{With}\{u = \text{ExpandIntegrand}[(a + b*\text{Log}[c*(d + e*x)^n])^p, \text{RFx}, x]\}, \text{Int}[u, x] /; \text{SumQ}[u] /; \text{FreeQ}\{a, b, c, d, e, n\}, x] \&\& \text{RationalFunctionQ}[\text{RFx}, x] \&\& \text{IntegerQ}[p]$

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] := Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e]^m)], x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*(i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] := Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m)))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*(i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] :=
Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)
^(r_.)]^(s_.), x_Symbol] := Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q]^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)
^(r_.)]*(s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/(j_.
) + (k_.)*(x_)), x_Symbol] := Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q]^r]/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)
```

```
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k_.)*(x_)), x_Symbol] := Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a + b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x), x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ[b*c - a*d, 0]
```

Rule 2523

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] := Simp[x*(a + b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6688

```
Int[u_, x_Symbol] :=> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl  
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :=> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]  
]
```

Rubi steps

$$\begin{aligned}
\int \frac{(78c + 78dx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{ag + bgx} dx &= \int \left(\frac{474552d(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^3g} + \frac{6084d(bc - ad)(78c + 78dx)^2}{b^3g} \right) dx \\
&= \frac{(474552(bc - ad)^3) \int \frac{\left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{ag+bgx} dx}{b^3} + \frac{(78d) \int (78c + 78dx)^2}{b^3g} \\
&= \frac{474552d(bc - ad)^2x \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^3g} + \frac{237276(bc - ad)(c + dx)^2}{b^3g} \\
&= \frac{474552d(bc - ad)^2x \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^3g} + \frac{237276(bc - ad)(c + dx)^2}{b^3g} \\
&= \frac{474552d(bc - ad)^2x \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^3g} + \frac{237276(bc - ad)(c + dx)^2}{b^3g} \\
&= \frac{474552d(bc - ad)^2x \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^3g} + \frac{237276(bc - ad)(c + dx)^2}{b^3g} \\
&= -\frac{790920ABd(bc - ad)^2x}{b^3g} - \frac{158184B(bc - ad)(c + dx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^2g} \\
&= -\frac{790920ABd(bc - ad)^2x}{b^3g} - \frac{790920B^2d(bc - ad)^2(a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{b^4g} \\
&= -\frac{790920ABd(bc - ad)^2x}{b^3g} - \frac{790920B^2d(bc - ad)^2(a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{b^4g} \\
&= -\frac{790920ABd(bc - ad)^2x}{b^3g} + \frac{158184B^2d(bc - ad)^2x}{b^3g} + \frac{158184B^2(bc - ad)(c + dx)^2}{b^3g} \\
&= -\frac{790920ABd(bc - ad)^2x}{b^3g} + \frac{158184B^2d(bc - ad)^2x}{b^3g} + \frac{158184B^2(bc - ad)(c + dx)^2}{b^3g} \\
&= -\frac{790920ABd(bc - ad)^2x}{b^3g} + \frac{158184B^2d(bc - ad)^2x}{b^3g} + \frac{158184B^2(bc - ad)(c + dx)^2}{b^3g}
\end{aligned}$$

Mathematica [B] time = 4.14, size = 3984, normalized size = 5.60

Result too large to show

Antiderivative was successfully verified.

[In] Integrate[(((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))^2)/(a*g + b*g*x), x]

[Out]
$$\begin{aligned} & i^3(108A^2b^3B^2c^3 - 216A^2b^2B^2c^2d - 12A^2b^2B^2c^2d + 144A^2b^2A^2b^3B^2c^3 - 216A^2b^2B^2c^2d - 12A^2b^2B^2c^2d + 144A^2b^2A^2b^3B^2c^3 \\ & A^2b^3B^2c^3d^2 - 18A^2b^2B^2c^2d^2 - 36A^2b^3A^2B^2d^3 - 36A^2b^3B^2d^3 + 54A^2b^3c^2d^2x - 42A^2b^3B^2c^2d^2x + 6b^3B^2c^2d^2x - 54A^2b^2c^2d^2x \\ & x + 72A^2b^2B^2c^2d^2x - 12A^2b^2B^2c^2d^2x + 18A^2b^2A^2b^3d^3x - 30A^2b^2A^2b^3B^2d^3x + 6A^2b^2B^2d^3x + 27A^2b^3c^2d^2x^2 - 6A^2b^3B^2c^2d^2x^2 \\ & x^2 - 9A^2b^2d^3x^2 + 6A^2b^2B^2d^3x^2 + 6A^2b^3d^3x^3 + 108A^2b^2B^2c^2d^2\text{Log}[a/b + x] + 12A^2b^2B^2c^2d^2\text{Log}[a/b + x] - 108A^2b^2A^2b^3B^2c^2d^2\text{Log}[a/b + x] \\ & - 18A^2b^2B^2c^2d^2\text{Log}[a/b + x] + 36A^2b^3A^2B^2d^3\text{Log}[a/b + x] - 13A^2b^3B^2d^3\text{Log}[a/b + x] + 18A^2b^3B^2c^3\text{Log}[a/b + x]^2 - 54A^2b^2B^2c^2d^2\text{Log}[a/b + x]^2 \\ & + 54A^2b^2A^2b^3B^2c^2d^2\text{Log}[a/b + x]^2 - 18A^2b^3A^2B^2d^3\text{Log}[a/b + x]^2 - 3A^2b^3B^2d^3\text{Log}[a/b + x]^2 + 12A^2b^3B^2d^3\text{Log}[a/b + x]^3 - 108A^2b^3B^2c^3\text{Log}[c/d + x] \\ & - 22b^3B^2c^3\text{Log}[c/d + x] + 108A^2b^2B^2c^2d^2\text{Log}[c/d + x] - 27A^2b^2B^2c^2d^2\text{Log}[c/d + x] - 36A^2b^2A^2b^3B^2c^2d^2\text{Log}[c/d + x] - 36A^2b^3B^2d^3\text{Log}[c/d + x] \\ & + 36A^2b^2b^2B^2c^2d^2\text{Log}[a/b + x]\text{Log}[c/d + x] - 30A^2b^3B^2d^3\text{Log}[a/b + x]\text{Log}[c/d + x] + 6b^3B^2c^3\text{Log}[c/d + x]^2 + 9A^2b^2B^2c^2d^2\text{Log}[c/d + x]^2 - 18A^2b^2b^2B^2c^2d^2\text{Log}[c/d + x]^2 \\ & + 18A^2b^2b^3c^3\text{Log}[a + b*x] - 54A^2b^2c^2d^2\text{Log}[a + b*x] + 54A^2b^2A^2b^3B^2c^2d^2\text{Log}[a + b*x] - 54A^2b^2A^2b^3B^2c^2d^2\text{Log}[a + b*x] + 6A^2b^2b^2B^2c^2d^2\text{Log}[a + b*x] \\ & - 18A^2b^3A^2d^3\text{Log}[a + b*x] + 30A^2b^3A^2B^2d^3\text{Log}[a + b*x] + 13A^2b^3B^2d^3\text{Log}[a + b*x] - 36A^2b^3B^2c^3\text{Log}[a/b + x]\text{Log}[a + b*x] + 108A^2b^2A^2b^3B^2c^2d^2\text{Log}[a/b + x]\text{Log}[a + b*x] \\ & - 108A^2b^2A^2b^3B^2c^2d^2\text{Log}[a/b + x]\text{Log}[a + b*x] + 36A^2b^3A^2B^2d^3\text{Log}[a/b + x]\text{Log}[a + b*x] - 30A^2b^3B^2d^3\text{Log}[a/b + x]\text{Log}[a + b*x] - 18A^2b^3B^2d^3\text{Log}[a/b + x]^2\text{Log}[a + b*x] \\ & + 36A^2b^3B^2c^3\text{Log}[c/d + x]\text{Log}[a + b*x] - 108A^2b^2B^2c^2d^2\text{Log}[c/d + x]\text{Log}[a + b*x] + 108A^2b^2A^2b^3B^2c^2d^2\text{Log}[c/d + x]\text{Log}[a + b*x] - 36A^2b^3A^2B^2d^3\text{Log}[c/d + x]\text{Log}[a + b*x] \\ & + 30A^2b^3B^2d^3\text{Log}[c/d + x]\text{Log}[a + b*x] + 36A^2b^3B^2d^3\text{Log}[a/b + x]\text{Log}[c/d + x]\text{Log}[a + b*x] - 18A^2b^3B^2d^3\text{Log}[c/d + x]^2\text{Log}[a + b*x] - 36A^2b^3B^2c^3\text{Log}[c/d + x]\text{Log} \\ & [(d*(a + b*x))/(-(b*c) + a*d)] + 108A^2b^2B^2c^2d^2\text{Log}[c/d + x]\text{Log}[(d*(a + b*x))/(-(b*c) + a*d)] - 108A^2b^2A^2b^3B^2c^2d^2\text{Log}[c/d + x]\text{Log}[(d*(a + b*x))/(-(b*c) + a*d)] \\ & + 36A^2b^3A^2B^2d^3\text{Log}[c/d + x]\text{Log}[(d*(a + b*x))/(-(b*c) + a*d)] - 36A^2b^3B^2d^3\text{Log}[a/b + x]\text{Log}[c/d + x]\text{Log}[(d*(a + b*x))/(-(b*c) + a*d)] + 18A^2b^3B^2d^3\text{Log}[c/d + x]^2\text{Log} \\ & [(d*(a + b*x))/(-(b*c) + a*d)] - 54b^3B^2c^3\text{Log}[(b*c - a*d)*e]/(c + d*x) + 108A^2b^2B^2c^2d^2\text{Log}[(b*c - a*d)*e]/(c + d*x) - 54A^2b^2b^2B^2c^2d^2\text{Log}[(b*c - a*d)*e]/(c + d*x) \\ & - 54A^2b^2b^2B^2c^2d^2\text{Log}[(e*(a + b*x))/(c + d*x)] + 90A^2b^2 \end{aligned}$$

$$\begin{aligned}
& *B^2*c*d^2*\text{Log}[(e*(a + b*x))/(c + d*x)] - 36*a^3*B^2*d^3*\text{Log}[(e*(a + b*x))/(c + d*x)] + 108*A*b^3*B*c^2*d*x*\text{Log}[(e*(a + b*x))/(c + d*x)] - 42*b^3*B^2*c^2*d*x*\text{Log}[(e*(a + b*x))/(c + d*x)] - 108*a*A*b^2*B*c*d^2*x*\text{Log}[(e*(a + b*x))/(c + d*x)] + 72*a*b^2*B^2*c*d^2*x*\text{Log}[(e*(a + b*x))/(c + d*x)] + 36*a^2*A*b*B*d^3*x*\text{Log}[(e*(a + b*x))/(c + d*x)] - 30*a^2*b*B^2*d^3*x*\text{Log}[(e*(a + b*x))/(c + d*x)] + 54*A*b^3*B*c*d^2*x^2*\text{Log}[(e*(a + b*x))/(c + d*x)] - 6*b^3*B^2*c*d^2*x^2*\text{Log}[(e*(a + b*x))/(c + d*x)] - 18*a*A*b^2*B*d^3*x^2*\text{Log}[(e*(a + b*x))/(c + d*x)] + 6*a*b^2*B^2*d^3*x^2*\text{Log}[(e*(a + b*x))/(c + d*x)] + 12*A*b^3*B*d^3*x^3*\text{Log}[(e*(a + b*x))/(c + d*x)] + 36*a^3*B^2*d^3*\text{Log}[a/b + x]*\text{Log}[(e*(a + b*x))/(c + d*x)] - 18*a^3*B^2*d^3*\text{Log}[a/b + x]^2*\text{Log}[(e*(a + b*x))/(c + d*x)] - 36*a^2*b*B^2*c*d^2*\text{Log}[c/d + x]*\text{Log}[(e*(a + b*x))/(c + d*x)] + 36*A*b^3*B*c^3*\text{Log}[a + b*x]*\text{Log}[(e*(a + b*x))/(c + d*x)] - 108*a*A*b^2*B*c^2*d*\text{Log}[a + b*x]*\text{Log}[(e*(a + b*x))/(c + d*x)] + 108*a^2*A*b*B*c*d^2*\text{Log}[a + b*x]*\text{Log}[(e*(a + b*x))/(c + d*x)] - 36*a^3*A*B*d^3*\text{Log}[a + b*x]*\text{Log}[(e*(a + b*x))/(c + d*x)] + 30*a^3*B^2*d^3*\text{Log}[a + b*x]*\text{Log}[(e*(a + b*x))/(c + d*x)] + 36*a^3*B^2*d^3*\text{Log}[a/b + x]*\text{Log}[a + b*x]*\text{Log}[(e*(a + b*x))/(c + d*x)] - 36*a^3*B^2*d^3*\text{Log}[c/d + x]*\text{Log}[a + b*x]*\text{Log}[(e*(a + b*x))/(c + d*x)] + 36*a^3*B^2*d^3*\text{Log}[c/d + x]*\text{Log}[(d*(a + b*x))/(-b*c) + a*d]*\text{Log}[(e*(a + b*x))/(c + d*x)] + 54*a*b^2*B^2*c^2*d*\text{Log}[(e*(a + b*x))/(c + d*x)]^2 - 81*a^2*b*B^2*c*d^2*\text{Log}[(e*(a + b*x))/(c + d*x)]^2 + 54*b^3*B^2*c^2*d*x*\text{Log}[(e*(a + b*x))/(c + d*x)]^2 - 54*a*b^2*B^2*c*d^2*x*\text{Log}[(e*(a + b*x))/(c + d*x)]^2 + 18*a^2*b*B^2*d^3*x*\text{Log}[(e*(a + b*x))/(c + d*x)]^2 + 27*b^3*B^2*c*d^2*x^2*\text{Log}[(e*(a + b*x))/(c + d*x)]^2 - 9*a*b^2*B^2*d^3*x^2*\text{Log}[(e*(a + b*x))/(c + d*x)]^2 + 6*b^3*B^2*d^3*x^3*\text{Log}[(e*(a + b*x))/(c + d*x)]^2 - 18*b^3*B^2*c^3*\text{Log}[(d*(a + b*x))/(-b*c) + a*d]*\text{Log}[(e*(a + b*x))/(c + d*x)]^2 - 18*a^3*B^2*d^3*\text{Log}[a + b*x]*\text{Log}[(e*(a + b*x))/(c + d*x)]^2 - 18*a*b^2*B^2*c^2*d*\text{Log}[(e*(a + b*x))/(c + d*x)]^3 + 18*a^2*b*B^2*c*d^2*\text{Log}[(e*(a + b*x))/(c + d*x)]^3 + 42*A*b^3*B*c^3*\text{Log}[c + d*x] + 4*b^3*B^2*c^3*\text{Log}[c + d*x] - 18*a*A*b^2*B*c^2*d*\text{Log}[c + d*x] + 15*a*b^2*B^2*c^2*d*\text{Log}[c + d*x] + 66*a^2*b*B^2*c*d^2*\text{Log}[c + d*x] + 12*b^3*B^2*c^3*\text{Log}[a/b + x]*\text{Log}[c + d*x] + 18*a*b^2*B^2*c^2*d*\text{Log}[a/b + x]*\text{Log}[c + d*x] - 12*b^3*B^2*c^3*\text{Log}[c/d + x]*\text{Log}[c + d*x] - 18*a*b^2*B^2*c^2*d*\text{Log}[c/d + x]*\text{Log}[c + d*x] - 12*b^3*B^2*c^3*\text{Log}[(e*(a + b*x))/(c + d*x)]*\text{Log}[c + d*x] - 18*a*b^2*B^2*c^2*d*\text{Log}[(e*(a + b*x))/(c + d*x)]*\text{Log}[c + d*x] - 12*b^3*B^2*c^3*\text{Log}[a/b + x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)] - 18*a*b^2*B^2*c^2*d*\text{Log}[a/b + x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)] - 36*a^2*b*B^2*c*d^2*\text{Log}[a/b + x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)] + 66*a^3*B^2*d^3*\text{Log}[a/b + x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)] - 18*a^3*B^2*d^3*\text{Log}[a/b + x]^2*\text{Log}[(b*(c + d*x))/(b*c - a*d)] + 54*b^3*B^2*c^3*\text{Log}[(e*(a + b*x))/(c + d*x)]*\text{Log}[(b*c - a*d)/(b*c + b*d*x)] - 216*a*b^2*B^2*c^2*d*\text{Log}[(e*(a + b*x))/(c + d*x)]*\text{Log}[(b*c - a*d)/(b*c + b*d*x)] + 162*a^2*b*B^2*c*d^2*\text{Log}[(e*(a + b*x))/(c + d*x)]*\text{Log}[(b*c - a*d)/(b*c + b*d*x)] + 54*a*b^2*B^2*c^2*d*\text{Log}[(e*(a + b*x))/(c + d*x)]^2*\text{Log}[(b*c - a*d)/(b*c + b*d*x)] - 54*a^2*b*B^2*c*d^2*\text{Log}[(e*(a + b*x))/(c + d*x)]^2*\text{Log}[(b*c - a*d)/(b*c + b*d*x)] - 6*B^2*(2*b^3*c^3 + 3*a*b^2*c^2*d + 6*a^2*b*c*d^2 - 11*a^3*d^3 + 6*a^3*d^3*\text{Log}[a/b + x])*PolyLog[2, (d*(a + b*x))/(-b*c) + a*d] + 54*b*B^2*c*(b*c -
\end{aligned}$$

$a*d)*(b*c - 3*a*d + 2*a*d*\text{Log}[(e*(a + b*x))/(c + d*x)])*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))] - 36*A*b^3*B*c^3*PolyLog[2, (b*(c + d*x))/(b*c - a*d)] + 108*a*A*b^2*B*c^2*d*PolyLog[2, (b*(c + d*x))/(b*c - a*d)] - 108*a^2*A*b*B*c*d^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)] + 36*a^3*A*B*d^3*PolyLog[2, (b*(c + d*x))/(b*c - a*d)] - 36*a^3*B^2*d^3*Log[a/b + x]*PolyLog[2, (b*(c + d*x))/(b*c - a*d)] + 36*a^3*B^2*d^3*Log[(e*(a + b*x))/(c + d*x)]*PolyLog[2, (b*(c + d*x))/(b*c - a*d)] + 36*b^3*B^2*c^3*Log[(e*(a + b*x))/(c + d*x)]*PolyLog[2, (b*(c + d*x))/(d*(a + b*x))] + 36*a^3*B^2*d^3*PolyLog[3, (d*(a + b*x))/(-(b*c) + a*d)] - 108*a*b^2*B^2*c^2*d*PolyLog[3, (d*(a + b*x))/(b*(c + d*x))] + 108*a^2*b*B^2*c*d^2*PolyLog[3, (d*(a + b*x))/(b*(c + d*x))] + 36*a^3*B^2*d^3*PolyLog[3, (b*(c + d*x))/(b*c - a*d)] + 36*b^3*B^2*c^3*PolyLog[3, (b*(c + d*x))/(d*(a + b*x)))]/(18*b^4*g)$

fricas [F] time = 0.66, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{A^2 d^3 i^3 x^3 + 3 A^2 c d^2 i^3 x^2 + 3 A^2 c^2 d i^3 x + A^2 c^3 i^3 + (B^2 d^3 i^3 x^3 + 3 B^2 c d^2 i^3 x^2 + 3 B^2 c^2 d i^3 x + B^2 c^3 i^3) \log}{b g x + a g} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g),x, algorithm="fricas")

[Out] integral((A^2*d^3*i^3*x^3 + 3*A^2*c*d^2*i^3*x^2 + 3*A^2*c^2*d*i^3*x + A^2*c^3*i^3 + (B^2*d^3*i^3*x^3 + 3*B^2*c*d^2*i^3*x^2 + 3*B^2*c^2*d*i^3*x + B^2*c^3*i^3)*log((b*e*x + a*e)/(d*x + c)))^2 + 2*(A*B*d^3*i^3*x^3 + 3*A*B*c*d^2*i^3*x^2 + 3*A*B*c^2*d*i^3*x + A*B*c^3*i^3)*log((b*e*x + a*e)/(d*x + c)))/(b*g*x + a*g), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g),x, algorithm="giac")

[Out] Timed out

maple [F] time = 2.32, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci)^3 \left(B \ln \left(\frac{bx+ae}{dx+c} \right) + A \right)^2}{bgx + ag} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g),x)
```

```
[Out] int((d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g),x, algort
ithm="maxima")
```

```
[Out] 3*A^2*c^2*d*i^3*(x/(b*g) - a*log(b*x + a)/(b^2*g)) - 1/6*A^2*d^3*i^3*(6*a^3
*log(b*x + a)/(b^4*g) - (2*b^2*x^3 - 3*a*b*x^2 + 6*a^2*x)/(b^3*g)) + 3/2*A^
2*c*d^2*i^3*(2*a^2*log(b*x + a)/(b^3*g) + (b*x^2 - 2*a*x)/(b^2*g)) + A^2*c^
3*i^3*log(b*g*x + a*g)/(b*g) + 1/6*(2*B^2*b^3*d^3*i^3*x^3 + 3*(3*b^3*c*d^2*
i^3 - a*b^2*d^3*i^3)*B^2*x^2 + 6*(3*b^3*c^2*d*i^3 - 3*a*b^2*c*d^2*i^3 + a^2
*b*d^3*i^3)*B^2*x + 6*(b^3*c^3*i^3 - 3*a*b^2*c^2*d*i^3 + 3*a^2*b*c*d^2*i^3
- a^3*d^3*i^3)*B^2*log(b*x + a))*log(d*x + c)^2/(b^4*g) - integrate(-1/3*(3
*B^2*b^4*c^4*i^3*log(e)^2 + 6*A*B*b^4*c^4*i^3*log(e) + 3*(B^2*b^4*d^4*i^3*l
og(e)^2 + 2*A*B*b^4*d^4*i^3*log(e))*x^4 + 12*(B^2*b^4*c*d^3*i^3*log(e)^2 +
2*A*B*b^4*c*d^3*i^3*log(e))*x^3 + 18*(B^2*b^4*c^2*d^2*i^3*log(e)^2 + 2*A*B*
b^4*c^2*d^2*i^3*log(e))*x^2 + 3*(B^2*b^4*d^4*i^3*x^4 + 4*B^2*b^4*c*d^3*i^3*
x^3 + 6*B^2*b^4*c^2*d^2*i^3*x^2 + 4*B^2*b^4*c^3*d*i^3*x + B^2*b^4*c^4*i^3)*
log(b*x + a)^2 + 12*(B^2*b^4*c^3*d*i^3*log(e)^2 + 2*A*B*b^4*c^3*d*i^3*log(e
))*x + 6*(B^2*b^4*c^4*i^3*log(e) + A*B*b^4*c^4*i^3 + (B^2*b^4*d^4*i^3*log(e
) + A*B*b^4*d^4*i^3))*x^4 + 4*(B^2*b^4*c*d^3*i^3*log(e) + A*B*b^4*c*d^3*i^3)
*x^3 + 6*(B^2*b^4*c^2*d^2*i^3*log(e) + A*B*b^4*c^2*d^2*i^3)*x^2 + 4*(B^2*b^
4*c^3*d*i^3*log(e) + A*B*b^4*c^3*d*i^3)*x*log(b*x + a) - (6*B^2*b^4*c^4*i^
3*log(e) + 6*A*B*b^4*c^4*i^3 + 2*(3*A*B*b^4*d^4*i^3 + (3*i^3*log(e) + i^3)*
B^2*b^4*d^4)*x^4 + (24*A*B*b^4*c*d^3*i^3 - (a*b^3*d^4*i^3 - 3*(8*i^3*log(e)
+ 3*i^3)*b^4*c*d^3)*B^2)*x^3 + 3*(12*A*B*b^4*c^2*d^2*i^3 - (3*a*b^3*c*d^3*
i^3 - a^2*b^2*d^4*i^3 - 6*(2*i^3*log(e) + i^3)*b^4*c^2*d^2)*B^2)*x^2 + 6*(4
*A*B*b^4*c^3*d*i^3 + (4*b^4*c^3*d*i^3*log(e) + 3*a*b^3*c^2*d^2*i^3 - 3*a^2*
b^2*c*d^3*i^3 + a^3*b*d^4*i^3)*B^2)*x + 6*(B^2*b^4*d^4*i^3*x^4 + 4*B^2*b^4*
c*d^3*i^3*x^3 + 6*B^2*b^4*c^2*d^2*i^3*x^2 + (5*b^4*c^3*d*i^3 - 3*a*b^3*c^2*
d^2*i^3 + 3*a^2*b^2*c*d^3*i^3 - a^3*b*d^4*i^3)*B^2*x + (b^4*c^4*i^3 + a*b^3
*c^3*d*i^3 - 3*a^2*b^2*c^2*d^2*i^3 + 3*a^3*b*c*d^3*i^3 - a^4*d^4*i^3)*B^2)*
log(b*x + a))*log(d*x + c))/(b^5*d*g*x^2 + a*b^4*c*g + (b^5*c*g + a*b^4*d*g
)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c i + d i x)^3 \left(A + B \ln \left(\frac{e^{(a+bx)}}{c+dx} \right) \right)^2}{a g + b g x} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x), x)

[Out] int(((c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x), x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g), x)

[Out] Timed out

$$3.79 \quad \int \frac{(ci+dx)^3 \left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)^2}{(ag+bgx)^2} dx$$

Optimal. Leaf size=692

$$\frac{2d^2i^3(a+bx)(bc-ad) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)^2}{b^4g^2} - \frac{Bd^2i^3(a+bx)(bc-ad) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{b^4g^2} + \frac{6Bdi^3(bc-ad)^2 \text{Li}_2\left(\frac{e(a+bx)}{c+dx}\right)}{b^4g^2}$$

[Out] $-2*B^2*(-a*d+b*c)^2*i^3*(d*x+c)/b^3/g^2/(b*x+a)-B*d^2*(-a*d+b*c)*i^3*(b*x+a)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^4/g^2-2*B*(-a*d+b*c)^2*i^3*(d*x+c)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^3/g^2/(b*x+a)+4*B*d*(-a*d+b*c)^2*i^3*\ln((-a*d+b*c)/b/(d*x+c))*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^4/g^2+2*d^2*(-a*d+b*c)*i^3*(b*x+a)*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/b^4/g^2-(-a*d+b*c)^2*i^3*(d*x+c)*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/b^3/g^2/(b*x+a)+1/2*d*i^3*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/b^2/g^2+B^2*d*(-a*d+b*c)^2*i^3*\ln(d*x+c)/b^4/g^2+B*d*(-a*d+b*c)^2*i^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))*\ln(1-b*(d*x+c)/d/(b*x+a))/b^4/g^2-3*d*(-a*d+b*c)^2*i^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2*\ln(1-b*(d*x+c)/d/(b*x+a))/b^4/g^2+4*B^2*d*(-a*d+b*c)^2*i^3*\text{polylog}(2,d*(b*x+a)/b/(d*x+c))/b^4/g^2-B^2*d*(-a*d+b*c)^2*i^3*\text{polylog}(2,b*(d*x+c)/d/(b*x+a))/b^4/g^2+6*B*d*(-a*d+b*c)^2*i^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))*\text{polylog}(2,b*(d*x+c)/d/(b*x+a))/b^4/g^2+6*B^2*d*(-a*d+b*c)^2*i^3*\text{polylog}(3,b*(d*x+c)/d/(b*x+a))/b^4/g^2$

Rubi [B] time = 4.82, antiderivative size = 1751, normalized size of antiderivative = 2.53, number of steps used = 90, number of rules used = 23, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}} = 0.548$, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 2486, 31, 44, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610}

result too large to display

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x]])^2)/(a*g + b*g*x)^2,x]

[Out] $-((A*B*d^2*(b*c - a*d)*i^3*x)/(b^3*g^2)) - (2*B^2*(b*c - a*d)^3*i^3)/(b^4*g^2*(a + b*x)) - (2*B^2*d*(b*c - a*d)^2*i^3*\text{Log}[a + b*x])/(b^4*g^2) + (a^2*B^2*d^3*i^3*\text{Log}[a + b*x]^2)/(2*b^4*g^2) - (a*B^2*d^2*(3*b*c - 2*a*d)*i^3*\text{Log}[a + b*x]^2)/(b^4*g^2) - (3*A*B*d*(b*c - a*d)^2*i^3*\text{Log}[a + b*x]^2)/(b^4*g^2) + (B^2*d*(b*c - a*d)^2*i^3*\text{Log}[a + b*x]^2)/(b^4*g^2) - (B^2*d^2*(b*c - a*d)*i^3*(a + b*x)*\text{Log}[(e*(a + b*x))/(c + d*x])/(b^4*g^2) - (3*B^2*d*(b*c - a*d)^2*i^3*\text{Log}[-((b*c - a*d)/(d*(a + b*x))])*\text{Log}[(e*(a + b*x))/(c + d*x])^2)/(b^4*g^2) - (3*B^2*d*(b*c - a*d)^2*i^3*\text{Log}[a + b*x]*\text{Log}[(e*(a + b*x))/(c + d*x])^2)/(b^4*g^2) - (2*B*(b*c - a*d)^3*i^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x])^2)/(b^4*g^2)$

$$\begin{aligned}
& + d*x)))/(b^4*g^2*(a + b*x)) - (a^2*B*d^3*i^3*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(b^4*g^2) + (2*a*B*d^2*(3*b*c - 2*a*d)*i^3*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(b^4*g^2) - (2*B*d*(b*c - a*d)^2*i^3*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(b^4*g^2) + (d^2*(3*b*c - 2*a*d)*i^3*x*(A + B*Log[(e*(a + b*x))/(c + d*x]]^2)/(b^3*g^2) + (d^3*i^3*x^2*(A + B*Log[(e*(a + b*x))/(c + d*x]]^2)/(2*b^2*g^2) - ((b*c - a*d)^3*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x]]^2)/(b^4*g^2*(a + b*x)) + (3*d*(b*c - a*d)^2*i^3*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x]]^2)/(b^4*g^2) + (3*B^2*d*(b*c - a*d)^2*i^3*Log[c + d*x]/(b^4*g^2) - (B^2*c^2*d*i^3*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x]/(b^2*g^2) + (2*B^2*c*d*(3*b*c - 2*a*d)*i^3*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x]/(b^3*g^2) - (2*B^2*d*(b*c - a*d)^2*i^3*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x]/(b^4*g^2) + (B*c^2*d*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x]])*Log[c + d*x]/(b^2*g^2) - (2*B*c*d*(3*b*c - 2*a*d)*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x]])*Log[c + d*x]/(b^3*g^2) + (2*B*d*(b*c - a*d)^2*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x]])*Log[c + d*x]/(b^4*g^2) + (B^2*c^2*d*i^3*Log[c + d*x]^2)/(2*b^2*g^2) - (B^2*c*d*(3*b*c - 2*a*d)*i^3*Log[c + d*x]^2)/(b^3*g^2) + (B^2*d*(b*c - a*d)^2*i^3*Log[c + d*x]^2)/(b^4*g^2) - (a^2*B^2*d^3*i^3*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)]/(b^4*g^2) + (2*a*B^2*d^2*(3*b*c - 2*a*d)*i^3*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)]/(b^4*g^2) + (6*A*B*d*(b*c - a*d)^2*i^3*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)]/(b^4*g^2) - (2*B^2*d*(b*c - a*d)^2*i^3*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)]/(b^4*g^2) - (a^2*B^2*d^3*i^3*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))]/(b^4*g^2) + (2*a*B^2*d^2*(3*b*c - 2*a*d)*i^3*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))]/(b^4*g^2) + (6*A*B*d*(b*c - a*d)^2*i^3*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))]/(b^4*g^2) - (2*B^2*d*(b*c - a*d)^2*i^3*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))]/(b^4*g^2) - (B^2*c^2*d*i^3*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]/(b^2*g^2) + (2*B^2*c*d*(3*b*c - 2*a*d)*i^3*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]/(b^3*g^2) - (2*B^2*d*(b*c - a*d)^2*i^3*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]/(b^4*g^2) + (6*B^2*d*(b*c - a*d)^2*i^3*Log[(e*(a + b*x))/(c + d*x]]*PolyLog[2, 1 + (b*c - a*d)/(d*(a + b*x))]/(b^4*g^2) + (6*B^2*d*(b*c - a*d)^2*i^3*PolyLog[3, 1 + (b*c - a*d)/(d*(a + b*x))]/(b^4*g^2)
\end{aligned}$$

Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(n_), x_Symbol] := Simp[Log[RemoveContent[a + b*x, x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[
```

ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] & & NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])

Rule 2301

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2317

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol] := Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e, Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]

Rule 2344

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))), x_Symbol] := Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_.)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] := Dist[1/e, Subst[Int[(g*x)/e]^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e*x, x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]^(s_.), x_Symbol] := Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] := -Simp[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/h, x] + Dist[(p*r*s*(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1)/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c, d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] := With[{g = Simplify[(v - 1)*(c + d*x)/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/(b*c - a*d), x] + Dist[h*p*r*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1)/((
```

$a + b*x)*(c + d*x)), x], x] /; \text{FreeQ}[\{g, h\}, x] /; \text{FreeQ}[\{a, b, c, d, e, f, p, q, r, s\}, x] \&\& \text{NeQ}[b*c - a*d, 0] \&\& \text{IGtQ}[s, 0] \&\& \text{EqQ}[p + q, 0]$

Rule 2507

$\text{Int}[\text{Log}[(e_.)*((f_.)*((a_.) + (b_.)*(x_.))^{(p_.)*((c_.) + (d_.)*(x_.))^{(q_.)})^{(r_.)}]^{(s_.)}*\text{Log}[(i_.)*((j_.)*((g_.) + (h_.)*(x_.))^{(t_.)})^{(u_.)}]*(v_.), x_Symbol] :> \text{With}[\{k = \text{Simplify}[v*(a + b*x)*(c + d*x)]\}, \text{Simp}[(k*\text{Log}[i*(j*(g + h*x)^t)^u]*\text{Log}[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^{(s + 1)})/(p*r*(s + 1)*(b*c - a*d)), x] - \text{Dist}[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), \text{Int}[\text{Log}[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^{(s + 1)}(g + h*x), x], x] /; \text{FreeQ}[k, x] /; \text{FreeQ}[\{a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u\}, x] \&\& \text{NeQ}[b*c - a*d, 0] \&\& \text{EqQ}[p + q, 0] \&\& \text{NeQ}[s, -1]$

Rule 2523

$\text{Int}[(a_.) + \text{Log}[(c_.)*(RfX_)^{(p_.)}]*(b_.)]^{(n_.)}, x_Symbol] :> \text{Simp}[x*(a + b*\text{Log}[c*RfX^p])^n, x] - \text{Dist}[b*n*p, \text{Int}[\text{SimplifyIntegrand}[(x*(a + b*\text{Log}[c*RfX^p])^n)/D[RfX, x]]/RfX, x], x] /; \text{FreeQ}[\{a, b, c, p\}, x] \&\& \text{RationalFunctionQ}[RfX, x] \&\& \text{IGtQ}[n, 0]$

Rule 2524

$\text{Int}[(a_.) + \text{Log}[(c_.)*(RfX_)^{(p_.)}]*(b_.)]^{(n_.)}/((d_.) + (e_.)*(x_.)), x_Symbol] :> \text{Simp}[(\text{Log}[d + e*x]*(a + b*\text{Log}[c*RfX^p])^n)/e, x] - \text{Dist}[(b*n*p)/e, \text{Int}[(\text{Log}[d + e*x]*(a + b*\text{Log}[c*RfX^p])^n)/D[RfX, x]]/RfX, x], x] /; \text{FreeQ}[\{a, b, c, d, e, p\}, x] \&\& \text{RationalFunctionQ}[RfX, x] \&\& \text{IGtQ}[n, 0]$

Rule 2525

$\text{Int}[(a_.) + \text{Log}[(c_.)*(RfX_)^{(p_.)}]*(b_.)]^{(n_.)*((d_.) + (e_.)*(x_.))^{(m_.)}], x_Symbol] :> \text{Simp}[(d + e*x)^{(m + 1)}*(a + b*\text{Log}[c*RfX^p])^n/(e*(m + 1)), x] - \text{Dist}[(b*n*p)/(e*(m + 1)), \text{Int}[\text{SimplifyIntegrand}[(d + e*x)^{(m + 1)}*(a + b*\text{Log}[c*RfX^p])^n)/D[RfX, x]]/RfX, x], x] /; \text{FreeQ}[\{a, b, c, d, e, m, p\}, x] \&\& \text{RationalFunctionQ}[RfX, x] \&\& \text{IGtQ}[n, 0] \&\& (\text{EqQ}[n, 1] || \text{IntegerQ}[m]) \&\& \text{NeQ}[m, -1]$

Rule 2528

$\text{Int}[(a_.) + \text{Log}[(c_.)*(RfX_)^{(p_.)}]*(b_.)]^{(n_.)}*(RgX_), x_Symbol] :> \text{With}[\{u = \text{ExpandIntegrand}[(a + b*\text{Log}[c*RfX^p])^n, RgX, x]\}, \text{Int}[u, x] /; \text{SumQ}[u]] /; \text{FreeQ}[\{a, b, c, p\}, x] \&\& \text{RationalFunctionQ}[RfX, x] \&\& \text{RationalFunctionQ}[RgX, x] \&\& \text{IGtQ}[n, 0]$

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :=> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /; !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] :=> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :=> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\begin{aligned}
\int \frac{(79c + 79dx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{(ag + bgx)^2} dx &= \int \left(\frac{493039d^2(3bc - 2ad) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^3g^2} + \frac{493039d^3x \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^3g^2} \right) dx \\
&= \frac{(493039d^3) \int x \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 dx}{b^2g^2} + \frac{(493039d^2(3bc - 2ad)) \int \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 dx}{b^3g^2} \\
&= \frac{493039d^2(3bc - 2ad)x \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^3g^2} + \frac{493039d^3x^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{2b^2g^2} \\
&= \frac{493039d^2(3bc - 2ad)x \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^3g^2} + \frac{493039d^3x^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{2b^2g^2} \\
&= \frac{493039d^2(3bc - 2ad)x \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^3g^2} + \frac{493039d^3x^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{2b^2g^2} \\
&= \frac{493039d^2(3bc - 2ad)x \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^3g^2} + \frac{493039d^3x^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{2b^2g^2} \\
&= -\frac{493039ABd^2(bc - ad)x}{b^3g^2} - \frac{986078B(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^4g^2(a + bx)} \\
&= -\frac{493039ABd^2(bc - ad)x}{b^3g^2} - \frac{493039B^2d^2(bc - ad)(a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{b^4g^2} \\
&= -\frac{493039ABd^2(bc - ad)x}{b^3g^2} - \frac{493039B^2d^2(bc - ad)(a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{b^4g^2} \\
&= -\frac{493039ABd^2(bc - ad)x}{b^3g^2} - \frac{986078B^2(bc - ad)^3}{b^4g^2(a + bx)} - \frac{986078B^2d(bc - ad)}{b^4g^2} \\
&= -\frac{493039ABd^2(bc - ad)x}{b^3g^2} - \frac{986078B^2(bc - ad)^3}{b^4g^2(a + bx)} - \frac{986078B^2d(bc - ad)}{b^4g^2} \\
&= -\frac{493039ABd^2(bc - ad)x}{b^3g^2} - \frac{986078B^2(bc - ad)^3}{b^4g^2(a + bx)} - \frac{986078B^2d(bc - ad)}{b^4g^2} \\
&= -\frac{493039ABd^2(bc - ad)x}{b^3g^2} - \frac{986078B^2(bc - ad)^3}{b^4g^2(a + bx)} - \frac{986078B^2d(bc - ad)}{b^4g^2}
\end{aligned}$$

Mathematica [B] time = 17.47, size = 5108, normalized size = 7.38

Result too large to show

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b*g*x)^2,x]

[Out] Result too large to show

fricas [F] time = 0.86, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{A^2 d^3 i^3 x^3 + 3 A^2 c d^2 i^3 x^2 + 3 A^2 c^2 d i^3 x + A^2 c^3 i^3 + (B^2 d^3 i^3 x^3 + 3 B^2 c d^2 i^3 x^2 + 3 B^2 c^2 d i^3 x + B^2 c^3 i^3) \log}{b^2 g^2 x^2 + 2 a b g^2 x + a^2 g^2} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^2,x, algorithm="fricas")

[Out] integral((A^2*d^3*i^3*x^3 + 3*A^2*c*d^2*i^3*x^2 + 3*A^2*c^2*d*i^3*x + A^2*c^3*i^3 + (B^2*d^3*i^3*x^3 + 3*B^2*c*d^2*i^3*x^2 + 3*B^2*c^2*d*i^3*x + B^2*c^3*i^3)*log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*B*d^3*i^3*x^3 + 3*A*B*c*d^2*i^3*x^2 + 3*A*B*c^2*d*i^3*x + A*B*c^3*i^3)*log((b*e*x + a*e)/(d*x + c)))/(b^2*g^2*x^2 + 2*a*b*g^2*x + a^2*g^2), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^2,x, algorithm="giac")

[Out] Timed out

maple [F] time = 2.25, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci)^3 \left(B \ln \left(\frac{bx+a}{dx+c} \right) + A \right)^2}{(bgx + ag)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^2,x)
```

```
[Out] int((d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^2,x, alg
orithm="maxima")
```

```
[Out] -3*A^2*(a^2/(b^4*g^2*x + a*b^3*g^2) - x/(b^2*g^2) + 2*a*log(b*x + a)/(b^3*g
^2))*c*d^2*i^3 + 1/2*(2*a^3/(b^5*g^2*x + a*b^4*g^2) + 6*a^2*log(b*x + a)/(b
^4*g^2) + (b*x^2 - 4*a*x)/(b^3*g^2))*A^2*d^3*i^3 + 3*A^2*c^2*d*i^3*(a/(b^3*
g^2*x + a*b^2*g^2) + log(b*x + a)/(b^2*g^2)) - 2*A*B*c^3*i^3*(log(b*e*x/(d*
x + c) + a*e/(d*x + c))/(b^2*g^2*x + a*b*g^2) + 1/(b^2*g^2*x + a*b*g^2) + d
*log(b*x + a)/((b^2*c - a*b*d)*g^2) - d*log(d*x + c)/((b^2*c - a*b*d)*g^2))
- A^2*c^3*i^3/(b^2*g^2*x + a*b*g^2) + 1/2*(B^2*b^3*d^3*i^3*x^3 + 3*(2*b^3*
c*d^2*i^3 - a*b^2*d^3*i^3)*B^2*x^2 + 2*(3*a*b^2*c*d^2*i^3 - 2*a^2*b*d^3*i^3
)*B^2*x - 2*(b^3*c^3*i^3 - 3*a*b^2*c^2*d*i^3 + 3*a^2*b*c*d^2*i^3 - a^3*d^3*
i^3)*B^2 + 6*((b^3*c^2*d*i^3 - 2*a*b^2*c*d^2*i^3 + a^2*b*d^3*i^3)*B^2*x + (
a*b^2*c^2*d*i^3 - 2*a^2*b*c*d^2*i^3 + a^3*d^3*i^3)*B^2)*log(b*x + a)*log(d
*x + c)^2/(b^5*g^2*x + a*b^4*g^2) - integrate(-(B^2*b^4*c^4*i^3*log(e)^2 +
(B^2*b^4*d^4*i^3*log(e)^2 + 2*A*B*b^4*d^4*i^3*log(e))*x^4 + 4*(B^2*b^4*c*d^
3*i^3*log(e)^2 + 2*A*B*b^4*c*d^3*i^3*log(e))*x^3 + 6*(B^2*b^4*c^2*d^2*i^3*1
og(e)^2 + 2*A*B*b^4*c^2*d^2*i^3*log(e))*x^2 + (B^2*b^4*d^4*i^3*x^4 + 4*B^2*
b^4*c*d^3*i^3*x^3 + 6*B^2*b^4*c^2*d^2*i^3*x^2 + 4*B^2*b^4*c^3*d*i^3*x + B^2
*b^4*c^4*i^3)*log(b*x + a)^2 + 2*(2*B^2*b^4*c^3*d*i^3*log(e)^2 + 3*A*B*b^4*
c^3*d*i^3*log(e))*x + 2*(B^2*b^4*c^4*i^3*log(e) + (B^2*b^4*d^4*i^3*log(e) +
A*B*b^4*d^4*i^3)*x^4 + 4*(B^2*b^4*c*d^3*i^3*log(e) + A*B*b^4*c*d^3*i^3)*x^
3 + 6*(B^2*b^4*c^2*d^2*i^3*log(e) + A*B*b^4*c^2*d^2*i^3)*x^2 + (4*B^2*b^4*c
^3*d*i^3*log(e) + 3*A*B*b^4*c^3*d*i^3)*x)*log(b*x + a) - ((2*A*B*b^4*d^4*i^
3 + (2*i^3*log(e) + i^3)*B^2*b^4*d^4)*x^4 + 2*(4*A*B*b^4*c*d^3*i^3 - (a*b^3
*d^4*i^3 - (4*i^3*log(e) + 3*i^3)*b^4*c*d^3)*B^2)*x^3 + 2*(b^4*c^4*i^3*log(
e) - a*b^3*c^3*d*i^3 + 3*a^2*b^2*c^2*d^2*i^3 - 3*a^3*b*c*d^3*i^3 + a^4*d^4*
i^3)*B^2 + (12*A*B*b^4*c^2*d^2*i^3 + (12*b^4*c^2*d^2*i^3*log(e) + 12*a*b^3*
c*d^3*i^3 - 7*a^2*b^2*d^4*i^3)*B^2)*x^2 + 2*(3*A*B*b^4*c^3*d*i^3 + (3*a*b^3
*c^2*d^2*i^3 - a^3*b*d^4*i^3 + (4*i^3*log(e) - i^3)*b^4*c^3*d)*B^2)*x + 2*(
B^2*b^4*d^4*i^3*x^4 + 4*B^2*b^4*c*d^3*i^3*x^3 + 3*(3*b^4*c^2*d^2*i^3 - 2*a*
b^3*c*d^3*i^3 + a^2*b^2*d^4*i^3)*B^2*x^2 + 2*(2*b^4*c^3*d*i^3 + 3*a*b^3*c^2
*d^2*i^3 - 6*a^2*b^2*c*d^3*i^3 + 3*a^3*b*d^4*i^3)*B^2*x + (b^4*c^4*i^3 + 3*
a^2*b^2*c^2*d^2*i^3 - 6*a^3*b*c*d^3*i^3 + 3*a^4*d^4*i^3)*B^2)*log(b*x + a)
*log(d*x + c))/(b^6*d*g^2*x^3 + a^2*b^4*c*g^2 + (b^6*c*g^2 + 2*a*b^5*d*g^2)
*x^2 + (2*a*b^5*c*g^2 + a^2*b^4*d*g^2)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ci + dix)^3 \left(A + B \ln \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{(ag + bgx)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x)^2,x)

[Out] int(((c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x)^2, x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)**2,x)

[Out] Timed out

$$3.80 \quad \int \frac{(ci+dx)^3 \left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)^2}{(ag+bgx)^3} dx$$

Optimal. Leaf size=604

$$\frac{d^3 i^3 (a+bx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)^2}{b^4 g^3} + \frac{6Bd^2 i^3 (bc-ad) \text{Li}_2\left(\frac{b(c+dx)}{d(a+bx)}\right) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{b^4 g^3} + \frac{2Bd^2 i^3 (bc-ad) \log\left(\frac{bc-d(a+bx)}{b(c+dx)}\right)}{b^4 g^3}$$

[Out] $-4*B^2*d*(-a*d+b*c)*i^3*(d*x+c)/b^3/g^3/(b*x+a)-1/4*B^2*(-a*d+b*c)*i^3*(d*x+c)^2/b^2/g^3/(b*x+a)^2-4*B*d*(-a*d+b*c)*i^3*(d*x+c)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^3/g^3/(b*x+a)-1/2*B*(-a*d+b*c)*i^3*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^2/g^3/(b*x+a)^2+2*B*d^2*(-a*d+b*c)*i^3*\ln((-a*d+b*c)/b/(d*x+c))*(A+B*\ln(e*(b*x+a)/(d*x+c)))/b^4/g^3+d^3*i^3*(b*x+a)*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/b^4/g^3-2*d*(-a*d+b*c)*i^3*(d*x+c)*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/b^3/g^3/(b*x+a)-1/2*(-a*d+b*c)*i^3*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/b^2/g^3/(b*x+a)^2-3*d^2*(-a*d+b*c)*i^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2*\ln(1-b*(d*x+c)/d/(b*x+a))/b^4/g^3+2*B^2*d^2*(-a*d+b*c)*i^3*\text{polylog}(2,d*(b*x+a)/b/(d*x+c))/b^4/g^3+6*B*d^2*(-a*d+b*c)*i^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))*\text{polylog}(2,b*(d*x+c)/d/(b*x+a))/b^4/g^3+6*B^2*d^2*(-a*d+b*c)*i^3*\text{polylog}(3,b*(d*x+c)/d/(b*x+a))/b^4/g^3$

Rubi [B] time = 4.93, antiderivative size = 1412, normalized size of antiderivative = 2.34, number of steps used = 95, number of rules used = 21, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}} = 0.500$, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 44, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610}

$$\frac{aB^2d^3 \log^2(a+bx)i^3}{b^4g^3} + \frac{5B^2d^2(bc-ad) \log^2(a+bx)i^3}{2b^4g^3} - \frac{3ABd^2(bc-ad) \log^2(a+bx)i^3}{b^4g^3} - \frac{3B^2d^2(bc-ad) \log\left(-\frac{bc-d(a+bx)}{b(c+dx)}\right)}{b^4g^3}$$

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b*g*x)^3, x]

[Out] $-(B^2*(b*c - a*d)^3*i^3)/(4*b^4*g^3*(a + b*x)^2) - (9*B^2*d*(b*c - a*d)^2*i^3)/(2*b^4*g^3*(a + b*x)) - (9*B^2*d^2*(b*c - a*d)*i^3*\text{Log}[a + b*x])/(2*b^4*g^3) - (a*B^2*d^3*i^3*\text{Log}[a + b*x]^2)/(b^4*g^3) - (3*A*B*d^2*(b*c - a*d)*i^3*\text{Log}[a + b*x]^2)/(b^4*g^3) + (5*B^2*d^2*(b*c - a*d)*i^3*\text{Log}[a + b*x]^2)/(2*b^4*g^3) - (3*B^2*d^2*(b*c - a*d)*i^3*\text{Log}[-((b*c - a*d)/(d*(a + b*x))])*\text{Log}[(e*(a + b*x))/(c + d*x)]^2)/(b^4*g^3) - (3*B^2*d^2*(b*c - a*d)*i^3*\text{Log}[a + b*x]*\text{Log}[(e*(a + b*x))/(c + d*x)]^2)/(b^4*g^3) - (B*(b*c - a*d)^3*i^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(2*b^4*g^3*(a + b*x)^2) - (5*B*d*(b*c -$

$$\begin{aligned}
& a*d)^2*i^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(b^4*g^3*(a + b*x)) + (2* \\
& a*B*d^3*i^3*\text{Log}[a + b*x]*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(b^4*g^3) - \\
& (5*B*d^2*(b*c - a*d)*i^3*\text{Log}[a + b*x]*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)])) \\
& / (b^4*g^3) + (d^3*i^3*x*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]^2)/(b^3*g^3) - \\
& ((b*c - a*d)^3*i^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]^2)/(2*b^4*g^3*(a + \\
& b*x)^2) - (3*d*(b*c - a*d)^2*i^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]^2)/(\\
& b^4*g^3*(a + b*x)) + (3*d^2*(b*c - a*d)*i^3*\text{Log}[a + b*x]*(A + B*\text{Log}[(e*(a + \\
& b*x))/(c + d*x)]^2)/(b^4*g^3) + (9*B^2*d^2*(b*c - a*d)*i^3*\text{Log}[c + d*x])/ \\
& (2*b^4*g^3) + (2*B^2*c*d^2*i^3*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c + d* \\
& x])/(b^3*g^3) - (5*B^2*d^2*(b*c - a*d)*i^3*\text{Log}[-((d*(a + b*x))/(b*c - a*d)) \\
&]*\text{Log}[c + d*x])/(b^4*g^3) - (2*B*c*d^2*i^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d* \\
& x)])*\text{Log}[c + d*x])/(b^3*g^3) + (5*B*d^2*(b*c - a*d)*i^3*(A + B*\text{Log}[(e*(a + \\
& b*x))/(c + d*x)]*\text{Log}[c + d*x])/(b^4*g^3) - (B^2*c*d^2*i^3*\text{Log}[c + d*x]^2)/ \\
& (b^3*g^3) + (5*B^2*d^2*(b*c - a*d)*i^3*\text{Log}[c + d*x]^2)/(2*b^4*g^3) + (2*a*B \\
& ^2*d^3*i^3*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)]/(b^4*g^3) + (6*A*B \\
& d^2*(b*c - a*d)*i^3*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)]/(b^4*g^3) \\
& - (5*B^2*d^2*(b*c - a*d)*i^3*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)]/(\\
& b^4*g^3) + (2*a*B^2*d^3*i^3*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))])/(b^4* \\
& g^3) + (6*A*B*d^2*(b*c - a*d)*i^3*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))]) \\
& / (b^4*g^3) - (5*B^2*d^2*(b*c - a*d)*i^3*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a \\
& *d))])/(b^4*g^3) + (2*B^2*c*d^2*i^3*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]/ \\
& (b^3*g^3) - (5*B^2*d^2*(b*c - a*d)*i^3*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d) \\
&])/(b^4*g^3) + (6*B^2*d^2*(b*c - a*d)*i^3*\text{Log}[(e*(a + b*x))/(c + d*x)]*\text{Poly} \\
& \text{Log}[2, 1 + (b*c - a*d)/(d*(a + b*x))])/(b^4*g^3) + (6*B^2*d^2*(b*c - a*d)*i \\
& ^3*\text{PolyLog}[3, 1 + (b*c - a*d)/(d*(a + b*x))])/(b^4*g^3)
\end{aligned}$$

Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 44

```
Int[((a_) + (b_)*(x_))^(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)/(x_), x_Symbol] := Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2317

```
Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)^(p_)/((d_) + (e_)*(x_)), x_Symb
```

```
o1] := Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
  Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
  x_Symbol] := Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]/(x_), x_Symbol] := -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x
), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] := Dist[1/e, Subst[Int
[(g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```


Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol]
:> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol]
:> -Simp[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/h, x]
+ Dist[(p*r*s*(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q]^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ[
b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))
^(q_.)]^(r_.)]^(s_.)*(u_), x_Symbol]
:> With[{g = Simplify[(v - 1)*(c + d*x)/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]},
-Simp[(h*PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/(b*c - a*d), x]
+ Dist[h*p*r*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x] /; FreeQ[{a, b, c, d, e, f,
p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_Symbol]
:> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g + h*x)^t]^u)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^(s + 1))/(p*r*(s + 1)*(b*c - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2523

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol]
:> Simp[x*(a + b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol]
:> Simp[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^n)/e, x] - Dist[(b*n*p)/e,
Int[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.),
x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1)),
x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a +
b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /;
FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x]
&& IGtQ[n, 0]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v, x]},
Simp[w*PolyLog[n + 1, v], x] /; !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; SimplifyIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]]
```

Rubi steps

$$\begin{aligned}
\int \frac{(80c + 80dx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{(ag + bgx)^3} dx &= \int \left(\frac{512000d^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^3g^3} + \frac{512000(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^3g^3(a + bx)^3} \right) dx \\
&= \frac{(512000d^3) \int \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 dx}{b^3g^3} + \frac{(1536000d^2(bc - ad))}{b^3g^3} \int \frac{\left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{a + bx} dx \\
&= \frac{512000d^3x \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^3g^3} - \frac{256000(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^4g^3(a + bx)^2} \\
&= \frac{512000d^3x \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^3g^3} - \frac{256000(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^4g^3(a + bx)^2} \\
&= \frac{512000d^3x \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^3g^3} - \frac{256000(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^4g^3(a + bx)^2} \\
&= \frac{512000d^3x \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^3g^3} - \frac{256000(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^4g^3(a + bx)^2} \\
&= -\frac{256000B(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^4g^3(a + bx)^2} - \frac{2560000Bd(bc - ad)}{b^4g^3} \\
&= -\frac{256000B(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^4g^3(a + bx)^2} - \frac{2560000Bd(bc - ad)}{b^4g^3} \\
&= -\frac{1536000B^2d^2(bc - ad) \log(a + bx) \log^2 \left(\frac{e(a+bx)}{c+dx} \right)}{b^4g^3} - \frac{256000B(bc - ad)}{b^4g^3} \\
&= -\frac{128000B^2(bc - ad)^3}{b^4g^3(a + bx)^2} - \frac{2304000B^2d(bc - ad)^2}{b^4g^3(a + bx)} - \frac{2304000B^2d^2(bc - ad)}{b^4g^3} \\
&= -\frac{128000B^2(bc - ad)^3}{b^4g^3(a + bx)^2} - \frac{2304000B^2d(bc - ad)^2}{b^4g^3(a + bx)} - \frac{2304000B^2d^2(bc - ad)}{b^4g^3} \\
&= -\frac{128000B^2(bc - ad)^3}{b^4g^3(a + bx)^2} - \frac{2304000B^2d(bc - ad)^2}{b^4g^3(a + bx)} - \frac{2304000B^2d^2(bc - ad)}{b^4g^3} \\
&= -\frac{128000B^2(bc - ad)^3}{b^4g^3(a + bx)^2} - \frac{2304000B^2d(bc - ad)^2}{b^4g^3(a + bx)} - \frac{2304000B^2d^2(bc - ad)}{b^4g^3}
\end{aligned}$$

Mathematica [B] time = 14.25, size = 6284, normalized size = 10.40

Result too large to show

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b*g*x)^3,x]

[Out] Result too large to show

fricas [F] time = 0.63, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{A^2 d^3 i^3 x^3 + 3 A^2 c d^2 i^3 x^2 + 3 A^2 c^2 d i^3 x + A^2 c^3 i^3 + (B^2 d^3 i^3 x^3 + 3 B^2 c d^2 i^3 x^2 + 3 B^2 c^2 d i^3 x + B^2 c^3 i^3) \log\left(\frac{e(a+bx)}{c+dx}\right)}{b^3 g^3 x^3 + 3 a b^2 g^3 x^2 + 3 a^2 b g^3 x + a^3 g^3}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^3,x, algorithm="fricas")

[Out] integral((A^2*d^3*i^3*x^3 + 3*A^2*c*d^2*i^3*x^2 + 3*A^2*c^2*d*i^3*x + A^2*c^3*i^3 + (B^2*d^3*i^3*x^3 + 3*B^2*c*d^2*i^3*x^2 + 3*B^2*c^2*d*i^3*x + B^2*c^3*i^3)*log((b*e*x + a*e)/(d*x + c)))^2 + 2*(A*B*d^3*i^3*x^3 + 3*A*B*c*d^2*i^3*x^2 + 3*A*B*c^2*d*i^3*x + A*B*c^3*i^3)*log((b*e*x + a*e)/(d*x + c)))/(b^3*g^3*x^3 + 3*a*b^2*g^3*x^2 + 3*a^2*b*g^3*x + a^3*g^3), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^3,x, algorithm="giac")

[Out] Timed out

maple [F] time = 2.29, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci)^3 \left(B \ln\left(\frac{(bx+a)e}{dx+c}\right) + A \right)^2}{(bgx + ag)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{int}((d*i*x+c*i)^3*(B*\ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^3,x)$

[Out] $\text{int}((d*i*x+c*i)^3*(B*\ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^3,x)$

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{integrate}((d*i*x+c*i)^3*(A+B*\log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^3,x, \text{algorithm}="maxima")$

[Out]
$$\begin{aligned} & -3/2*A*B*c^2*d*i^3*(2*(2*b*x + a)*\log(b*e*x/(d*x + c) + a*e/(d*x + c)))/(b^4 \\ & *g^3*x^2 + 2*a*b^3*g^3*x + a^2*b^2*g^3) + (3*a*b*c - a^2*d + 2*(2*b^2*c - a \\ & *b*d)*x)/((b^5*c - a*b^4*d)*g^3*x^2 + 2*(a*b^4*c - a^2*b^3*d)*g^3*x + (a^2* \\ & b^3*c - a^3*b^2*d)*g^3) + 2*(2*b*c*d - a*d^2)*\log(b*x + a)/((b^4*c^2 - 2*a* \\ & b^3*c*d + a^2*b^2*d^2)*g^3) - 2*(2*b*c*d - a*d^2)*\log(d*x + c)/((b^4*c^2 - \\ & 2*a*b^3*c*d + a^2*b^2*d^2)*g^3)) - 1/2*A^2*d^3*i^3*((6*a^2*b*x + 5*a^3)/(b^ \\ & 6*g^3*x^2 + 2*a*b^5*g^3*x + a^2*b^4*g^3) - 2*x/(b^3*g^3) + 6*a*\log(b*x + a) \\ & / (b^4*g^3)) + 3/2*A^2*c*d^2*i^3*((4*a*b*x + 3*a^2)/(b^5*g^3*x^2 + 2*a*b^4*g \\ & ^3*x + a^2*b^3*g^3) + 2*\log(b*x + a)/(b^3*g^3)) + 1/2*A*B*c^3*i^3*((2*b*d*x \\ & - b*c + 3*a*d)/((b^4*c - a*b^3*d)*g^3*x^2 + 2*(a*b^3*c - a^2*b^2*d)*g^3*x \\ & + (a^2*b^2*c - a^3*b*d)*g^3) - 2*\log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^3* \\ & g^3*x^2 + 2*a*b^2*g^3*x + a^2*b*g^3) + 2*d^2*\log(b*x + a)/((b^3*c^2 - 2*a*b \\ & ^2*c*d + a^2*b*d^2)*g^3) - 2*d^2*\log(d*x + c)/((b^3*c^2 - 2*a*b^2*c*d + a^2 \\ & *b*d^2)*g^3)) - 3/2*(2*b*x + a)*A^2*c^2*d*i^3/(b^4*g^3*x^2 + 2*a*b^3*g^3*x \\ & + a^2*b^2*g^3) - 1/2*A^2*c^3*i^3/(b^3*g^3*x^2 + 2*a*b^2*g^3*x + a^2*b*g^3) \\ & + 1/2*(2*B^2*b^3*d^3*i^3*x^3 + 4*B^2*a*b^2*d^3*i^3*x^2 - 2*(3*b^3*c^2*d*i^3 \\ & - 6*a*b^2*c*d^2*i^3 + 2*a^2*b*d^3*i^3)*B^2*x - (b^3*c^3*i^3 + 3*a*b^2*c^2* \\ & d*i^3 - 9*a^2*b*c*d^2*i^3 + 5*a^3*d^3*i^3)*B^2 + 6*((b^3*c*d^2*i^3 - a*b^2* \\ & d^3*i^3)*B^2*x^2 + 2*(a*b^2*c*d^2*i^3 - a^2*b*d^3*i^3)*B^2*x + (a^2*b*c*d^2 \\ & *i^3 - a^3*d^3*i^3)*B^2)*\log(b*x + a))*\log(d*x + c)^2/(b^6*g^3*x^2 + 2*a*b^ \\ & 5*g^3*x + a^2*b^4*g^3) - \text{integrate}(-(4*B^2*b^4*c^3*d*i^3*x*\log(e))^2 + B^2*b \\ & ^4*c^4*i^3*\log(e)^2 + (B^2*b^4*d^4*i^3*\log(e))^2 + 2*A*B*b^4*d^4*i^3*\log(e)) \\ & *x^4 + 4*(B^2*b^4*c*d^3*i^3*\log(e)^2 + 2*A*B*b^4*c*d^3*i^3*\log(e))*x^3 + 6* \\ & (B^2*b^4*c^2*d^2*i^3*\log(e)^2 + A*B*b^4*c^2*d^2*i^3*\log(e))*x^2 + (B^2*b^4* \\ & d^4*i^3*x^4 + 4*B^2*b^4*c*d^3*i^3*x^3 + 6*B^2*b^4*c^2*d^2*i^3*x^2 + 4*B^2*b \\ & ^4*c^3*d*i^3*x + B^2*b^4*c^4*i^3)*\log(b*x + a)^2 + 2*(4*B^2*b^4*c^3*d*i^3*x \\ & *\log(e) + B^2*b^4*c^4*i^3*\log(e) + (B^2*b^4*d^4*i^3*\log(e) + A*B*b^4*d^4*i^ \\ & 3)*x^4 + 4*(B^2*b^4*c*d^3*i^3*\log(e) + A*B*b^4*c*d^3*i^3)*x^3 + 3*(2*B^2*b^ \\ & 4*c^2*d^2*i^3*\log(e) + A*B*b^4*c^2*d^2*i^3)*x^2)*\log(b*x + a) - (2*(A*B*b^4 \\ & *d^4*i^3 + (i^3*\log(e) + i^3)*B^2*b^4*d^4)*x^4 - (9*a*b^3*c^2*d^2*i^3 - 21* \\ & a^2*b^2*c*d^3*i^3 + 9*a^3*b*d^4*i^3 - (8*i^3*\log(e) - i^3)*b^4*c^3*d)*B^2*x \\ & + 2*(4*A*B*b^4*c*d^3*i^3 + (4*b^4*c*d^3*i^3*\log(e) + 3*a*b^3*d^4*i^3)*B^2) \\ & *x^3 + (2*b^4*c^4*i^3*\log(e) - a*b^3*c^3*d*i^3 - 3*a^2*b^2*c^2*d^2*i^3 + 9* \end{aligned}$$

$$a^3 b^3 c^3 d^3 i^3 - 5 a^4 d^4 i^3 B^2 + 6 (A B b^4 c^2 d^2 i^3 + (2 a b^3 c^2 d^3 i^3 + (2 i^3 \log(e) - i^3) b^4 c^2 d^2) B^2) x^2 + 2 (B^2 b^4 d^4 i^3 x^4 + (7 b^4 c^2 d^3 i^3 - 3 a b^3 d^4 i^3) B^2 x^3 + 3 (2 b^4 c^2 d^2 i^3 + 3 a b^3 c^2 d^3 i^3 - 3 a^2 b^2 d^4 i^3) B^2 x^2 + (4 b^4 c^3 d i^3 + 9 a^2 b^2 c^2 d^3 i^3 - 9 a^3 b d^4 i^3) B^2 x + (b^4 c^4 i^3 + 3 a^3 b^3 c^2 d^3 i^3 - 3 a^4 d^4 i^3) B^2) \log(bx + a) \log(dx + c) / (b^7 d^3 g^3 x^4 + a^3 b^4 c^3 g^3 + (b^7 c^3 g^3 + 3 a b^6 d^3 g^3) x^3 + 3 (a b^6 c^3 g^3 + a^2 b^5 d^3 g^3) x^2 + (3 a^2 b^5 c^3 g^3 + a^3 b^4 d^3 g^3) x), x$$

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ci + dix)^3 \left(A + B \ln \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{(ag + bgx)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x)^3,x)

[Out] int(((c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x)^3, x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)**3,x)

[Out] Timed out

$$3.81 \quad \int \frac{(ci+dx)^3 \left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)^2}{(ag+bgx)^5} dx$$

Optimal. Leaf size=147

$$\frac{i^3(c+dx)^4 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)^2}{4g^5(a+bx)^4(bc-ad)} - \frac{Bi^3(c+dx)^4 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{8g^5(a+bx)^4(bc-ad)} - \frac{B^2i^3(c+dx)^4}{32g^5(a+bx)^4(bc-ad)}$$

[Out] $-1/32*B^2*i^3*(d*x+c)^4/(-a*d+b*c)/g^5/(b*x+a)^4-1/8*B*i^3*(d*x+c)^4*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)/g^5/(b*x+a)^4-1/4*i^3*(d*x+c)^4*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/(-a*d+b*c)/g^5/(b*x+a)^4$

Rubi [C] time = 4.54, antiderivative size = 970, normalized size of antiderivative = 6.60, number of steps used = 130, number of rules used = 11, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}} = 0.262$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{B^2i^3 \log^2(a+bx)d^4}{4b^4(bc-ad)g^5} + \frac{B^2i^3 \log^2(c+dx)d^4}{4b^4(bc-ad)g^5} - \frac{B^2i^3 \log(a+bx)d^4}{8b^4(bc-ad)g^5} - \frac{Bi^3 \log(a+bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right) d^4}{2b^4(bc-ad)g^5} + \frac{B^2i^3 \log^2(a+bx)d^4}{8b^4(bc-ad)g^5}$$

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b*g*x)^5, x]

[Out] $-(B^2*(b*c - a*d)^3*i^3)/(32*b^4*g^5*(a + b*x)^4) - (B^2*d*(b*c - a*d)^2*i^3)/(8*b^4*g^5*(a + b*x)^3) - (3*B^2*d^2*(b*c - a*d)*i^3)/(16*b^4*g^5*(a + b*x)^2) - (B^2*d^3*i^3)/(8*b^4*g^5*(a + b*x)) - (B^2*d^4*i^3*Log[a + b*x])/(8*b^4*(b*c - a*d)*g^5) + (B^2*d^4*i^3*Log[a + b*x]^2)/(4*b^4*(b*c - a*d)*g^5) - (B*(b*c - a*d)^3*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(8*b^4*g^5*(a + b*x)^4) - (B*d*(b*c - a*d)^2*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(2*b^4*g^5*(a + b*x)^3) - (3*B*d^2*(b*c - a*d)*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(4*b^4*g^5*(a + b*x)^2) - (B*d^3*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(2*b^4*g^5*(a + b*x)) - (B*d^4*i^3*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(2*b^4*(b*c - a*d)*g^5) - ((b*c - a*d)^3*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(4*b^4*g^5*(a + b*x)^4) - (d*(b*c - a*d)^2*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(b^4*g^5*(a + b*x)^3) - (3*d^2*(b*c - a*d)*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(2*b^4*g^5*(a + b*x)^2) - (d^3*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(b^4*g^5*(a + b*x)) + (B^2*d^4*i^3*Log[c + d*x])/(8*b^4*(b*c - a*d)*g^5) - (B^2*d^4*i^3*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(2*b^4*(b*c - a*d)*g^5) + (B*d^4*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/(2*b^4*(b*c - a*d)*g^5)$

$$d)*g^5) + (B^2*d^4*i^3*Log[c + d*x]^2)/(4*b^4*(b*c - a*d)*g^5) - (B^2*d^4*i^3*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)]/(2*b^4*(b*c - a*d)*g^5) - (B^2*d^4*i^3*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))]/(2*b^4*(b*c - a*d)*g^5) - (B^2*d^4*i^3*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]/(2*b^4*(b*c - a*d)*g^5)$$
Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 44

```
Int[((a_) + (b_)*(x_))^(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_) + Log[(c_)*(x_)]^(n_))* (b_)]/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_))* (b_)]^(p_)*((f_) + (g_)*(x_))^(q_), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_)*((d_) + (e_)*(x_))^(n_)]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))])*(b_)]/((f_) + (g_)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_))* (b_)]/((f_) + (g_)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
```



```
)^n))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n]^p, RFx, x]}, Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(81c + 81dx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{(ag + bgx)^5} dx &= \int \left(\frac{531441(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^3 g^5 (a + bx)^5} + \frac{1594323d(bc - ad)^2}{b^3 g^5 (a + bx)^5} \right) dx \\
&= \frac{(531441d^3) \int \frac{\left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{(a+bx)^2} dx}{b^3 g^5} + \frac{(1594323d^2(bc - ad)) \int \frac{A + B \log \left(\frac{e(a+bx)}{c+dx} \right)}{a+bx} dx}{b^3 g^5} \\
&= -\frac{531441(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{4b^4 g^5 (a + bx)^4} - \frac{531441d(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^4 g^5 (a + bx)^4} \\
&= -\frac{531441(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{4b^4 g^5 (a + bx)^4} - \frac{531441d(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^4 g^5 (a + bx)^4} \\
&= -\frac{531441(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{4b^4 g^5 (a + bx)^4} - \frac{531441d(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^4 g^5 (a + bx)^4} \\
&= -\frac{531441(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{4b^4 g^5 (a + bx)^4} - \frac{531441d(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^4 g^5 (a + bx)^4} \\
&= -\frac{531441B(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{8b^4 g^5 (a + bx)^4} - \frac{531441Bd(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{2b^4 g^5 (a + bx)^4} \\
&= -\frac{531441B(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{8b^4 g^5 (a + bx)^4} - \frac{531441Bd(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{2b^4 g^5 (a + bx)^4} \\
&= -\frac{531441B(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{8b^4 g^5 (a + bx)^4} - \frac{531441Bd(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{2b^4 g^5 (a + bx)^4} \\
&= -\frac{531441B^2(bc - ad)^3}{32b^4 g^5 (a + bx)^4} - \frac{531441B^2d(bc - ad)^2}{8b^4 g^5 (a + bx)^3} - \frac{1594323B^2d^2(bc - ad)}{16b^4 g^5 (a + bx)^2} \\
&= -\frac{531441B^2(bc - ad)^3}{32b^4 g^5 (a + bx)^4} - \frac{531441B^2d(bc - ad)^2}{8b^4 g^5 (a + bx)^3} - \frac{1594323B^2d^2(bc - ad)}{16b^4 g^5 (a + bx)^2} \\
&= -\frac{531441B^2(bc - ad)^3}{32b^4 g^5 (a + bx)^4} - \frac{531441B^2d(bc - ad)^2}{8b^4 g^5 (a + bx)^3} - \frac{1594323B^2d^2(bc - ad)}{16b^4 g^5 (a + bx)^2}
\end{aligned}$$

Mathematica [C] time = 1.44, size = 2470, normalized size = 16.80

Result too large to show

Antiderivative was successfully verified.

[In] Integrate[(((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))^2)/(a*g + b*g*x)^5,x]

[Out]
$$-1/32*(i^3*(8*A^2*b^4*c^4 + 4*A*b^4*B*c^4 + b^4*B^2*c^4 - 8*a^4*A^2*d^4 - 4*a^4*A*B*d^4 - a^4*B^2*d^4 + 32*A^2*b^4*c^3*d*x + 16*A*b^4*B*c^3*d*x + 4*b^4*B^2*c^3*d*x - 32*a^3*A^2*b*d^4*x - 16*a^3*A*b*B*d^4*x - 4*a^3*b*B^2*d^4*x + 48*A^2*b^4*c^2*d^2*x^2 + 24*A*b^4*B*c^2*d^2*x^2 + 6*b^4*B^2*c^2*d^2*x^2 - 48*a^2*A^2*b^2*d^4*x^2 - 24*a^2*A*b^2*B*d^4*x^2 - 6*a^2*b^2*B^2*d^4*x^2 + 32*A^2*b^4*c*d^3*x^3 + 16*A*b^4*B*c*d^3*x^3 + 4*b^4*B^2*c*d^3*x^3 - 32*a*A^2*b^3*d^4*x^3 - 16*a*A*b^3*B*d^4*x^3 - 4*a*b^3*B^2*d^4*x^3 + 16*a^4*A*B*d^4*Log[a + b*x] + 4*a^4*B^2*d^4*Log[a + b*x] + 64*a^3*A*b*B*d^4*x*Log[a + b*x] + 16*a^3*b*B^2*d^4*x*Log[a + b*x] + 96*a^2*A*b^2*B*d^4*x^2*Log[a + b*x] + 24*a^2*b^2*B^2*d^4*x^2*Log[a + b*x] + 64*a*A*b^3*B*d^4*x^3*Log[a + b*x] + 16*a*b^3*B^2*d^4*x^3*Log[a + b*x] + 16*A*b^4*B*d^4*x^4*Log[a + b*x] + 4*b^4*B^2*d^4*x^4*Log[a + b*x] - 8*a^4*B^2*d^4*Log[a + b*x]^2 - 32*a^3*b*B^2*d^4*x*Log[a + b*x]^2 - 48*a^2*b^2*B^2*d^4*x^2*Log[a + b*x]^2 - 32*a*b^3*B^2*d^4*x^3*Log[a + b*x]^2 - 8*b^4*B^2*d^4*x^4*Log[a + b*x]^2 + 16*A*b^4*B*c^4*Log[(e*(a + b*x))/(c + d*x)] + 4*b^4*B^2*c^4*Log[(e*(a + b*x))/(c + d*x)] - 16*a^4*A*B*d^4*Log[(e*(a + b*x))/(c + d*x)] - 4*a^4*B^2*d^4*Log[(e*(a + b*x))/(c + d*x)] + 64*A*b^4*B*c^3*d*x*Log[(e*(a + b*x))/(c + d*x)] + 16*b^4*B^2*c^3*d*x*Log[(e*(a + b*x))/(c + d*x)] - 64*a^3*A*b*B*d^4*x*Log[(e*(a + b*x))/(c + d*x)] - 16*a^3*b*B^2*d^4*x*Log[(e*(a + b*x))/(c + d*x)] + 96*A*b^4*B*c^2*d^2*x^2*Log[(e*(a + b*x))/(c + d*x)] + 24*b^4*B^2*c^2*d^2*x^2*Log[(e*(a + b*x))/(c + d*x)] - 96*a^2*A*b^2*B*d^4*x^2*Log[(e*(a + b*x))/(c + d*x)] - 24*a^2*b^2*B^2*d^4*x^2*Log[(e*(a + b*x))/(c + d*x)] + 64*A*b^4*B*c*d^3*x^3*Log[(e*(a + b*x))/(c + d*x)] + 16*b^4*B^2*c*d^3*x^3*Log[(e*(a + b*x))/(c + d*x)] - 64*a*A*b^3*B*d^4*x^3*Log[(e*(a + b*x))/(c + d*x)] - 16*a*b^3*B^2*d^4*x^3*Log[(e*(a + b*x))/(c + d*x)] + 16*a^4*B^2*d^4*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)] + 64*a^3*b*B^2*d^4*x*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)] + 96*a^2*b^2*B^2*d^4*x^2*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)] + 64*a*b^3*B^2*d^4*x^3*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)] + 16*b^4*B^2*d^4*x^4*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)] + 8*b^4*B^2*c^4*Log[(e*(a + b*x))/(c + d*x)]^2 - 8*a^4*B^2*d^4*Log[(e*(a + b*x))/(c + d*x)]^2 + 32*b^4*B^2*c^3*d*x*Log[(e*(a + b*x))/(c + d*x)]^2 - 32*a^3*b*B^2*d^4*x*Log[(e*(a + b*x))/(c + d*x)]^2 + 48*b^4*B^2*c^2*d^2*x^2*Log[(e*(a + b*x))/(c + d*x)]^2 - 48*a^2*b^2*B^2*d^4*x^2*Log[(e*(a + b*x))/(c + d*x)]^2 + 32*b^4*B^2*c*d^3*x^3*Log[(e*(a + b*x))/(c + d*x)]^2 - 32*a*b^3*B^2*d^4*x^3*Log[(e*(a + b*x))/(c + d*x)]^2 - 16*a^4*A*B*d^4*Log[c + d*x] - 4*a^4*B^2*d^4*Log[c + d*x] - 64*a^3*A*b*B*d^4*x*Log[c + d*x] - 16*a^3*b*B^2*d^4*x*Log[c + d*x]$$

$$\begin{aligned}
& - 96*a^2*A*b^2*B*d^4*x^2*\text{Log}[c + d*x] - 24*a^2*b^2*B^2*d^4*x^2*\text{Log}[c + d*x] \\
& - 64*a*A*b^3*B*d^4*x^3*\text{Log}[c + d*x] - 16*a*b^3*B^2*d^4*x^3*\text{Log}[c + d*x] - \\
& 16*A*b^4*B*d^4*x^4*\text{Log}[c + d*x] - 4*b^4*B^2*d^4*x^4*\text{Log}[c + d*x] + 16*a^4*B^2*d^4*\text{Log} \\
& [(d*(a + b*x))/(-(b*c) + a*d)]*\text{Log}[c + d*x] + 64*a^3*b*B^2*d^4*x* \\
& \text{Log}[(d*(a + b*x))/(-(b*c) + a*d)]*\text{Log}[c + d*x] + 96*a^2*b^2*B^2*d^4*x^2*\text{Log} \\
& [(d*(a + b*x))/(-(b*c) + a*d)]*\text{Log}[c + d*x] + 64*a*b^3*B^2*d^4*x^3*\text{Log}[(d*(a + \\
& b*x))/(-(b*c) + a*d)]*\text{Log}[c + d*x] + 16*b^4*B^2*d^4*x^4*\text{Log}[(d*(a + b*x) \\
&)/(-(b*c) + a*d)]*\text{Log}[c + d*x] - 16*a^4*B^2*d^4*\text{Log}[(e*(a + b*x))/(c + d*x \\
&)]*\text{Log}[c + d*x] - 64*a^3*b*B^2*d^4*x*\text{Log}[(e*(a + b*x))/(c + d*x)]*\text{Log}[c + d \\
& *x] - 96*a^2*b^2*B^2*d^4*x^2*\text{Log}[(e*(a + b*x))/(c + d*x)]*\text{Log}[c + d*x] - 64 \\
& *a*b^3*B^2*d^4*x^3*\text{Log}[(e*(a + b*x))/(c + d*x)]*\text{Log}[c + d*x] - 16*b^4*B^2*d^4 \\
& *x^4*\text{Log}[(e*(a + b*x))/(c + d*x)]*\text{Log}[c + d*x] - 8*a^4*B^2*d^4*\text{Log}[c + d*x] \\
& ^2 - 32*a^3*b*B^2*d^4*x*\text{Log}[c + d*x]^2 - 48*a^2*b^2*B^2*d^4*x^2*\text{Log}[c + d \\
& *x]^2 - 32*a*b^3*B^2*d^4*x^3*\text{Log}[c + d*x]^2 - 8*b^4*B^2*d^4*x^4*\text{Log}[c + d*x] \\
& ^2 + 16*a^4*B^2*d^4*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)] + 64*a^3*b \\
& *B^2*d^4*x*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)] + 96*a^2*b^2*B^2*d^4 \\
& *x^2*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)] + 64*a*b^3*B^2*d^4*x^3*\text{Log} \\
& [a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)] + 16*b^4*B^2*d^4*x^4*\text{Log}[a + b*x]* \\
& \text{Log}[(b*(c + d*x))/(b*c - a*d)] + 16*B^2*d^4*(a + b*x)^4*\text{PolyLog}[2, (d*(a + \\
& b*x))/(-(b*c) + a*d)] + 16*B^2*d^4*(a + b*x)^4*\text{PolyLog}[2, (b*(c + d*x))/(b*c \\
& - a*d)])))/(b^4*(b*c - a*d)*g^5*(a + b*x)^4)
\end{aligned}$$

fricas [B] time = 0.89, size = 559, normalized size = 3.80

$$\frac{4\left(\left(8A^2 + 4AB + B^2\right)b^4cd^3 - \left(8A^2 + 4AB + B^2\right)ab^3d^4\right)i^3x^3 + 6\left(\left(8A^2 + 4AB + B^2\right)b^4c^2d^2 - \left(8A^2 + 4AB + B^2\right)ab^3c^2d\right)i^3x^2 + \dots}{\dots}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^5,x, alg orithm="fricas")

[Out]
$$\begin{aligned}
& -1/32*(4*((8*A^2 + 4*A*B + B^2)*b^4*c*d^3 - (8*A^2 + 4*A*B + B^2)*a*b^3*d^4) \\
&)*i^3*x^3 + 6*((8*A^2 + 4*A*B + B^2)*b^4*c^2*d^2 - (8*A^2 + 4*A*B + B^2)*a^2 \\
& *b^2*d^4)*i^3*x^2 + 4*((8*A^2 + 4*A*B + B^2)*b^4*c^3*d - (8*A^2 + 4*A*B + B^2) \\
& *a^3*b*d^4)*i^3*x + ((8*A^2 + 4*A*B + B^2)*b^4*c^4 - (8*A^2 + 4*A*B + B^2) \\
& *a^4*d^4)*i^3 + 8*(B^2*b^4*d^4*i^3*x^4 + 4*B^2*b^4*c*d^3*i^3*x^3 + 6*B^2 \\
& *b^4*c^2*d^2*i^3*x^2 + 4*B^2*b^4*c^3*d*i^3*x + B^2*b^4*c^4*i^3)*\text{log}((b*e*x \\
& + a*e)/(d*x + c))^2 + 4*((4*A*B + B^2)*b^4*d^4*i^3*x^4 + 4*(4*A*B + B^2)*b^4 \\
& *c*d^3*i^3*x^3 + 6*(4*A*B + B^2)*b^4*c^2*d^2*i^3*x^2 + 4*(4*A*B + B^2)*b^4 \\
& *c^3*d*i^3*x + (4*A*B + B^2)*b^4*c^4*i^3)*\text{log}((b*e*x + a*e)/(d*x + c)))/((b \\
& ^9*c - a*b^8*d)*g^5*x^4 + 4*(a*b^8*c - a^2*b^7*d)*g^5*x^3 + 6*(a^2*b^7*c - \\
& a^3*b^6*d)*g^5*x^2 + 4*(a^3*b^6*c - a^4*b^5*d)*g^5*x + (a^4*b^5*c - a^5*b^4 \\
& *d)*g^5)
\end{aligned}$$

giac [A] time = 3.22, size = 185, normalized size = 1.26

$$\frac{\left(8 B^2 i e^5 \log\left(\frac{bx+ae}{dx+c}\right)^2 + 16 AB i e^5 \log\left(\frac{bx+ae}{dx+c}\right) + 4 B^2 i e^5 \log\left(\frac{bx+ae}{dx+c}\right) + 8 A^2 i e^5 + 4 AB i e^5 + B^2 i e^5\right)(dx+c)^4}{32 (bx+ae)^4 g^5}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^5,x, algorithm="giac")

[Out] 1/32*(8*B^2*i*e^5*log((b*x*e + a*e)/(d*x + c))^2 + 16*A*B*i*e^5*log((b*x*e + a*e)/(d*x + c)) + 4*B^2*i*e^5*log((b*x*e + a*e)/(d*x + c)) + 8*A^2*i*e^5 + 4*A*B*i*e^5 + B^2*i*e^5)*(d*x + c)^4*(b*c/((b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))/((b*x*e + a*e)^4*g^5)

maple [B] time = 0.05, size = 890, normalized size = 6.05

$$\frac{B^2 ad e^4 i^3 \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)^2}{4(ad-bc)^2 \left(\frac{ae}{dx+c} - \frac{bce}{(dx+c)d} + \frac{be}{d}\right)^4 g^5} - \frac{B^2 bc e^4 i^3 \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)^2}{4(ad-bc)^2 \left(\frac{ae}{dx+c} - \frac{bce}{(dx+c)d} + \frac{be}{d}\right)^4 g^5} + \frac{ABad e^4 i^3 \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{2(ad-bc)^2 \left(\frac{ae}{dx+c} - \frac{bce}{(dx+c)d} + \frac{be}{d}\right)^4 g^5}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^5,x)

[Out] 1/4*d*e^4*i^3/(a*d-b*c)^2/g^5*A^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*a-1/4*e^4*i^3/(a*d-b*c)^2/g^5*A^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*b*c+1/2*d*e^4*i^3/(a*d-b*c)^2/g^5*A*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-1/2*e^4*i^3/(a*d-b*c)^2/g^5*A*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*c+1/8*d*e^4*i^3/(a*d-b*c)^2/g^5*A*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*a-1/8*e^4*i^3/(a*d-b*c)^2/g^5*A*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*b*c+1/4*d*e^4*i^3/(a*d-b*c)^2/g^5*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a-1/4*e^4*i^3/(a*d-b*c)^2/g^5*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b*c+1/8*d*e^4*i^3/(a*d-b*c)^2/g^5*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-1/8*e^4*i^3/(a*d-b*c)^2/g^5*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*c+1/32*d*e^4*i^3/(a*d-b*c)^2/g^5*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*a-1/32*e^4*i^3/(a*d-b*c)^2/g^5*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*b*c

maxima [B] time = 11.34, size = 11688, normalized size = 79.51

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^5,x, algorithm="maxima")

[Out]
$$-1/4*(4*b*x + a)*B^2*c^2*d*i^3*\log(b*e*x/(d*x + c) + a*e/(d*x + c))^2/(b^6*g^5*x^4 + 4*a*b^5*g^5*x^3 + 6*a^2*b^4*g^5*x^2 + 4*a^3*b^3*g^5*x + a^4*b^2*g^5) - 1/4*(6*b^2*x^2 + 4*a*b*x + a^2)*B^2*c*d^2*i^3*\log(b*e*x/(d*x + c) + a*e/(d*x + c))^2/(b^7*g^5*x^4 + 4*a*b^6*g^5*x^3 + 6*a^2*b^5*g^5*x^2 + 4*a^3*b^4*g^5*x + a^4*b^3*g^5) - 1/4*(4*b^3*x^3 + 6*a*b^2*x^2 + 4*a^2*b*x + a^3)*B^2*d^3*i^3*\log(b*e*x/(d*x + c) + a*e/(d*x + c))^2/(b^8*g^5*x^4 + 4*a*b^7*g^5*x^3 + 6*a^2*b^6*g^5*x^2 + 4*a^3*b^5*g^5*x + a^4*b^4*g^5) + 1/288*(12*((12*b^3*d^3*x^3 - 3*b^3*c^3 + 13*a*b^2*c^2*d - 23*a^2*b*c*d^2 + 25*a^3*d^3 - 6*(b^3*c*d^2 - 7*a*b^2*d^3))*x^2 + 4*(b^3*c^2*d - 5*a*b^2*c*d^2 + 13*a^2*b*d^3)*x)/(b^8*c^3 - 3*a*b^7*c^2*d + 3*a^2*b^6*c*d^2 - a^3*b^5*d^3)*g^5*x^4 + 4*(a*b^7*c^3 - 3*a^2*b^6*c^2*d + 3*a^3*b^5*c*d^2 - a^4*b^4*d^3)*g^5*x^3 + 6*(a^2*b^6*c^3 - 3*a^3*b^5*c^2*d + 3*a^4*b^4*c*d^2 - a^5*b^3*d^3)*g^5*x^2 + 4*(a^3*b^5*c^3 - 3*a^4*b^4*c^2*d + 3*a^5*b^3*c*d^2 - a^6*b^2*d^3)*g^5*x + (a^4*b^4*c^3 - 3*a^5*b^3*c^2*d + 3*a^6*b^2*c*d^2 - a^7*b*d^3)*g^5) + 12*d^4*log(b*x + a)/((b^5*c^4 - 4*a*b^4*c^3*d + 6*a^2*b^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)*g^5) - 12*d^4*log(d*x + c)/((b^5*c^4 - 4*a*b^4*c^3*d + 6*a^2*b^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)*g^5))*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - (9*b^4*c^4 - 64*a*b^3*c^3*d + 216*a^2*b^2*c^2*d^2 - 576*a^3*b*c*d^3 + 415*a^4*d^4 - 300*(b^4*c*d^3 - a*b^3*d^4))*x^3 + 6*(13*b^4*c^2*d^2 - 176*a*b^3*c*d^3 + 163*a^2*b^2*d^4)*x^2 + 72*(b^4*d^4*x^4 + 4*a*b^3*d^4*x^3 + 6*a^2*b^2*d^4*x^2 + 4*a^3*b*d^4*x + a^4*d^4)*log(b*x + a)^2 + 72*(b^4*d^4*x^4 + 4*a*b^3*d^4*x^3 + 6*a^2*b^2*d^4*x^2 + 4*a^3*b*d^4*x + a^4*d^4)*log(d*x + c)^2 - 4*(7*b^4*c^3*d - 60*a*b^3*c^2*d^2 + 324*a^2*b^2*c*d^3 - 271*a^3*b*d^4)*x - 300*(b^4*d^4*x^4 + 4*a*b^3*d^4*x^3 + 6*a^2*b^2*d^4*x^2 + 4*a^3*b*d^4*x + a^4*d^4)*log(b*x + a) + 12*(25*b^4*d^4*x^4 + 100*a*b^3*d^4*x^3 + 150*a^2*b^2*d^4*x^2 + 100*a^3*b*d^4*x + 25*a^4*d^4 - 12*(b^4*d^4*x^4 + 4*a*b^3*d^4*x^3 + 6*a^2*b^2*d^4*x^2 + 4*a^3*b*d^4*x + a^4*d^4)*log(b*x + a))*log(d*x + c))/(a^4*b^5*c^4*g^5 - 4*a^5*b^4*c^3*d*g^5 + 6*a^6*b^3*c^2*d^2*g^5 - 4*a^7*b^2*c*d^3*g^5 + a^8*b*d^4*g^5 + (b^9*c^4*g^5 - 4*a*b^8*c^3*d*g^5 + 6*a^2*b^7*c^2*d^2*g^5 - 4*a^3*b^6*c*d^3*g^5 + a^4*b^5*d^4*g^5)*x^4 + 4*(a*b^8*c^4*g^5 - 4*a^2*b^7*c^3*d*g^5 + 6*a^3*b^6*c^2*d^2*g^5 - 4*a^4*b^5*c*d^3*g^5 + a^5*b^4*d^4*g^5)*x^3 + 6*(a^2*b^7*c^4*g^5 - 4*a^3*b^6*c^3*d*g^5 + 6*a^4*b^5*c^2*d^2*g^5 - 4*a^5*b^4*c*d^3*g^5 + a^6*b^3*d^4*g^5)*x^2 + 4*(a^3*b^6*c^4*g^5 - 4*a^4*b^5*c^3*d*g^5 + 6*a^5*b^4*c^2*d^2*g^5 - 4*a^6*b^3*c*d^3*g^5 + a^7*b^2*d^4*g^5)*x) * B^2*c^3*i^3 - 1/288*(12*((7*a*b^3*c^3 - 33*a^2*b^2*c^2*d + 75*a^3*b*c*d^2 - 13*a^4*d^3 + 12*(4*b^4*c*d^2 - a*b^3*d^3))*x^3 - 6*(4*b^4*c^2*d - 29*a*b^3*c*d^2 + 7*a^2*b^2*d^3))*x^2 + 4*(4*b^4*c^3 - 21*a*b^3*c^2*d + 57*a^2*b^2*c*d^2 - 13*a^3*b*d^3)*x)/(b^9*c^3 - 3*a*b^8*c^2*d + 3*a^2*b^7*c*d^2 - a^3*b^6*d^3)*g^5*x^4 + 4*(a*b^8*c^3 - 3*a^2*b^7*c^2*d + 3*a^3*b^6*c*d^2 - a^4*b^5*d^3)*g^5*x^3 + 6*(a^2*b^7*c^3 - 3*a^3*b^6*c^2*d$$

$$\begin{aligned}
& d + 3a^4b^5c^2d^2 - a^5b^4d^3)g^5x^2 + 4(a^3b^6c^3 - 3a^4b^5c^2 \\
& *d + 3a^5b^4c^2d^2 - a^6b^3d^3)g^5x + (a^4b^5c^3 - 3a^5b^4c^2d \\
& + 3a^6b^3c^2d^2 - a^7b^2d^3)g^5) + 12(4b^6c^3d^3 - a^4d^4)\log(bx + a) \\
& /((b^6c^4 - 4a^2b^5c^3d + 6a^2b^4c^2d^2 - 4a^3b^3c^2d^3 + a^4b^2d^4) \\
& *g^5) - 12(4b^6c^3d^3 - a^4d^4)\log(dx + c)/((b^6c^4 - 4a^2b^5c^3d + \\
& 6a^2b^4c^2d^2 - 4a^3b^3c^2d^3 + a^4b^2d^4)g^5))\log(bex/(dx + \\
& c) + ae/(dx + c)) + (37a^4b^4c^4 - 304a^2b^3c^3d + 1512a^3b^2c^2d^2 \\
& - 1360a^4b^2c^2d^3 + 115a^5d^4 + 12(88b^5c^2d^2 - 101a^2b^4c^2d^3 \\
& + 13a^2b^3d^4)x^3 - 6(40b^5c^3d - 609a^2b^4c^2d^2 + 648a^2b^3c^2d^3 \\
& - 79a^3b^2d^4)x^2 - 72(4a^4b^3c^2d^3 - a^5d^4 + (4b^5c^2d^3 - \\
& a^2b^4d^4)x^4 + 4(4a^4b^3c^2d^3 - a^2b^3d^4)x^3 + 6(4a^2b^3c^2d^3 - \\
& a^3b^2d^4)x^2 + 4(4a^3b^2c^2d^3 - a^4b^2d^4)x)\log(bx + a)^2 - 72 \\
& (4a^4b^3c^2d^3 - a^5d^4 + (4b^5c^2d^3 - a^2b^4d^4)x^4 + 4(4a^2b^3c^2d^3 \\
& - a^2b^3d^4)x^3 + 6(4a^2b^3c^2d^3 - a^3b^2d^4)x^2 + 4(4a^3b^2c^2d^3 \\
& - a^4b^2d^4)x)\log(dx + c)^2 + 4(16b^5c^4 - 163a^2b^4c^3d + 10 \\
& 68a^2b^3c^2d^2 - 1036a^3b^2c^2d^3 + 115a^4b^2d^4)x + 12(88a^4b^2c^2 \\
& *d^3 - 13a^5d^4 + (88b^5c^2d^3 - 13a^2b^4d^4)x^4 + 4(88a^2b^4c^2d^3 - \\
& 13a^2b^3d^4)x^3 + 6(88a^2b^3c^2d^3 - 13a^3b^2d^4)x^2 + 4(88a^3b^2c^2d^3 \\
& - 13a^4b^2d^4)x)\log(bx + a) - 12(88a^4b^2c^2d^3 - 13a^5d^4 \\
& + (88b^5c^2d^3 - 13a^2b^4d^4)x^4 + 4(88a^2b^4c^2d^3 - 13a^2b^3d^4) \\
&)x^3 + 6(88a^2b^3c^2d^3 - 13a^3b^2d^4)x^2 + 4(88a^3b^2c^2d^3 - 1 \\
& 3a^4b^2d^4)x - 12(4a^4b^2c^2d^3 - a^5d^4 + (4b^5c^2d^3 - a^2b^4d^4)x^4 \\
& + 4(4a^2b^4c^2d^3 - a^2b^3d^4)x^3 + 6(4a^2b^3c^2d^3 - a^3b^2d^4) \\
&)x^2 + 4(4a^3b^2c^2d^3 - a^4b^2d^4)x)\log(bx + a))\log(dx + c)/(a^4b^6c^4 \\
& *g^5 - 4a^5b^5c^3d^2g^5 + 6a^6b^4c^2d^2g^5 - 4a^7b^3c^2d^3 \\
& *g^5 + a^8b^2d^4g^5 + (b^10c^4g^5 - 4a^2b^9c^3d^2g^5 + 6a^2b^8c^2d^2 \\
& *g^5 - 4a^3b^7c^2d^3g^5 + a^4b^6d^4g^5)x^4 + 4(a^2b^9c^4g^5 - 4 \\
& *a^2b^8c^3d^2g^5 + 6a^3b^7c^2d^2g^5 - 4a^4b^6c^2d^3g^5 + a^5b^5d^4 \\
& *g^5)x^3 + 6(a^2b^8c^4g^5 - 4a^3b^7c^3d^2g^5 + 6a^4b^6c^2d^2 \\
& *g^5 - 4a^5b^5c^2d^3g^5 + a^6b^4d^4g^5)x^2 + 4(a^3b^7c^4g^5 - 4a^4b^6c^3 \\
& *d^2g^5 + 6a^5b^5c^2d^2g^5 - 4a^6b^4c^2d^3g^5 + a^7b^3d^4 \\
& *g^5)x)B^2c^2di^3 - 1/288(12((13a^2b^3c^3 - 75a^3b^2c^2d + \\
& 33a^4b^2c^2d^2 - 7a^5d^3 - 12(6b^5c^2d - 4a^2b^4c^2d^2 + a^2b^3d^3) \\
&)x^3 + 6(6b^5c^3 - 46a^2b^4c^2d + 29a^2b^3c^2d^2 - 7a^3b^2d^3)x \\
& ^2 + 4(10a^2b^4c^3 - 63a^2b^3c^2d + 33a^3b^2c^2d^2 - 7a^4b^2d^3)x) \\
&)/((b^10c^3 - 3a^2b^9c^2d + 3a^2b^8c^2d^2 - a^3b^7d^3)g^5x^4 + 4(a^2b^9c^3 \\
& - 3a^2b^8c^2d + 3a^3b^7c^2d^2 - a^4b^6d^3)g^5x^3 + 6(a^2b^8c^3 - 3a^3b^7c^2d \\
& + 3a^4b^6c^2d^2 - a^5b^5d^3)g^5x^2 + 4(a^3b^7c^3 - 3a^4b^6c^2d + 3a^5b^5c^2d^2 \\
& - a^6b^4d^3)g^5x + (a^4b^6c^3 - 3a^5b^5c^2d + 3a^6b^4c^2d^2 - a^7b^3d^3)g^5) \\
& - 12(6b^2c^2d^2 - 4a^2b^3c^2d^3 + a^2d^4)\log(bx + a)/((b^7c^4 - 4a^2b^6c^3d + \\
& 6a^2b^5c^2d^2 - 4a^3b^4c^2d^3 + a^4b^3d^4)g^5) + 12(6b^2c^2d^2 \\
& - 4a^2b^3c^2d^3 + a^2d^4)\log(dx + c)/((b^7c^4 - 4a^2b^6c^3d + 6a^2b^5c^2d^2 \\
& - 4a^3b^4c^2d^3 + a^4b^3d^4)g^5))\log(bex/(dx + c) + ae/(dx + c)) + (115a^2b^4c^4 \\
& - 1360a^3b^3c^3d + 1512a^4b^2c^2d^2
\end{aligned}$$

$$\begin{aligned}
& - 304*a^5*b*c*d^3 + 37*a^6*d^4 - 12*(108*b^6*c^3*d - 148*a*b^5*c^2*d^2 + 47 \\
& *a^2*b^4*c*d^3 - 7*a^3*b^3*d^4)*x^3 + 6*(36*b^6*c^4 - 712*a*b^5*c^3*d + 903 \\
& *a^2*b^4*c^2*d^2 - 264*a^3*b^3*c*d^3 + 37*a^4*b^2*d^4)*x^2 + 72*(6*a^4*b^2* \\
& c^2*d^2 - 4*a^5*b*c*d^3 + a^6*d^4 + (6*b^6*c^2*d^2 - 4*a*b^5*c*d^3 + a^2*b^ \\
& 4*d^4)*x^4 + 4*(6*a*b^5*c^2*d^2 - 4*a^2*b^4*c*d^3 + a^3*b^3*d^4)*x^3 + 6*(6 \\
& *a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*x^2 + 4*(6*a^3*b^3*c^2*d^ \\
& 2 - 4*a^4*b^2*c*d^3 + a^5*b*d^4)*x)*\log(b*x + a)^2 + 72*(6*a^4*b^2*c^2*d^2 \\
& - 4*a^5*b*c*d^3 + a^6*d^4 + (6*b^6*c^2*d^2 - 4*a*b^5*c*d^3 + a^2*b^4*d^4)*x \\
& ^4 + 4*(6*a*b^5*c^2*d^2 - 4*a^2*b^4*c*d^3 + a^3*b^3*d^4)*x^3 + 6*(6*a^2*b^4 \\
& *c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*x^2 + 4*(6*a^3*b^3*c^2*d^2 - 4*a^ \\
& 4*b^2*c*d^3 + a^5*b*d^4)*x)*\log(d*x + c)^2 + 4*(76*a*b^5*c^4 - 1057*a^2*b^4 \\
& *c^3*d + 1248*a^3*b^3*c^2*d^2 - 304*a^4*b^2*c*d^3 + 37*a^5*b*d^4)*x - 12*(1 \\
& 08*a^4*b^2*c^2*d^2 - 40*a^5*b*c*d^3 + 7*a^6*d^4 + (108*b^6*c^2*d^2 - 40*a*b \\
& ^5*c*d^3 + 7*a^2*b^4*d^4)*x^4 + 4*(108*a*b^5*c^2*d^2 - 40*a^2*b^4*c*d^3 + 7 \\
& *a^3*b^3*d^4)*x^3 + 6*(108*a^2*b^4*c^2*d^2 - 40*a^3*b^3*c*d^3 + 7*a^4*b^2*d \\
& ^4)*x^2 + 4*(108*a^3*b^3*c^2*d^2 - 40*a^4*b^2*c*d^3 + 7*a^5*b*d^4)*x)*\log(b \\
& *x + a) + 12*(108*a^4*b^2*c^2*d^2 - 40*a^5*b*c*d^3 + 7*a^6*d^4 + (108*b^6*c \\
& ^2*d^2 - 40*a*b^5*c*d^3 + 7*a^2*b^4*d^4)*x^4 + 4*(108*a*b^5*c^2*d^2 - 40*a^ \\
& 2*b^4*c*d^3 + 7*a^3*b^3*d^4)*x^3 + 6*(108*a^2*b^4*c^2*d^2 - 40*a^3*b^3*c*d^ \\
& 3 + 7*a^4*b^2*d^4)*x^2 + 4*(108*a^3*b^3*c^2*d^2 - 40*a^4*b^2*c*d^3 + 7*a^5* \\
& b*d^4)*x - 12*(6*a^4*b^2*c^2*d^2 - 4*a^5*b*c*d^3 + a^6*d^4 + (6*b^6*c^2*d^2 \\
& - 4*a*b^5*c*d^3 + a^2*b^4*d^4)*x^4 + 4*(6*a*b^5*c^2*d^2 - 4*a^2*b^4*c*d^3 \\
& + a^3*b^3*d^4)*x^3 + 6*(6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)* \\
& x^2 + 4*(6*a^3*b^3*c^2*d^2 - 4*a^4*b^2*c*d^3 + a^5*b*d^4)*x)*\log(b*x + a)* \\
& \log(d*x + c))/(a^4*b^7*c^4*g^5 - 4*a^5*b^6*c^3*d*g^5 + 6*a^6*b^5*c^2*d^2*g^ \\
& 5 - 4*a^7*b^4*c*d^3*g^5 + a^8*b^3*d^4*g^5 + (b^11*c^4*g^5 - 4*a*b^10*c^3*d* \\
& g^5 + 6*a^2*b^9*c^2*d^2*g^5 - 4*a^3*b^8*c*d^3*g^5 + a^4*b^7*d^4*g^5)*x^4 + \\
& 4*(a*b^10*c^4*g^5 - 4*a^2*b^9*c^3*d*g^5 + 6*a^3*b^8*c^2*d^2*g^5 - 4*a^4*b^7 \\
& *c*d^3*g^5 + a^5*b^6*d^4*g^5)*x^3 + 6*(a^2*b^9*c^4*g^5 - 4*a^3*b^8*c^3*d*g^ \\
& 5 + 6*a^4*b^7*c^2*d^2*g^5 - 4*a^5*b^6*c*d^3*g^5 + a^6*b^5*d^4*g^5)*x^2 + 4* \\
& (a^3*b^8*c^4*g^5 - 4*a^4*b^7*c^3*d*g^5 + 6*a^5*b^6*c^2*d^2*g^5 - 4*a^6*b^5* \\
& c*d^3*g^5 + a^7*b^4*d^4*g^5)*x)*B^2*c*d^2*i^3 - 1/288*(12*((25*a^3*b^3*c^3 \\
& - 23*a^4*b^2*c^2*d + 13*a^5*b*c*d^2 - 3*a^6*d^3 + 12*(4*b^6*c^3 - 6*a*b^5* \\
& c^2*d + 4*a^2*b^4*c*d^2 - a^3*b^3*d^3))*x^3 + 6*(18*a*b^5*c^3 - 22*a^2*b^4*c \\
& ^2*d + 13*a^3*b^3*c*d^2 - 3*a^4*b^2*d^3))*x^2 + 4*(22*a^2*b^4*c^3 - 23*a^3*b \\
& ^3*c^2*d + 13*a^4*b^2*c*d^2 - 3*a^5*b*d^3))*x)/((b^11*c^3 - 3*a*b^10*c^2*d + \\
& 3*a^2*b^9*c*d^2 - a^3*b^8*d^3)*g^5*x^4 + 4*(a*b^10*c^3 - 3*a^2*b^9*c^2*d + \\
& 3*a^3*b^8*c*d^2 - a^4*b^7*d^3)*g^5*x^3 + 6*(a^2*b^9*c^3 - 3*a^3*b^8*c^2*d \\
& + 3*a^4*b^7*c*d^2 - a^5*b^6*d^3)*g^5*x^2 + 4*(a^3*b^8*c^3 - 3*a^4*b^7*c^2*d \\
& + 3*a^5*b^6*c*d^2 - a^6*b^5*d^3)*g^5*x + (a^4*b^7*c^3 - 3*a^5*b^6*c^2*d + \\
& 3*a^6*b^5*c*d^2 - a^7*b^4*d^3)*g^5) + 12*(4*b^3*c^3*d - 6*a*b^2*c^2*d^2 + 4 \\
& *a^2*b*c*d^3 - a^3*d^4)*\log(b*x + a)/((b^8*c^4 - 4*a*b^7*c^3*d + 6*a^2*b^6* \\
& c^2*d^2 - 4*a^3*b^5*c*d^3 + a^4*b^4*d^4)*g^5) - 12*(4*b^3*c^3*d - 6*a*b^2*c \\
& ^2*d^2 + 4*a^2*b*c*d^3 - a^3*d^4)*\log(d*x + c)/((b^8*c^4 - 4*a*b^7*c^3*d + \\
& 6*a^2*b^6*c^2*d^2 - 4*a^3*b^5*c*d^3 + a^4*b^4*d^4)*g^5))*\log(b*e*x/(d*x + c
\end{aligned}$$

$$\begin{aligned}
&) + a \cdot e / (d \cdot x + c)) + (415 \cdot a^3 \cdot b^4 \cdot c^4 - 576 \cdot a^4 \cdot b^3 \cdot c^3 \cdot d + 216 \cdot a^5 \cdot b^2 \cdot c^2 \\
& \cdot d^2 - 64 \cdot a^6 \cdot b \cdot c \cdot d^3 + 9 \cdot a^7 \cdot d^4 + 12 \cdot (48 \cdot b^7 \cdot c^4 - 84 \cdot a \cdot b^6 \cdot c^3 \cdot d + 52 \cdot a^2 \\
& \cdot b^5 \cdot c^2 \cdot d^2 - 19 \cdot a^3 \cdot b^4 \cdot c \cdot d^3 + 3 \cdot a^4 \cdot b^3 \cdot d^4) \cdot x^3 + 6 \cdot (252 \cdot a \cdot b^6 \cdot c^4 - \\
& 400 \cdot a^2 \cdot b^5 \cdot c^3 \cdot d + 203 \cdot a^3 \cdot b^4 \cdot c^2 \cdot d^2 - 64 \cdot a^4 \cdot b^3 \cdot c \cdot d^3 + 9 \cdot a^5 \cdot b^2 \cdot d^4) \\
& \cdot x^2 - 72 \cdot (4 \cdot a^4 \cdot b^3 \cdot c^3 \cdot d - 6 \cdot a^5 \cdot b^2 \cdot c^2 \cdot d^2 + 4 \cdot a^6 \cdot b \cdot c \cdot d^3 - a^7 \cdot d^4 + \\
& (4 \cdot b^7 \cdot c^3 \cdot d - 6 \cdot a \cdot b^6 \cdot c^2 \cdot d^2 + 4 \cdot a^2 \cdot b^5 \cdot c \cdot d^3 - a^3 \cdot b^4 \cdot d^4) \cdot x^4 + 4 \cdot (4 \cdot \\
& a \cdot b^6 \cdot c^3 \cdot d - 6 \cdot a^2 \cdot b^5 \cdot c^2 \cdot d^2 + 4 \cdot a^3 \cdot b^4 \cdot c \cdot d^3 - a^4 \cdot b^3 \cdot d^4) \cdot x^3 + 6 \cdot (4 \\
& \cdot a^2 \cdot b^5 \cdot c^3 \cdot d - 6 \cdot a^3 \cdot b^4 \cdot c^2 \cdot d^2 + 4 \cdot a^4 \cdot b^3 \cdot c \cdot d^3 - a^5 \cdot b^2 \cdot d^4) \cdot x^2 + 4 \\
& \cdot (4 \cdot a^3 \cdot b^4 \cdot c^3 \cdot d - 6 \cdot a^4 \cdot b^3 \cdot c^2 \cdot d^2 + 4 \cdot a^5 \cdot b^2 \cdot c \cdot d^3 - a^6 \cdot b \cdot d^4) \cdot x) \cdot \log \\
& (b \cdot x + a)^2 - 72 \cdot (4 \cdot a^4 \cdot b^3 \cdot c^3 \cdot d - 6 \cdot a^5 \cdot b^2 \cdot c^2 \cdot d^2 + 4 \cdot a^6 \cdot b \cdot c \cdot d^3 - a^7 \\
& \cdot d^4 + (4 \cdot b^7 \cdot c^3 \cdot d - 6 \cdot a \cdot b^6 \cdot c^2 \cdot d^2 + 4 \cdot a^2 \cdot b^5 \cdot c \cdot d^3 - a^3 \cdot b^4 \cdot d^4) \cdot x^4 \\
& + 4 \cdot (4 \cdot a \cdot b^6 \cdot c^3 \cdot d - 6 \cdot a^2 \cdot b^5 \cdot c^2 \cdot d^2 + 4 \cdot a^3 \cdot b^4 \cdot c \cdot d^3 - a^4 \cdot b^3 \cdot d^4) \cdot x^3 \\
& + 6 \cdot (4 \cdot a^2 \cdot b^5 \cdot c^3 \cdot d - 6 \cdot a^3 \cdot b^4 \cdot c^2 \cdot d^2 + 4 \cdot a^4 \cdot b^3 \cdot c \cdot d^3 - a^5 \cdot b^2 \cdot d^4) \cdot \\
& x^2 + 4 \cdot (4 \cdot a^3 \cdot b^4 \cdot c^3 \cdot d - 6 \cdot a^4 \cdot b^3 \cdot c^2 \cdot d^2 + 4 \cdot a^5 \cdot b^2 \cdot c \cdot d^3 - a^6 \cdot b \cdot d^4) \\
& \cdot x) \cdot \log(d \cdot x + c)^2 + 4 \cdot (340 \cdot a^2 \cdot b^5 \cdot c^4 - 501 \cdot a^3 \cdot b^4 \cdot c^3 \cdot d + 216 \cdot a^4 \cdot b^3 \cdot c \\
& ^2 \cdot d^2 - 64 \cdot a^5 \cdot b^2 \cdot c \cdot d^3 + 9 \cdot a^6 \cdot b \cdot d^4) \cdot x + 12 \cdot (48 \cdot a^4 \cdot b^3 \cdot c^3 \cdot d - 36 \cdot a^5 \cdot \\
& b^2 \cdot c^2 \cdot d^2 + 16 \cdot a^6 \cdot b \cdot c \cdot d^3 - 3 \cdot a^7 \cdot d^4 + (48 \cdot b^7 \cdot c^3 \cdot d - 36 \cdot a \cdot b^6 \cdot c^2 \cdot d^2 \\
& + 16 \cdot a^2 \cdot b^5 \cdot c \cdot d^3 - 3 \cdot a^3 \cdot b^4 \cdot d^4) \cdot x^4 + 4 \cdot (48 \cdot a \cdot b^6 \cdot c^3 \cdot d - 36 \cdot a^2 \cdot b^5 \cdot c \\
& ^2 \cdot d^2 + 16 \cdot a^3 \cdot b^4 \cdot c \cdot d^3 - 3 \cdot a^4 \cdot b^3 \cdot d^4) \cdot x^3 + 6 \cdot (48 \cdot a^2 \cdot b^5 \cdot c^3 \cdot d - 36 \cdot a \\
& ^3 \cdot b^4 \cdot c^2 \cdot d^2 + 16 \cdot a^4 \cdot b^3 \cdot c \cdot d^3 - 3 \cdot a^5 \cdot b^2 \cdot d^4) \cdot x^2 + 4 \cdot (48 \cdot a^3 \cdot b^4 \cdot c^3 \cdot \\
& d - 36 \cdot a^4 \cdot b^3 \cdot c^2 \cdot d^2 + 16 \cdot a^5 \cdot b^2 \cdot c \cdot d^3 - 3 \cdot a^6 \cdot b \cdot d^4) \cdot x) \cdot \log(b \cdot x + a) - \\
& 12 \cdot (48 \cdot a^4 \cdot b^3 \cdot c^3 \cdot d - 36 \cdot a^5 \cdot b^2 \cdot c^2 \cdot d^2 + 16 \cdot a^6 \cdot b \cdot c \cdot d^3 - 3 \cdot a^7 \cdot d^4 + (4 \\
& 8 \cdot b^7 \cdot c^3 \cdot d - 36 \cdot a \cdot b^6 \cdot c^2 \cdot d^2 + 16 \cdot a^2 \cdot b^5 \cdot c \cdot d^3 - 3 \cdot a^3 \cdot b^4 \cdot d^4) \cdot x^4 + 4 \cdot \\
& (48 \cdot a \cdot b^6 \cdot c^3 \cdot d - 36 \cdot a^2 \cdot b^5 \cdot c^2 \cdot d^2 + 16 \cdot a^3 \cdot b^4 \cdot c \cdot d^3 - 3 \cdot a^4 \cdot b^3 \cdot d^4) \cdot x^3 \\
& + 6 \cdot (48 \cdot a^2 \cdot b^5 \cdot c^3 \cdot d - 36 \cdot a^3 \cdot b^4 \cdot c^2 \cdot d^2 + 16 \cdot a^4 \cdot b^3 \cdot c \cdot d^3 - 3 \cdot a^5 \cdot b^2 \\
& \cdot d^4) \cdot x^2 + 4 \cdot (48 \cdot a^3 \cdot b^4 \cdot c^3 \cdot d - 36 \cdot a^4 \cdot b^3 \cdot c^2 \cdot d^2 + 16 \cdot a^5 \cdot b^2 \cdot c \cdot d^3 - 3 \\
& \cdot a^6 \cdot b \cdot d^4) \cdot x - 12 \cdot (4 \cdot a^4 \cdot b^3 \cdot c^3 \cdot d - 6 \cdot a^5 \cdot b^2 \cdot c^2 \cdot d^2 + 4 \cdot a^6 \cdot b \cdot c \cdot d^3 - a \\
& ^7 \cdot d^4 + (4 \cdot b^7 \cdot c^3 \cdot d - 6 \cdot a \cdot b^6 \cdot c^2 \cdot d^2 + 4 \cdot a^2 \cdot b^5 \cdot c \cdot d^3 - a^3 \cdot b^4 \cdot d^4) \cdot x^4 \\
& + 4 \cdot (4 \cdot a \cdot b^6 \cdot c^3 \cdot d - 6 \cdot a^2 \cdot b^5 \cdot c^2 \cdot d^2 + 4 \cdot a^3 \cdot b^4 \cdot c \cdot d^3 - a^4 \cdot b^3 \cdot d^4) \cdot x \\
& ^3 + 6 \cdot (4 \cdot a^2 \cdot b^5 \cdot c^3 \cdot d - 6 \cdot a^3 \cdot b^4 \cdot c^2 \cdot d^2 + 4 \cdot a^4 \cdot b^3 \cdot c \cdot d^3 - a^5 \cdot b^2 \cdot d^4) \\
&) \cdot x^2 + 4 \cdot (4 \cdot a^3 \cdot b^4 \cdot c^3 \cdot d - 6 \cdot a^4 \cdot b^3 \cdot c^2 \cdot d^2 + 4 \cdot a^5 \cdot b^2 \cdot c \cdot d^3 - a^6 \cdot b \cdot d^4 \\
&) \cdot x) \cdot \log(b \cdot x + a) \cdot \log(d \cdot x + c)) / (a^4 \cdot b^8 \cdot c^4 \cdot g^5 - 4 \cdot a^5 \cdot b^7 \cdot c^3 \cdot d \cdot g^5 + \\
& 6 \cdot a^6 \cdot b^6 \cdot c^2 \cdot d^2 \cdot g^5 - 4 \cdot a^7 \cdot b^5 \cdot c \cdot d^3 \cdot g^5 + a^8 \cdot b^4 \cdot d^4 \cdot g^5 + (b^{12} \cdot c^4 \cdot g \\
& ^5 - 4 \cdot a \cdot b^{11} \cdot c^3 \cdot d \cdot g^5 + 6 \cdot a^2 \cdot b^{10} \cdot c^2 \cdot d^2 \cdot g^5 - 4 \cdot a^3 \cdot b^9 \cdot c \cdot d^3 \cdot g^5 + a^4 \\
& \cdot b^8 \cdot d^4 \cdot g^5) \cdot x^4 + 4 \cdot (a \cdot b^{11} \cdot c^4 \cdot g^5 - 4 \cdot a^2 \cdot b^{10} \cdot c^3 \cdot d \cdot g^5 + 6 \cdot a^3 \cdot b^9 \cdot c \\
& ^2 \cdot d^2 \cdot g^5 - 4 \cdot a^4 \cdot b^8 \cdot c \cdot d^3 \cdot g^5 + a^5 \cdot b^7 \cdot d^4 \cdot g^5) \cdot x^3 + 6 \cdot (a^2 \cdot b^{10} \cdot c^4 \cdot g \\
& ^5 - 4 \cdot a^3 \cdot b^9 \cdot c^3 \cdot d \cdot g^5 + 6 \cdot a^4 \cdot b^8 \cdot c^2 \cdot d^2 \cdot g^5 - 4 \cdot a^5 \cdot b^7 \cdot c \cdot d^3 \cdot g^5 + a^6 \\
& \cdot b^6 \cdot d^4 \cdot g^5) \cdot x^2 + 4 \cdot (a^3 \cdot b^9 \cdot c^4 \cdot g^5 - 4 \cdot a^4 \cdot b^8 \cdot c^3 \cdot d \cdot g^5 + 6 \cdot a^5 \cdot b^7 \cdot c \\
& ^2 \cdot d^2 \cdot g^5 - 4 \cdot a^6 \cdot b^6 \cdot c \cdot d^3 \cdot g^5 + a^7 \cdot b^5 \cdot d^4 \cdot g^5) \cdot x) \cdot B^2 \cdot d^3 \cdot i^3 - 1/24 \cdot \\
& A \cdot B \cdot d^3 \cdot i^3 \cdot (12 \cdot (4 \cdot b^3 \cdot x^3 + 6 \cdot a \cdot b^2 \cdot x^2 + 4 \cdot a^2 \cdot b \cdot x + a^3) \cdot \log(b \cdot e \cdot x / (d \cdot x \\
& + c) + a \cdot e / (d \cdot x + c)) / (b^8 \cdot g^5 \cdot x^4 + 4 \cdot a \cdot b^7 \cdot g^5 \cdot x^3 + 6 \cdot a^2 \cdot b^6 \cdot g^5 \cdot x^2 + \\
& 4 \cdot a^3 \cdot b^5 \cdot g^5 \cdot x + a^4 \cdot b^4 \cdot g^5) + (25 \cdot a^3 \cdot b^3 \cdot c^3 - 23 \cdot a^4 \cdot b^2 \cdot c^2 \cdot d + 13 \cdot a^5 \\
& \cdot b \cdot c \cdot d^2 - 3 \cdot a^6 \cdot d^3 + 12 \cdot (4 \cdot b^6 \cdot c^3 - 6 \cdot a \cdot b^5 \cdot c^2 \cdot d + 4 \cdot a^2 \cdot b^4 \cdot c \cdot d^2 - a \\
& ^3 \cdot b^3 \cdot d^3) \cdot x^3 + 6 \cdot (18 \cdot a \cdot b^5 \cdot c^3 - 22 \cdot a^2 \cdot b^4 \cdot c^2 \cdot d + 13 \cdot a^3 \cdot b^3 \cdot c \cdot d^2 - 3 \\
& \cdot a^4 \cdot b^2 \cdot d^3) \cdot x^2 + 4 \cdot (22 \cdot a^2 \cdot b^4 \cdot c^3 - 23 \cdot a^3 \cdot b^3 \cdot c^2 \cdot d + 13 \cdot a^4 \cdot b^2 \cdot c \cdot d^2
\end{aligned}$$

$$\begin{aligned}
& - 3a^5bd^3) * x) / ((b^{11}c^3 - 3a^2b^{10}c^2d + 3a^2b^9c^2d^2 - a^3b^8d^3) * g^5x^4 + 4(a^2b^{10}c^3 - 3a^2b^9c^2d + 3a^3b^8c^2d^2 - a^4b^7d^3) * g^5x^3 + 6(a^2b^9c^3 - 3a^3b^8c^2d + 3a^4b^7c^2d^2 - a^5b^6d^3) * g^5x^2 + 4(a^3b^8c^3 - 3a^4b^7c^2d + 3a^5b^6c^2d^2 - a^6b^5d^3) * g^5x + (a^4b^7c^3 - 3a^5b^6c^2d + 3a^6b^5c^2d^2 - a^7b^4d^3) * g^5) + 12(4b^3c^3d - 6a^2b^2c^2d^2 + 4a^2b^2c^2d^3 - a^3d^4) * \log(bx + a) / ((b^8c^4 - 4a^2b^7c^3d + 6a^2b^6c^2d^2 - 4a^3b^5c^2d^3 + a^4b^4d^4) * g^5) - 12(4b^3c^3d - 6a^2b^2c^2d^2 + 4a^2b^2c^2d^3 - a^3d^4) * \log(dx + c) / ((b^8c^4 - 4a^2b^7c^3d + 6a^2b^6c^2d^2 - 4a^3b^5c^2d^3 + a^4b^4d^4) * g^5)) - 1/24 * A * B * c^2 * d^2 * i^3 * ((12(6b^2x^2 + 4a * b * x + a^2) * \log(b * e * x / (d * x + c) + a * e / (d * x + c))) / (b^7 * g^5 * x^4 + 4a * b^6 * g^5 * x^3 + 6a^2 * b^5 * g^5 * x^2 + 4a^3 * b^4 * g^5 * x + a^4 * b^3 * g^5) + (13a^2 * b^3 * c^3 - 7 * 5a^3 * b^2 * c^2 * d + 33a^4 * b * c^2 * d^2 - 7a^5 * d^3 - 12(6b^5 * c^2 * d - 4a * b^4 * c * d^2 + a^2 * b^3 * d^3) * x^3 + 6(6b^5 * c^3 - 46a * b^4 * c^2 * d + 29a^2 * b^3 * c * d^2 - 7a^3 * b^2 * d^3) * x^2 + 4(10a * b^4 * c^3 - 63a^2 * b^3 * c^2 * d + 33a^3 * b^2 * c * d^2 - 7a^4 * b * d^3) * x) / ((b^{10}c^3 - 3a^2b^9c^2d + 3a^2b^8c^2d^2 - a^3b^7d^3) * g^5x^4 + 4(a^2b^9c^3 - 3a^2b^8c^2d + 3a^3b^7c^2d^2 - a^4b^6d^3) * g^5x^3 + 6(a^2b^8c^3 - 3a^3b^7c^2d + 3a^4b^6c^2d^2 - a^5b^5d^3) * g^5x^2 + 4(a^3b^7c^3 - 3a^4b^6c^2d + 3a^5b^5c^2d^2 - a^6b^4d^3) * g^5x + (a^4b^6c^3 - 3a^5b^5c^2d + 3a^6b^4c^2d^2 - a^7b^3d^3) * g^5) - 12(6b^2 * c^2 * d^2 - 4a * b * c * d^3 + a^2 * d^4) * \log(bx + a) / ((b^7 * c^4 - 4a * b^6 * c^3 * d + 6a^2 * b^5 * c^2 * d^2 - 4a^3 * b^4 * c * d^3 + a^4 * b^3 * d^4) * g^5) + 12(6b^2 * c^2 * d^2 - 4a * b * c * d^3 + a^2 * d^4) * \log(dx + c) / ((b^7 * c^4 - 4a * b^6 * c^3 * d + 6a^2 * b^5 * c^2 * d^2 - 4a^3 * b^4 * c * d^3 + a^4 * b^3 * d^4) * g^5)) - 1/24 * A * B * c^2 * d^2 * i^3 * ((12(4b * x + a) * \log(b * e * x / (d * x + c) + a * e / (d * x + c))) / (b^6 * g^5 * x^4 + 4a * b^5 * g^5 * x^3 + 6a^2 * b^4 * g^5 * x^2 + 4a^3 * b^3 * g^5 * x + a^4 * b^2 * g^5) + (7a * b^3 * c^3 - 33a^2 * b^2 * c^2 * d + 75a^3 * b * c^2 * d^2 - 13a^4 * d^3 + 12(4b^4 * c * d^2 - a * b^3 * d^3) * x^3 - 6(4b^4 * c^2 * d - 29a * b^3 * c * d^2 + 7a^2 * b^2 * d^3) * x^2 + 4(4b^4 * c^3 - 21a * b^3 * c^2 * d + 57a^2 * b^2 * c * d^2 - 13a^3 * b * d^3) * x) / ((b^9 * c^3 - 3a^2 * b^8 * c^2 * d + 3a^2 * b^7 * c^2 * d^2 - a^3 * b^6 * d^3) * g^5 * x^4 + 4(a * b^8 * c^3 - 3a^2 * b^7 * c^2 * d + 3a^3 * b^6 * c^2 * d^2 - a^4 * b^5 * d^3) * g^5 * x^3 + 6(a^2 * b^7 * c^3 - 3a^3 * b^6 * c^2 * d + 3a^4 * b^5 * c^2 * d^2 - a^5 * b^4 * d^3) * g^5 * x^2 + 4(a^3 * b^6 * c^3 - 3a^4 * b^5 * c^2 * d + 3a^5 * b^4 * c^2 * d^2 - a^6 * b^3 * d^3) * g^5 * x + (a^4 * b^5 * c^3 - 3a^5 * b^4 * c^2 * d + 3a^6 * b^3 * c^2 * d^2 - a^7 * b^2 * d^3) * g^5) + 12(4b * c * d^3 - a * d^4) * \log(bx + a) / ((b^6 * c^4 - 4a * b^5 * c^3 * d + 6a^2 * b^4 * c^2 * d^2 - 4a^3 * b^3 * c * d^3 + a^4 * b^2 * d^4) * g^5) - 12(4b * c * d^3 - a * d^4) * \log(dx + c) / ((b^6 * c^4 - 4a * b^5 * c^3 * d + 6a^2 * b^4 * c^2 * d^2 - 4a^3 * b^3 * c * d^3 + a^4 * b^2 * d^4) * g^5)) + 1/24 * A * B * c^3 * i^3 * ((12b^3 * d^3 * x^3 - 3b^3 * c^3 + 13a * b^2 * c^2 * d - 23a^2 * b * c * d^2 + 25a^3 * d^3 - 6(b^3 * c * d^2 - 7a * b^2 * d^3) * x^2 + 4(b^3 * c^2 * d - 5a * b^2 * c * d^2 + 13a^2 * b * d^3) * x) / ((b^8 * c^3 - 3a * b^7 * c^2 * d + 3a^2 * b^6 * c^2 * d^2 - a^3 * b^5 * d^3) * g^5 * x^4 + 4(a * b^7 * c^3 - 3a^2 * b^6 * c^2 * d + 3a^3 * b^5 * c^2 * d^2 - a^4 * b^4 * d^3) * g^5 * x^3 + 6(a^2 * b^6 * c^3 - 3a^3 * b^5 * c^2 * d + 3a^4 * b^4 * c^2 * d^2 - a^5 * b^3 * d^3) * g^5 * x^2 + 4(a^3 * b^5 * c^3 - 3a^4 * b^4 * c^2 * d + 3a^5 * b^3 * c^2 * d^2 - a^6 * b^2 * d^3) * g^5 * x + (a^4 * b^4 * c^3 - 3a^5 * b^3 * c^2 * d + 3a^6 * b^2 * c^2 * d^2 - a^7 * b * d^3) * g^5) - 12 * \log(b * e * x / (d * x + c) + a * e / (d * x + c)) / (b^5 * g^5 * x^4
\end{aligned}$$

$$\begin{aligned}
& + 4*a*b^4*g^5*x^3 + 6*a^2*b^3*g^5*x^2 + 4*a^3*b^2*g^5*x + a^4*b*g^5) + 12*d \\
& ^4*\log(b*x + a)/((b^5*c^4 - 4*a*b^4*c^3*d + 6*a^2*b^3*c^2*d^2 - 4*a^3*b^2*c \\
& *d^3 + a^4*b*d^4)*g^5) - 12*d^4*\log(d*x + c)/((b^5*c^4 - 4*a*b^4*c^3*d + 6* \\
& a^2*b^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)*g^5)) - 1/4*B^2*c^3*i^3*\log(\\
& b*e*x/(d*x + c) + a*e/(d*x + c))^2/(b^5*g^5*x^4 + 4*a*b^4*g^5*x^3 + 6*a^2*b \\
& ^3*g^5*x^2 + 4*a^3*b^2*g^5*x + a^4*b*g^5) - 1/4*(4*b*x + a)*A^2*c^2*d*i^3/(\\
& b^6*g^5*x^4 + 4*a*b^5*g^5*x^3 + 6*a^2*b^4*g^5*x^2 + 4*a^3*b^3*g^5*x + a^4*b \\
& ^2*g^5) - 1/4*(6*b^2*x^2 + 4*a*b*x + a^2)*A^2*c*d^2*i^3/(b^7*g^5*x^4 + 4*a*a \\
& b^6*g^5*x^3 + 6*a^2*b^5*g^5*x^2 + 4*a^3*b^4*g^5*x + a^4*b^3*g^5) - 1/4*(4*b \\
& ^3*x^3 + 6*a*b^2*x^2 + 4*a^2*b*x + a^3)*A^2*d^3*i^3/(b^8*g^5*x^4 + 4*a*b^7* \\
& g^5*x^3 + 6*a^2*b^6*g^5*x^2 + 4*a^3*b^5*g^5*x + a^4*b^4*g^5) - 1/4*A^2*c^3* \\
& i^3/(b^5*g^5*x^4 + 4*a*b^4*g^5*x^3 + 6*a^2*b^3*g^5*x^2 + 4*a^3*b^2*g^5*x + \\
& a^4*b*g^5)
\end{aligned}$$

mupad [B] time = 10.43, size = 1565, normalized size = 10.65

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{int}(((c*i + d*i*x)^3*(A + B*\log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x)^5, x)$

[Out] $\begin{aligned}
& -(24*A^2*a^4*d^4*i^3 - 24*A^2*b^4*c^4*i^3 + 3*B^2*a^4*d^4*i^3 - 3*B^2*b^4*c \\
& ^4*i^3 + 12*A*B*a^4*d^4*i^3 - 12*A*B*b^4*c^4*i^3 - 24*B^2*b^4*c^4*i^3*\log((\\
& e*(a + b*x))/(c + d*x))^2 + B^2*a^4*d^4*i^3*\text{atan}((a*d*i + b*c*i + b*d*x*2 \\
& i)/(a*d - b*c))*24i + 12*B^2*a^4*d^4*i^3*\log((e*(a + b*x))/(c + d*x)) - 12* \\
& B^2*b^4*c^4*i^3*\log((e*(a + b*x))/(c + d*x)) - 24*B^2*b^4*d^4*i^3*x^4*\log((\\
& e*(a + b*x))/(c + d*x))^2 + 96*A^2*a^3*b*d^4*i^3*x + 12*B^2*a^3*b*d^4*i^3*x \\
& - 96*A^2*b^4*c^3*d*i^3*x - 12*B^2*b^4*c^3*d*i^3*x + B^2*b^4*d^4*i^3*x^4*\text{at} \\
& \text{an}((a*d*i + b*c*i + b*d*x*2i)/(a*d - b*c))*24i + A*B*a^4*d^4*i^3*\text{atan}((a* \\
& d*i + b*c*i + b*d*x*2i)/(a*d - b*c))*96i + 96*A^2*a*b^3*d^4*i^3*x^3 + 12* \\
& B^2*a*b^3*d^4*i^3*x^3 - 96*A^2*b^4*c*d^3*i^3*x^3 - 12*B^2*b^4*c*d^3*i^3*x^3 \\
& + 48*A*B*a^4*d^4*i^3*\log((e*(a + b*x))/(c + d*x)) - 48*A*B*b^4*c^4*i^3*\log \\
& ((e*(a + b*x))/(c + d*x)) + 144*A^2*a^2*b^2*d^4*i^3*x^2 + 18*B^2*a^2*b^2*d^ \\
& 4*i^3*x^2 - 144*A^2*b^4*c^2*d^2*i^3*x^2 - 18*B^2*b^4*c^2*d^2*i^3*x^2 + 48*A \\
& *B*a^3*b*d^4*i^3*x - 48*A*B*b^4*c^3*d*i^3*x + 48*B^2*a*b^3*d^4*i^3*x^3*\log(\\
& (e*(a + b*x))/(c + d*x)) - 96*B^2*b^4*c^3*d*i^3*x*\log((e*(a + b*x))/(c + d* \\
& x))^2 - 48*B^2*b^4*c*d^3*i^3*x^3*\log((e*(a + b*x))/(c + d*x)) + A*B*b^4*d^4 \\
& *i^3*x^4*\text{atan}((a*d*i + b*c*i + b*d*x*2i)/(a*d - b*c))*96i + B^2*a^3*b*d^4 \\
& *i^3*x*\text{atan}((a*d*i + b*c*i + b*d*x*2i)/(a*d - b*c))*96i + 48*A*B*a*b^3*d^ \\
& 4*i^3*x^3 - 48*A*B*b^4*c*d^3*i^3*x^3 + 72*B^2*a^2*b^2*d^4*i^3*x^2*\log((e*(a \\
& + b*x))/(c + d*x)) - 72*B^2*b^4*c^2*d^2*i^3*x^2*\log((e*(a + b*x))/(c + d*x \\
&)) - 96*B^2*b^4*c*d^3*i^3*x^3*\log((e*(a + b*x))/(c + d*x))^2 + B^2*a*b^3*d^ \\
& 4*i^3*x^3*\text{atan}((a*d*i + b*c*i + b*d*x*2i)/(a*d - b*c))*96i + 48*B^2*a^3*b \\
& ^3*d^4*i^3*x*\log((e*(a + b*x))/(c + d*x)) - 48*B^2*b^4*c^3*d*i^3*x*\log((e*(a
\end{aligned}$

$$\begin{aligned}
& + b*x))/ (c + d*x)) + 72*A*B*a^2*b^2*d^4*i^3*x^2 - 72*A*B*b^4*c^2*d^2*i^3*x^2 \\
& - 144*B^2*b^4*c^2*d^2*i^3*x^2*\log((e*(a + b*x))/(c + d*x))^2 + B^2*a^2*b^2 \\
& *d^4*i^3*x^2*\operatorname{atan}((a*d*1i + b*c*1i + b*d*x*2i)/(a*d - b*c))*144i + A*B*a^3 \\
& *b*d^4*i^3*x*\operatorname{atan}((a*d*1i + b*c*1i + b*d*x*2i)/(a*d - b*c))*384i + 288*A*B* \\
& a^2*b^2*d^4*i^3*x^2*\log((e*(a + b*x))/(c + d*x)) - 288*A*B*b^4*c^2*d^2*i^3* \\
& x^2*\log((e*(a + b*x))/(c + d*x)) + A*B*a*b^3*d^4*i^3*x^3*\operatorname{atan}((a*d*1i + b*c \\
& *1i + b*d*x*2i)/(a*d - b*c))*384i + 192*A*B*a^3*b*d^4*i^3*x*\log((e*(a + b*x) \\
&))/(c + d*x)) - 192*A*B*b^4*c^3*d*i^3*x*\log((e*(a + b*x))/(c + d*x)) + A*B* \\
& a^2*b^2*d^4*i^3*x^2*\operatorname{atan}((a*d*1i + b*c*1i + b*d*x*2i)/(a*d - b*c))*576i + 1 \\
& 92*A*B*a*b^3*d^4*i^3*x^3*\log((e*(a + b*x))/(c + d*x)) - 192*A*B*b^4*c*d^3*i \\
& ^3*x^3*\log((e*(a + b*x))/(c + d*x)))/(96*b^4*g^5*(a*d - b*c)*(a + b*x)^4)
\end{aligned}$$

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)**5,x)

[Out] Timed out

$$3.82 \quad \int \frac{(ci+dx)^3 \left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)^2}{(ag+bgx)^6} dx$$

Optimal. Leaf size=299

$$\frac{bi^3(c+dx)^5 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)^2}{5g^6(a+bx)^5(bc-ad)^2} - \frac{2bBi^3(c+dx)^5 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{25g^6(a+bx)^5(bc-ad)^2} + \frac{di^3(c+dx)^4 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)^2}{4g^6(a+bx)^4(bc-ad)^2}$$

[Out] $\frac{1}{32}B^2d^3i^3(dx+c)^4/(-ad+bc)^2/g^6/(bx+a)^4 - \frac{2}{125}bB^2i^3(dx+c)^5/(-ad+bc)^2/g^6/(bx+a)^5 + \frac{1}{8}B^2d^3i^3(dx+c)^4(A+B\ln(e(bx+a)/(dx+c)))/(-ad+bc)^2/g^6/(bx+a)^4 - \frac{2}{25}bB^2i^3(dx+c)^5(A+B\ln(e(bx+a)/(dx+c)))/(-ad+bc)^2/g^6/(bx+a)^5 + \frac{1}{4}d^3i^3(dx+c)^4(A+B\ln(e(bx+a)/(dx+c)))^2/(-ad+bc)^2/g^6/(bx+a)^4 - \frac{1}{5}b^2i^3(dx+c)^5(A+B\ln(e(bx+a)/(dx+c)))^2/(-ad+bc)^2/g^6/(bx+a)^5$

Rubi [C] time = 5.20, antiderivative size = 1061, normalized size of antiderivative = 3.55, number of steps used = 146, number of rules used = 11, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}} = 0.262$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$-\frac{B^2i^3 \log^2(a+bx)d^5}{20b^4(bc-ad)^2g^6} - \frac{B^2i^3 \log^2(c+dx)d^5}{20b^4(bc-ad)^2g^6} + \frac{9B^2i^3 \log(a+bx)d^5}{200b^4(bc-ad)^2g^6} + \frac{Bi^3 \log(a+bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right) d^5}{10b^4(bc-ad)^2g^6} - \frac{9B^2i^3 \log^2(a+bx)d^5}{200b^4(bc-ad)^2g^6}$$

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x]])^2)/(a*g + b*g*x)^6, x]

[Out] $(-2*B^2*(b*c - a*d)^3*i^3)/(125*b^4*g^6*(a + b*x)^5) - (39*B^2*d*(b*c - a*d)^2*i^3)/(800*b^4*g^6*(a + b*x)^4) - (7*B^2*d^2*(b*c - a*d)*i^3)/(200*b^4*g^6*(a + b*x)^3) + (11*B^2*d^3*i^3)/(400*b^4*g^6*(a + b*x)^2) + (9*B^2*d^4*i^3)/(200*b^4*(b*c - a*d)*g^6*(a + b*x)) + (9*B^2*d^5*i^3*Log[a + b*x])/(200*b^4*(b*c - a*d)^2*g^6) - (B^2*d^5*i^3*Log[a + b*x]^2)/(20*b^4*(b*c - a*d)^2*g^6) - (2*B*(b*c - a*d)^3*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(25*b^4*g^6*(a + b*x)^5) - (11*B*d*(b*c - a*d)^2*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(40*b^4*g^6*(a + b*x)^4) - (3*B*d^2*(b*c - a*d)*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(10*b^4*g^6*(a + b*x)^3) - (B*d^3*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(20*b^4*g^6*(a + b*x)^2) + (B*d^4*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(10*b^4*(b*c - a*d)*g^6*(a + b*x)) + (B*d^5*i^3*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(10*b^4*(b*c - a*d)^2*g^6) - ((b*c - a*d)^3*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x]]^2)/(5*b^4*g^6*(a + b*x)^5) - (3*d*(b*c - a*d)^2*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x]]))$

$$\begin{aligned} &^2)/(4*b^4*g^6*(a + b*x)^4) - (d^2*(b*c - a*d)*i^3*(A + B*Log[(e*(a + b*x)) \\ &/ (c + d*x)])^2)/(b^4*g^6*(a + b*x)^3) - (d^3*i^3*(A + B*Log[(e*(a + b*x)) / (\\ &c + d*x)])^2)/(2*b^4*g^6*(a + b*x)^2) - (9*B^2*d^5*i^3*Log[c + d*x]) / (200*b \\ &^4*(b*c - a*d)^2*g^6) + (B^2*d^5*i^3*Log[-((d*(a + b*x)) / (b*c - a*d))] * Log[\\ &c + d*x]) / (10*b^4*(b*c - a*d)^2*g^6) - (B*d^5*i^3*(A + B*Log[(e*(a + b*x)) / \\ &(c + d*x)]) * Log[c + d*x]) / (10*b^4*(b*c - a*d)^2*g^6) - (B^2*d^5*i^3*Log[c + \\ &d*x]^2) / (20*b^4*(b*c - a*d)^2*g^6) + (B^2*d^5*i^3*Log[a + b*x] * Log[(b*(c + \\ &d*x)) / (b*c - a*d)]) / (10*b^4*(b*c - a*d)^2*g^6) + (B^2*d^5*i^3*PolyLog[2, - \\ &((d*(a + b*x)) / (b*c - a*d))]) / (10*b^4*(b*c - a*d)^2*g^6) + (B^2*d^5*i^3*Pol \\ &yLog[2, (b*(c + d*x)) / (b*c - a*d)]) / (10*b^4*(b*c - a*d)^2*g^6) \end{aligned}$$

Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &&
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
```

$(e*f - d*g), 0]$

Rule 2394

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_.) + (e_.)*(x_.))^{(n_.)}]*(b_.)]/((f_.) + (g_.)*(x_.)), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[(e*(f + g*x))/(e*f - d*g)]*(a + b*\text{Log}[c*(d + e*x)^n])/g, x] - \text{Dist}[(b*e*n)/g, \text{Int}[\text{Log}[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g, n\}, x] \&\& \text{NeQ}[e*f - d*g, 0]$

Rule 2418

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_.) + (e_.)*(x_.))^{(n_.)}]*(b_.))^{(p_.)}*(\text{RFx}_.), x_Symbol] \rightarrow \text{With}[\{u = \text{ExpandIntegrand}[(a + b*\text{Log}[c*(d + e*x)^n])^p, \text{RFx}, x]\}, \text{Int}[u, x] /; \text{SumQ}[u] /; \text{FreeQ}[\{a, b, c, d, e, n\}, x] \&\& \text{RationalFunctionQ}[\text{RFx}, x] \&\& \text{IntegerQ}[p]$

Rule 2524

$\text{Int}[(a_.) + \text{Log}[(c_.)*(\text{RFx}_.)^{(p_.)}]*(b_.))^{(n_.)}/((d_.) + (e_.)*(x_.)), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[d + e*x]*(a + b*\text{Log}[c*\text{RFx}^p])^n)/e, x] - \text{Dist}[(b*n*p)/e, \text{Int}[(\text{Log}[d + e*x]*(a + b*\text{Log}[c*\text{RFx}^p])^{(n-1)}*D[\text{RFx}, x])/(\text{RFx}, x), x] /; \text{FreeQ}[\{a, b, c, d, e, p\}, x] \&\& \text{RationalFunctionQ}[\text{RFx}, x] \&\& \text{IGtQ}[n, 0]$

Rule 2525

$\text{Int}[(a_.) + \text{Log}[(c_.)*(\text{RFx}_.)^{(p_.)}]*(b_.))^{(n_.)}*((d_.) + (e_.)*(x_.))^{(m_.)}, x_Symbol] \rightarrow \text{Simp}[(d + e*x)^{(m+1)}*(a + b*\text{Log}[c*\text{RFx}^p])^n/(e*(m+1)), x] - \text{Dist}[(b*n*p)/(e*(m+1)), \text{Int}[\text{SimplifyIntegrand}[(d + e*x)^{(m+1)}*(a + b*\text{Log}[c*\text{RFx}^p])^{(n-1)}*D[\text{RFx}, x])/(\text{RFx}, x), x], x] /; \text{FreeQ}[\{a, b, c, d, e, m, p\}, x] \&\& \text{RationalFunctionQ}[\text{RFx}, x] \&\& \text{IGtQ}[n, 0] \&\& (\text{EqQ}[n, 1] || \text{IntegerQ}[m]) \&\& \text{NeQ}[m, -1]$

Rule 2528

$\text{Int}[(a_.) + \text{Log}[(c_.)*(\text{RFx}_.)^{(p_.)}]*(b_.))^{(n_.)}*(\text{RGx}_.), x_Symbol] \rightarrow \text{With}[\{u = \text{ExpandIntegrand}[(a + b*\text{Log}[c*\text{RFx}^p])^n, \text{RGx}, x]\}, \text{Int}[u, x] /; \text{SumQ}[u] /; \text{FreeQ}[\{a, b, c, p\}, x] \&\& \text{RationalFunctionQ}[\text{RFx}, x] \&\& \text{RationalFunctionQ}[\text{RGx}, x] \&\& \text{IGtQ}[n, 0]$

Rubi steps

$$\begin{aligned}
\int \frac{(82c + 82dx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{(ag + bgx)^6} dx &= \int \left(\frac{551368(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^3 g^6 (a + bx)^6} + \frac{1654104d(bc - ad)^2}{b^3 g^6 (a + bx)^6} \right) dx \\
&= \frac{(551368d^3) \int \frac{\left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{(a+bx)^3} dx}{b^3 g^6} + \frac{(1654104d^2(bc - ad)) \int \frac{A + B \log \left(\frac{e(a+bx)}{c+dx} \right)}{(a+bx)^3} dx}{b^3 g^6} \\
&= -\frac{551368(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{5b^4 g^6 (a + bx)^5} - \frac{413526d(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^4 g^6 (a + bx)^5} \\
&= -\frac{551368(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{5b^4 g^6 (a + bx)^5} - \frac{413526d(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^4 g^6 (a + bx)^5} \\
&= -\frac{551368(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{5b^4 g^6 (a + bx)^5} - \frac{413526d(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^4 g^6 (a + bx)^5} \\
&= -\frac{551368(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{5b^4 g^6 (a + bx)^5} - \frac{413526d(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{b^4 g^6 (a + bx)^5} \\
&= -\frac{1102736B(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{25b^4 g^6 (a + bx)^5} - \frac{758131Bd(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{5b^4 g^6 (a + bx)^5} \\
&= -\frac{1102736B(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{25b^4 g^6 (a + bx)^5} - \frac{758131Bd(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{5b^4 g^6 (a + bx)^5} \\
&= -\frac{1102736B(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{25b^4 g^6 (a + bx)^5} - \frac{758131Bd(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{5b^4 g^6 (a + bx)^5} \\
&= -\frac{1102736B^2(bc - ad)^3}{125b^4 g^6 (a + bx)^5} - \frac{2687919B^2d(bc - ad)^2}{100b^4 g^6 (a + bx)^4} - \frac{482447B^2d^2(bc - ad)}{25b^4 g^6 (a + bx)^3} \\
&= -\frac{1102736B^2(bc - ad)^3}{125b^4 g^6 (a + bx)^5} - \frac{2687919B^2d(bc - ad)^2}{100b^4 g^6 (a + bx)^4} - \frac{482447B^2d^2(bc - ad)}{25b^4 g^6 (a + bx)^3} \\
&= -\frac{1102736B^2(bc - ad)^3}{125b^4 g^6 (a + bx)^5} - \frac{2687919B^2d(bc - ad)^2}{100b^4 g^6 (a + bx)^4} - \frac{482447B^2d^2(bc - ad)}{25b^4 g^6 (a + bx)^3} \\
&= -\frac{1102736B^2(bc - ad)^3}{125b^4 g^6 (a + bx)^5} - \frac{2687919B^2d(bc - ad)^2}{100b^4 g^6 (a + bx)^4} - \frac{482447B^2d^2(bc - ad)}{25b^4 g^6 (a + bx)^3}
\end{aligned}$$

Mathematica [C] time = 4.20, size = 2289, normalized size = 7.66

Result too large to show

Antiderivative was successfully verified.

[In] Integrate[(((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))^2)/(a*g + b*g*x)^6,x]

[Out]
$$\begin{aligned} & (i^3*(2000*a^2*B^2*d^2*(b*c - a*d)^3 - 825*a*B^2*d*(b*c - a*d)^4 - 192*B^2* \\ & (b*c - a*d)^5 + 4000*a*b*B^2*d^2*(b*c - a*d)^3*x - 825*b*B^2*d*(b*c - a*d)^4 \\ & 4*x + 2000*b^2*B^2*d^2*(b*c - a*d)^3*x^2 - 3000*a^2*B^2*d^3*(b*c - a*d)^2*(\\ & a + b*x) + 1100*a*B^2*d^2*(b*c - a*d)^3*(a + b*x) + 240*B^2*d*(b*c - a*d)^4 \\ & *(a + b*x) - 6000*a*b*B^2*d^3*(b*c - a*d)^2*x*(a + b*x) + 1100*b*B^2*d^2*(b \\ & *c - a*d)^3*x*(a + b*x) - 3000*b^2*B^2*d^3*(b*c - a*d)^2*x^2*(a + b*x) + 60 \\ & 00*a^2*B^2*d^4*(b*c - a*d)*(a + b*x)^2 - 6150*a*B^2*d^3*(b*c - a*d)^2*(a + \\ & b*x)^2 + 3520*B^2*d^2*(-(b*c) + a*d)^3*(a + b*x)^2 + 12000*a*b*B^2*d^4*(b*c \\ & - a*d)*x*(a + b*x)^2 - 6150*b*B^2*d^3*(b*c - a*d)^2*x*(a + b*x)^2 + 6000*b \\ & ^2*B^2*d^4*(b*c - a*d)*x^2*(a + b*x)^2 + 18000*a*b*B^2*c*d^4*(a + b*x)^3 - \\ & 18000*a^2*B^2*d^5*(a + b*x)^3 + 12300*a*B^2*d^4*(b*c - a*d)*(a + b*x)^3 + 9 \\ & 480*B^2*d^3*(b*c - a*d)^2*(a + b*x)^3 + 18000*b^2*B^2*c*d^4*x*(a + b*x)^3 - \\ & 18000*a*b*B^2*d^5*x*(a + b*x)^3 + 12300*b*B^2*d^4*(b*c - a*d)*x*(a + b*x)^ \\ & 3 - 16800*b*B^2*c*d^4*(a + b*x)^4 + 16800*a*B^2*d^5*(a + b*x)^4 + 18960*B^2 \\ & *d^4*(-(b*c) + a*d)*(a + b*x)^4 + 6000*a^2*B^2*d^5*(a + b*x)^3*Log[a + b*x] \\ & + 12000*a*b*B^2*d^5*x*(a + b*x)^3*Log[a + b*x] + 6000*b^2*B^2*d^5*x^2*(a + \\ & b*x)^3*Log[a + b*x] + 30300*a*B^2*d^5*(a + b*x)^4*Log[a + b*x] + 30300*b*B \\ & ^2*d^5*x*(a + b*x)^4*Log[a + b*x] - 35760*B^2*d^5*(a + b*x)^5*Log[a + b*x] \\ & - 4500*a*B*d*(b*c - a*d)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 960*B*(b*c \\ & - a*d)^5*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 4500*b*B*d*(b*c - a*d)^4*x \\ & *(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 6000*a*B*d^2*(b*c - a*d)^3*(a + b*x) \\ & *(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 1200*B*d*(b*c - a*d)^4*(a + b*x)* \\ & (A + B*Log[(e*(a + b*x))/(c + d*x)]) + 6000*b*B*d^2*(b*c - a*d)^3*x*(a + b*x) \\ & *(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 9000*a*B*d^3*(b*c - a*d)^2*(a + b \\ & *x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 9600*B*d^2*(-(b*c) + a*d)^3*(a \\ & + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 9000*b*B*d^3*(b*c - a*d)^2 \\ & *x*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 18000*a*B*d^4*(b*c - \\ & a*d)*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 8400*B*d^3*(b*c - a \\ & *d)^2*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 18000*b*B*d^4*(b*c \\ & - a*d)*x*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 16800*B*d^4*(- \\ & (b*c) + a*d)*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 18000*a*B*d \\ & ^5*(a + b*x)^4*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 18000*b*B \\ & *d^5*x*(a + b*x)^4*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 168 \\ & 00*B*d^5*(a + b*x)^5*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 24 \\ & 00*(b*c - a*d)^5*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 - 9000*d*(b*c - a*d) \\ & ^4*(a + b*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 + 12000*d^2*(-(b*c) + \end{aligned}$$

$$\begin{aligned}
& a^3d^3(a + bx)^2(A + B\log[(e(a + bx))/(c + dx)])^2 - 6000d^3(bc - a^2d)^2(a + bx)^3(A + B\log[(e(a + bx))/(c + dx)])^2 - 6000a^2B^2d^5(a + bx)^3\log[c + dx] \\
& - 12000abB^2d^5x^2(a + bx)^3\log[c + dx] - 6000b^2B^2d^5x^2(a + bx)^3\log[c + dx] - 30300aB^2d^5(a + bx)^4\log[c + dx] \\
& - 30300bB^2d^5x^2(a + bx)^4\log[c + dx] + 35760B^2d^5(a + bx)^5\log[c + dx] - 18000aBd^5(a + bx)^4(A + B\log[(e(a + bx))/(c + dx)]) \\
& \log[c + dx] - 18000bBd^5x^2(a + bx)^4(A + B\log[(e(a + bx))/(c + dx)])\log[c + dx] + 16800Bd^5(a + bx)^5(A + B\log[(e(a + bx))/(c + dx)]) \\
& \log[c + dx] - 9000aB^2d^5(a + bx)^4(\log[a + bx] * (\log[a + bx] - 2\log[(b(c + dx))/(bc - a^2d)])) - 2\text{PolyLog}[2, (d(a + bx))/(-bc + a^2d)] \\
& - 9000bB^2d^5x^2(a + bx)^4(\log[a + bx] * (\log[a + bx] - 2\log[(b(c + dx))/(bc - a^2d)])) - 2\text{PolyLog}[2, (d(a + bx))/(-bc + a^2d)] \\
& + 8400B^2d^5(a + bx)^5(\log[a + bx] * (\log[a + bx] - 2\log[(b(c + dx))/(bc - a^2d)])) - 2\text{PolyLog}[2, (d(a + bx))/(-bc + a^2d)] \\
& + 9000aB^2d^5(a + bx)^4((2\log[(d(a + bx))/(-bc + a^2d)] - \log[c + dx])\log[c + dx] + 2\text{PolyLog}[2, (b(c + dx))/(bc - a^2d)]) + 9000b \\
& B^2d^5x^2(a + bx)^4((2\log[(d(a + bx))/(-bc + a^2d)] - \log[c + dx])\log[c + dx] + 2\text{PolyLog}[2, (b(c + dx))/(bc - a^2d)]) - 8400B^2d^5(a + bx)^5 \\
& ((2\log[(d(a + bx))/(-bc + a^2d)] - \log[c + dx])\log[c + dx] + 2\text{PolyLog}[2, (b(c + dx))/(bc - a^2d)])) / (12000b^4(bc - a^2d)^2g^6(a + bx)^5)
\end{aligned}$$

fricas [B] time = 0.95, size = 1045, normalized size = 3.49

$$20\left(\left(20AB + 9B^2\right)b^5cd^4 - \left(20AB + 9B^2\right)ab^4d^5\right)i^3x^4 - 10\left(\left(200A^2 + 20AB - 11B^2\right)b^5c^2d^3 - 50\left(8A^2 + 4AB + \dots\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^6,x, alg orithm="fricas")

[Out] 1/4000*(20*((20*A*B + 9*B^2)*b^5*c*d^4 - (20*A*B + 9*B^2)*a*b^4*d^5)*i^3*x^4 - 10*((200*A^2 + 20*A*B - 11*B^2)*b^5*c^2*d^3 - 50*(8*A^2 + 4*A*B + B^2)*a*b^4*c*d^4 + (200*A^2 + 180*A*B + 61*B^2)*a^2*b^3*d^5)*i^3*x^3 - 10*(2*(200*A^2 + 60*A*B + 7*B^2)*b^5*c^3*d^2 - 75*(8*A^2 + 4*A*B + B^2)*a*b^4*c^2*d^3 + (200*A^2 + 180*A*B + 61*B^2)*a^3*b^2*d^5)*i^3*x^2 - 5*((600*A^2 + 220*A*B + 39*B^2)*b^5*c^4*d - 100*(8*A^2 + 4*A*B + B^2)*a*b^4*c^3*d^2 + (200*A^2 + 180*A*B + 61*B^2)*a^4*b*d^5)*i^3*x - (32*(25*A^2 + 10*A*B + 2*B^2)*b^5*c^5 - 125*(8*A^2 + 4*A*B + B^2)*a*b^4*c^4*d + (200*A^2 + 180*A*B + 61*B^2)*a^5*d^5)*i^3 + 200*(B^2*b^5*d^5*i^3*x^5 + 5*B^2*a*b^4*d^5*i^3*x^4 - 10*(B^2*b^5*c^2*d^3 - 2*B^2*a*b^4*c*d^4)*i^3*x^3 - 10*(2*B^2*b^5*c^3*d^2 - 3*B^2*a*b^4*c^2*d^3)*i^3*x^2 - 5*(3*B^2*b^5*c^4*d - 4*B^2*a*b^4*c^3*d^2)*i^3*x - (4*B^2*b^5*c^5 - 5*B^2*a*b^4*c^4*d)*i^3)*log((b*e*x + a*e)/(d*x + c))^2 + 20*

$$\begin{aligned} & ((20AB + 9B^2)b^5d^5i^3x^5 + 5(4B^2b^5c^2d^4 + 5(4AB + B^2)ab^4d^5)i^3x^4 - 10((20AB + B^2)b^5c^2d^3 - 10(4AB + B^2)ab^4c^2d^4)i^3x^3 \\ & - 10(2(20AB + 3B^2)b^5c^3d^2 - 15(4AB + B^2)ab^4c^2d^3)i^3x^2 - 5((60AB + 11B^2)b^5c^4d - 20(4AB + B^2)ab^4c^3d^2)i^3x \\ & - (16(5AB + B^2)b^5c^5 - 25(4AB + B^2)ab^4c^4d)i^3) \log\left(\frac{bex+ae}{dx+c}\right) / ((b^{11}c^2 - 2ab^{10}cd + a^2b^9d^2)g^6x^5 \\ & + 5(ab^{10}c^2 - 2a^2b^9cd + a^3b^8d^2)g^6x^4 + 10(a^2b^9c^2 - 2a^3b^8cd + a^4b^7d^2)g^6x^3 + 10(a^3b^8c^2 - 2a^4b^7cd \\ & + a^5b^6d^2)g^6x^2 + 5(a^4b^7c^2 - 2a^5b^6cd + a^6b^5d^2)g^6x + (a^5b^6c^2 - 2a^6b^5cd + a^7b^4d^2)g^6) \end{aligned}$$

giac [A] time = 4.34, size = 437, normalized size = 1.46

$$\left(800 B^2 b i e^6 \log\left(\frac{bxe+ae}{dx+c}\right)^2 - \frac{1000 (bxe+ae) B^2 d i e^5 \log\left(\frac{bxe+ae}{dx+c}\right)^2}{dx+c} + 1600 A B b i e^6 \log\left(\frac{bxe+ae}{dx+c}\right) + 320 B^2 b i e^6 \log\left(\frac{bxe+ae}{dx+c}\right) - \frac{2000 (bxe+ae) A B d i e^5 \log\left(\frac{bxe+ae}{dx+c}\right)}{dx+c} - 500 (bxe+ae) B^2 d i e^5 \log\left(\frac{bxe+ae}{dx+c}\right) / (dx+c) + 800 A^2 b i e^6 + 320 A B b i e^6 + 64 B^2 b i e^6 - 1000 (bxe+ae) A^2 d i e^5 / (dx+c) - 500 (bxe+ae) A B d i e^5 / (dx+c) - 125 (bxe+ae) B^2 d i e^5 / (dx+c) \right) \cdot \left(\frac{b^2 c^2 (b^2 c^2 - a^2 d^2)}{(b^2 c^2 - a^2 d^2)^2} - \frac{a d}{(b^2 c^2 - a^2 d^2)} \right) / ((b^{11} c^2 - 2 a b^{10} c d + a^2 b^9 d^2) g^6 x^5 + \dots)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^6,x, algorithm="giac")

[Out] 1/4000*(800*B^2*b*i*e^6*log((b*x*e + a*e)/(d*x + c))^2 - 1000*(b*x*e + a*e)*B^2*d*i*e^5*log((b*x*e + a*e)/(d*x + c))^2/(d*x + c) + 1600*A*B*b*i*e^6*log((b*x*e + a*e)/(d*x + c)) + 320*B^2*b*i*e^6*log((b*x*e + a*e)/(d*x + c)) - 2000*(b*x*e + a*e)*A*B*d*i*e^5*log((b*x*e + a*e)/(d*x + c))/(d*x + c) - 500*(b*x*e + a*e)*B^2*d*i*e^5*log((b*x*e + a*e)/(d*x + c))/(d*x + c) + 800*A^2*b*i*e^6 + 320*A*B*b*i*e^6 + 64*B^2*b*i*e^6 - 1000*(b*x*e + a*e)*A^2*d*i*e^5/(d*x + c) - 500*(b*x*e + a*e)*A*B*d*i*e^5/(d*x + c) - 125*(b*x*e + a*e)*B^2*d*i*e^5/(d*x + c))*(b^2*c^2/(b^2*c^2 - a^2*d^2) - a*d/((b^2*c^2 - a^2*d^2)))/((b*x*e + a*e)^5*b*c*g^6/(d*x + c)^5 - (b*x*e + a*e)^5*a*d*g^6/(d*x + c)^5)

maple [B] time = 0.05, size = 1814, normalized size = 6.07

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^6,x)

[Out] 1/4*d^2*e^4*i^3/(a*d-b*c)^3/g^6*A^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*a-1/4*d*e^4*i^3/(a*d-b*c)^3/g^6*A^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*b*c-1/5*d*e^5*i^3/(a*d-b*c)^3/g^6*A^2*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/

$$\begin{aligned}
& d^5e + b/d^5e)^{5a+1/5} e^{5i^3} / (a^3d - b^3c)^3 / g^6 A^2 b^2 / ((1/(d^5x+c)) * a^5e - 1/(d^5x+c) \\
& * b^5c / d^5e + b/d^5e)^{5c+1/2} d^2e^4i^3 / (a^3d - b^3c)^3 / g^6 A^* B / ((1/(d^5x+c)) * a^5e - 1/(d^5 \\
& * x+c) * b^5c / d^5e + b/d^5e)^4 \ln(b/d^5e + (a^3d - b^3c) / (d^5x+c) / d^5e) * a - 1/2 * d^5e^4i^3 / (a^3d \\
& - b^3c)^3 / g^6 A^* B / ((1/(d^5x+c)) * a^5e - 1/(d^5x+c) * b^5c / d^5e + b/d^5e)^4 \ln(b/d^5e + (a^3d - b^3c) \\
&) / (d^5x+c) / d^5e) * b^5c + 1/8 * d^2e^4i^3 / (a^3d - b^3c)^3 / g^6 A^* B / ((1/(d^5x+c)) * a^5e - 1/(d^5 \\
& x+c) * b^5c / d^5e + b/d^5e)^4 * a - 1/8 * d^5e^4i^3 / (a^3d - b^3c)^3 / g^6 A^* B / ((1/(d^5x+c)) * a^5e - 1/ \\
& (d^5x+c) * b^5c / d^5e + b/d^5e)^4 * b^5c - 2/5 * d^5e^5i^3 / (a^3d - b^3c)^3 / g^6 A^* B * b / ((1/(d^5x+c) \\
& * a^5e - 1/(d^5x+c) * b^5c / d^5e + b/d^5e)^5 \ln(b/d^5e + (a^3d - b^3c) / (d^5x+c) / d^5e) * a + 2/5 * e^{5i \\
& ^3} / (a^3d - b^3c)^3 / g^6 A^* B * b^2 / ((1/(d^5x+c)) * a^5e - 1/(d^5x+c) * b^5c / d^5e + b/d^5e)^5 \ln(b/d \\
& * e + (a^3d - b^3c) / (d^5x+c) / d^5e) * c - 2/25 * d^5e^5i^3 / (a^3d - b^3c)^3 / g^6 A^* B * b / ((1/(d^5x+c) \\
& * a^5e - 1/(d^5x+c) * b^5c / d^5e + b/d^5e)^5 * a + 2/25 * e^{5i^3} / (a^3d - b^3c)^3 / g^6 A^* B * b^2 / ((1/(\\
& d^5x+c) * a^5e - 1/(d^5x+c) * b^5c / d^5e + b/d^5e)^5 * c + 1/4 * d^2e^4i^3 / (a^3d - b^3c)^3 / g^6 B^2 \\
& / ((1/(d^5x+c)) * a^5e - 1/(d^5x+c) * b^5c / d^5e + b/d^5e)^4 \ln(b/d^5e + (a^3d - b^3c) / (d^5x+c) / d^5e)^ \\
& 2 * a - 1/4 * d^5e^4i^3 / (a^3d - b^3c)^3 / g^6 B^2 / ((1/(d^5x+c)) * a^5e - 1/(d^5x+c) * b^5c / d^5e + b/d^5 \\
& e)^4 \ln(b/d^5e + (a^3d - b^3c) / (d^5x+c) / d^5e)^2 * b^5c + 1/8 * d^2e^4i^3 / (a^3d - b^3c)^3 / g^6 * \\
& B^2 / ((1/(d^5x+c)) * a^5e - 1/(d^5x+c) * b^5c / d^5e + b/d^5e)^4 \ln(b/d^5e + (a^3d - b^3c) / (d^5x+c) / d^5 \\
& e) * a - 1/8 * d^5e^4i^3 / (a^3d - b^3c)^3 / g^6 B^2 / ((1/(d^5x+c)) * a^5e - 1/(d^5x+c) * b^5c / d^5e + b/d^5 \\
& * e)^4 \ln(b/d^5e + (a^3d - b^3c) / (d^5x+c) / d^5e) * b^5c + 1/32 * d^2e^4i^3 / (a^3d - b^3c)^3 / g^6 * \\
& B^2 / ((1/(d^5x+c)) * a^5e - 1/(d^5x+c) * b^5c / d^5e + b/d^5e)^4 * a - 1/32 * d^5e^4i^3 / (a^3d - b^3c)^3 / \\
& g^6 B^2 / ((1/(d^5x+c)) * a^5e - 1/(d^5x+c) * b^5c / d^5e + b/d^5e)^4 * b^5c - 1/5 * d^5e^5i^3 / (a^3d - b^3 \\
& c)^3 / g^6 B^2 * b / ((1/(d^5x+c)) * a^5e - 1/(d^5x+c) * b^5c / d^5e + b/d^5e)^5 \ln(b/d^5e + (a^3d - b^3c) \\
& / (d^5x+c) / d^5e)^2 * a + 1/5 * e^{5i^3} / (a^3d - b^3c)^3 / g^6 B^2 * b^2 / ((1/(d^5x+c)) * a^5e - 1/(d^5x \\
& +c) * b^5c / d^5e + b/d^5e)^5 \ln(b/d^5e + (a^3d - b^3c) / (d^5x+c) / d^5e)^2 * c - 2/25 * d^5e^5i^3 / (a^3 \\
& d - b^3c)^3 / g^6 B^2 * b / ((1/(d^5x+c)) * a^5e - 1/(d^5x+c) * b^5c / d^5e + b/d^5e)^5 \ln(b/d^5e + (a^3d - \\
& b^3c) / (d^5x+c) / d^5e) * a + 2/25 * e^{5i^3} / (a^3d - b^3c)^3 / g^6 B^2 * b^2 / ((1/(d^5x+c)) * a^5e - 1/(\\
& d^5x+c) * b^5c / d^5e + b/d^5e)^5 \ln(b/d^5e + (a^3d - b^3c) / (d^5x+c) / d^5e) * c - 2/125 * d^5e^5i^3 / (\\
& a^3d - b^3c)^3 / g^6 B^2 * b / ((1/(d^5x+c)) * a^5e - 1/(d^5x+c) * b^5c / d^5e + b/d^5e)^5 * a + 2/125 * e^{5i \\
& ^3} / (a^3d - b^3c)^3 / g^6 B^2 * b^2 / ((1/(d^5x+c)) * a^5e - 1/(d^5x+c) * b^5c / d^5e + b/d^5e)^5 * c
\end{aligned}$$

maxima [B] time = 16.44, size = 15765, normalized size = 52.73

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^6,x, alg
orithm="maxima")

[Out]
$$\begin{aligned}
& -3/20 * (5*b*x + a) * B^2 * c^2 * d * i^3 * \log(b*e*x/(d*x + c) + a*e/(d*x + c))^2 / (b^7 \\
& * g^6 * x^5 + 5*a*b^6 * g^6 * x^4 + 10*a^2*b^5 * g^6 * x^3 + 10*a^3*b^4 * g^6 * x^2 + 5*a^4 \\
& * b^3 * g^6 * x + a^5 * b^2 * g^6) - 1/10 * (10*b^2*x^2 + 5*a*b*x + a^2) * B^2 * c * d^2 * i^3 \\
& * \log(b*e*x/(d*x + c) + a*e/(d*x + c))^2 / (b^8 * g^6 * x^5 + 5*a*b^7 * g^6 * x^4 + 1 \\
& 0*a^2*b^6 * g^6 * x^3 + 10*a^3*b^5 * g^6 * x^2 + 5*a^4*b^4 * g^6 * x + a^5 * b^3 * g^6) - 1 \\
& /20 * (10*b^3*x^3 + 10*a*b^2*x^2 + 5*a^2*b*x + a^3) * B^2 * d^3 * i^3 * \log(b*e*x/(d* \\
& x + c) + a*e/(d*x + c))^2 / (b^9 * g^6 * x^5 + 5*a*b^8 * g^6 * x^4 + 10*a^2*b^7 * g^6 * x \\
& ^3 + 10*a^3*b^6 * g^6 * x^2 + 5*a^4*b^5 * g^6 * x + a^5 * b^4 * g^6) - 1/9000 * (60 * (60 *
\end{aligned}$$

$$\begin{aligned}
& b^4 d^4 x^4 + 12 b^4 c^4 - 63 a b^3 c^3 d + 137 a^2 b^2 c^2 d^2 - 163 a^3 b \\
& c d^3 + 137 a^4 d^4 - 30 (b^4 c d^3 - 9 a b^3 d^4) x^3 + 10 (2 b^4 c^2 d^2 \\
& - 13 a b^3 c d^3 + 47 a^2 b^2 d^4) x^2 - 5 (3 b^4 c^3 d - 17 a b^3 c^2 d^2 \\
& + 43 a^2 b^2 c d^3 - 77 a^3 b d^4) x) / ((b^{10} c^4 - 4 a b^9 c^3 d + 6 a^2 b \\
& ^8 c^2 d^2 - 4 a^3 b^7 c d^3 + a^4 b^6 d^4) g^6 x^5 + 5 (a b^9 c^4 - 4 a^2 b \\
& ^8 c^3 d + 6 a^3 b^7 c^2 d^2 - 4 a^4 b^6 c d^3 + a^5 b^5 d^4) g^6 x^4 + 10 \\
& (a^2 b^8 c^4 - 4 a^3 b^7 c^3 d + 6 a^4 b^6 c^2 d^2 - 4 a^5 b^5 c d^3 + a^6 \\
& b^4 d^4) g^6 x^3 + 10 (a^3 b^7 c^4 - 4 a^4 b^6 c^3 d + 6 a^5 b^5 c^2 d^2 - \\
& 4 a^6 b^4 c d^3 + a^7 b^3 d^4) g^6 x^2 + 5 (a^4 b^6 c^4 - 4 a^5 b^5 c^3 d \\
& + 6 a^6 b^4 c^2 d^2 - 4 a^7 b^3 c d^3 + a^8 b^2 d^4) g^6 x + (a^5 b^5 c^4 - \\
& 4 a^6 b^4 c^3 d + 6 a^7 b^3 c^2 d^2 - 4 a^8 b^2 c d^3 + a^9 b d^4) g^6) + \\
& 60 d^5 \log(b x + a) / ((b^6 c^5 - 5 a b^5 c^4 d + 10 a^2 b^4 c^3 d^2 - 10 a^3 \\
& b^3 c^2 d^3 + 5 a^4 b^2 c d^4 - a^5 b d^5) g^6) - 60 d^5 \log(d x + c) / ((b^6 \\
& c^5 - 5 a b^5 c^4 d + 10 a^2 b^4 c^3 d^2 - 10 a^3 b^3 c^2 d^3 + 5 a^4 b^2 \\
& c d^4 - a^5 b d^5) g^6) * \log(b e x / (d x + c) + a e / (d x + c)) + (144 b^5 c \\
& ^5 - 1125 a b^4 c^4 d + 4000 a^2 b^3 c^3 d^2 - 9000 a^3 b^2 c^2 d^3 + 18000 \\
& a^4 b c d^4 - 12019 a^5 d^5 + 8220 (b^5 c d^4 - a b^4 d^5) x^4 - 30 (77 b^5 \\
& c^2 d^3 - 1250 a b^4 c d^4 + 1173 a^2 b^3 d^5) x^3 + 10 (94 b^5 c^3 d^2 - \\
& 975 a b^4 c^2 d^3 + 6600 a^2 b^3 c d^4 - 5719 a^3 b^2 d^5) x^2 - 1800 (b^5 \\
& d^5 x^5 + 5 a b^4 d^5 x^4 + 10 a^2 b^3 d^5 x^3 + 10 a^3 b^2 d^5 x^2 + 5 a^4 \\
& b d^5 x + a^5 d^5) * \log(b x + a)^2 - 1800 (b^5 d^5 x^5 + 5 a b^4 d^5 x^4 + \\
& 10 a^2 b^3 d^5 x^3 + 10 a^3 b^2 d^5 x^2 + 5 a^4 b d^5 x + a^5 d^5) * \log(d x \\
& + c)^2 - 5 (81 b^5 c^4 d - 700 a b^4 c^3 d^2 + 3000 a^2 b^3 c^2 d^3 - 1080 \\
& 0 a^3 b^2 c d^4 + 8419 a^4 b d^5) x + 8220 (b^5 d^5 x^5 + 5 a b^4 d^5 x^4 + \\
& 10 a^2 b^3 d^5 x^3 + 10 a^3 b^2 d^5 x^2 + 5 a^4 b d^5 x + a^5 d^5) * \log(b x \\
& + a) - 60 (137 b^5 d^5 x^5 + 685 a b^4 d^5 x^4 + 1370 a^2 b^3 d^5 x^3 + 13 \\
& 70 a^3 b^2 d^5 x^2 + 685 a^4 b d^5 x + 137 a^5 d^5 - 60 (b^5 d^5 x^5 + 5 a b \\
& ^4 d^5 x^4 + 10 a^2 b^3 d^5 x^3 + 10 a^3 b^2 d^5 x^2 + 5 a^4 b d^5 x + a^5 \\
& d^5) * \log(b x + a) * \log(d x + c)) / (a^5 b^6 c^5 g^6 - 5 a^6 b^5 c^4 d g^6 + \\
& 10 a^7 b^4 c^3 d^2 g^6 - 10 a^8 b^3 c^2 d^3 g^6 + 5 a^9 b^2 c d^4 g^6 - a^{10} b \\
& d^5 g^6 + (b^{11} c^5 g^6 - 5 a b^{10} c^4 d g^6 + 10 a^2 b^9 c^3 d^2 g^6 - \\
& 10 a^3 b^8 c^2 d^3 g^6 + 5 a^4 b^7 c d^4 g^6 - a^5 b^6 d^5 g^6) x^5 + 5 (a \\
& b^{10} c^5 g^6 - 5 a^2 b^9 c^4 d g^6 + 10 a^3 b^8 c^3 d^2 g^6 - 10 a^4 b^7 c \\
& ^2 d^3 g^6 + 5 a^5 b^6 c d^4 g^6 - a^6 b^5 d^5 g^6) x^4 + 10 (a^2 b^9 c^5 g^6 \\
& - 5 a^3 b^8 c^4 d g^6 + 10 a^4 b^7 c^3 d^2 g^6 - 10 a^5 b^6 c^2 d^3 g^6 \\
& + 5 a^6 b^5 c d^4 g^6 - a^7 b^4 d^5 g^6) x^3 + 10 (a^3 b^8 c^5 g^6 - 5 a^4 b \\
& ^7 c^4 d g^6 + 10 a^5 b^6 c^3 d^2 g^6 - 10 a^6 b^5 c^2 d^3 g^6 + 5 a^7 b^4 \\
& c d^4 g^6 - a^8 b^3 d^5 g^6) x^2 + 5 (a^4 b^7 c^5 g^6 - 5 a^5 b^6 c^4 d g^6 \\
& + 10 a^6 b^5 c^3 d^2 g^6 - 10 a^7 b^4 c^2 d^3 g^6 + 5 a^8 b^3 c d^4 g^6 - \\
& a^9 b^2 d^5 g^6) x) * B^2 c^3 i^3 - 1/12000 (60 ((27 a b^4 c^4 - 148 a^2 b^3 \\
& c^3 d + 352 a^3 b^2 c^2 d^2 - 548 a^4 b c d^3 + 77 a^5 d^4 - 60 (5 b^5 c^3 \\
& d^3 - a b^4 d^4) x^4 + 30 (5 b^5 c^2 d^2 - 46 a b^4 c d^3 + 9 a^2 b^3 d^4) x^3 \\
& - 10 (10 b^5 c^3 d - 67 a b^4 c^2 d^2 + 248 a^2 b^3 c d^3 - 47 a^3 b^2 \\
& d^4) x^2 + 5 (15 b^5 c^4 - 88 a b^4 c^3 d + 232 a^2 b^3 c^2 d^2 - 428 a^3 b \\
& ^2 c d^3 + 77 a^4 b d^4) x) / ((b^{11} c^4 - 4 a b^{10} c^3 d + 6 a^2 b^9 c^2 d^2
\end{aligned}$$

$$\begin{aligned}
& - 4*a^3*b^8*c*d^3 + a^4*b^7*d^4)*g^6*x^5 + 5*(a*b^10*c^4 - 4*a^2*b^9*c^3*d \\
& + 6*a^3*b^8*c^2*d^2 - 4*a^4*b^7*c*d^3 + a^5*b^6*d^4)*g^6*x^4 + 10*(a^2*b^9 \\
& *c^4 - 4*a^3*b^8*c^3*d + 6*a^4*b^7*c^2*d^2 - 4*a^5*b^6*c*d^3 + a^6*b^5*d^4) \\
& *g^6*x^3 + 10*(a^3*b^8*c^4 - 4*a^4*b^7*c^3*d + 6*a^5*b^6*c^2*d^2 - 4*a^6*b^ \\
& 5*c*d^3 + a^7*b^4*d^4)*g^6*x^2 + 5*(a^4*b^7*c^4 - 4*a^5*b^6*c^3*d + 6*a^6*b \\
& ^5*c^2*d^2 - 4*a^7*b^4*c*d^3 + a^8*b^3*d^4)*g^6*x + (a^5*b^6*c^4 - 4*a^6*b^ \\
& 5*c^3*d + 6*a^7*b^4*c^2*d^2 - 4*a^8*b^3*c*d^3 + a^9*b^2*d^4)*g^6) - 60*(5*b \\
& *c*d^4 - a*d^5)*\log(b*x + a)/((b^7*c^5 - 5*a*b^6*c^4*d + 10*a^2*b^5*c^3*d^2 \\
& - 10*a^3*b^4*c^2*d^3 + 5*a^4*b^3*c*d^4 - a^5*b^2*d^5)*g^6) + 60*(5*b*c*d^4 \\
& - a*d^5)*\log(d*x + c)/((b^7*c^5 - 5*a*b^6*c^4*d + 10*a^2*b^5*c^3*d^2 - 10* \\
& a^3*b^4*c^2*d^3 + 5*a^4*b^3*c*d^4 - a^5*b^2*d^5)*g^6))*\log(b*e*x/(d*x + c) \\
& + a*e/(d*x + c)) + (549*a*b^5*c^5 - 4625*a^2*b^4*c^4*d + 19000*a^3*b^3*c^3* \\
& d^2 - 63000*a^4*b^2*c^2*d^3 + 51875*a^5*b*c*d^4 - 3799*a^6*d^5 - 60*(625*b^ \\
& 6*c^2*d^3 - 702*a*b^5*c*d^4 + 77*a^2*b^4*d^5))*x^4 + 30*(325*b^6*c^3*d^2 - 5 \\
& 667*a*b^5*c^2*d^3 + 5975*a^2*b^4*c*d^4 - 633*a^3*b^3*d^5))*x^3 - 10*(350*b^6 \\
& *c^4*d - 3949*a*b^5*c^3*d^2 + 29475*a^2*b^4*c^2*d^3 - 28775*a^3*b^3*c*d^4 + \\
& 2899*a^4*b^2*d^5))*x^2 + 1800*(5*a^5*b*c*d^4 - a^6*d^5 + (5*b^6*c*d^4 - a*b \\
& ^5*d^5))*x^5 + 5*(5*a*b^5*c*d^4 - a^2*b^4*d^5))*x^4 + 10*(5*a^2*b^4*c*d^4 - a \\
& ^3*b^3*d^5))*x^3 + 10*(5*a^3*b^3*c*d^4 - a^4*b^2*d^5))*x^2 + 5*(5*a^4*b^2*c*d \\
& ^4 - a^5*b*d^5))*x*\log(b*x + a)^2 + 1800*(5*a^5*b*c*d^4 - a^6*d^5 + (5*b^6* \\
& c*d^4 - a*b^5*d^5))*x^5 + 5*(5*a*b^5*c*d^4 - a^2*b^4*d^5))*x^4 + 10*(5*a^2*b^ \\
& 4*c*d^4 - a^3*b^3*d^5))*x^3 + 10*(5*a^3*b^3*c*d^4 - a^4*b^2*d^5))*x^2 + 5*(5* \\
& a^4*b^2*c*d^4 - a^5*b*d^5))*x*\log(d*x + c)^2 + 5*(225*b^6*c^5 - 2201*a*b^5* \\
& c^4*d + 10900*a^2*b^4*c^3*d^2 - 46200*a^3*b^3*c^2*d^3 + 41075*a^4*b^2*c*d^4 \\
& - 3799*a^5*b*d^5))*x - 60*(625*a^5*b*c*d^4 - 77*a^6*d^5 + (625*b^6*c*d^4 - \\
& 77*a*b^5*d^5))*x^5 + 5*(625*a*b^5*c*d^4 - 77*a^2*b^4*d^5))*x^4 + 10*(625*a^2* \\
& b^4*c*d^4 - 77*a^3*b^3*d^5))*x^3 + 10*(625*a^3*b^3*c*d^4 - 77*a^4*b^2*d^5))*x \\
& ^2 + 5*(625*a^4*b^2*c*d^4 - 77*a^5*b*d^5))*x*\log(b*x + a) + 60*(625*a^5*b*c \\
& *d^4 - 77*a^6*d^5 + (625*b^6*c*d^4 - 77*a*b^5*d^5))*x^5 + 5*(625*a*b^5*c*d^4 \\
& - 77*a^2*b^4*d^5))*x^4 + 10*(625*a^2*b^4*c*d^4 - 77*a^3*b^3*d^5))*x^3 + 10*(\\
& 625*a^3*b^3*c*d^4 - 77*a^4*b^2*d^5))*x^2 + 5*(625*a^4*b^2*c*d^4 - 77*a^5*b*d \\
& ^5))*x - 60*(5*a^5*b*c*d^4 - a^6*d^5 + (5*b^6*c*d^4 - a*b^5*d^5))*x^5 + 5*(5* \\
& a*b^5*c*d^4 - a^2*b^4*d^5))*x^4 + 10*(5*a^2*b^4*c*d^4 - a^3*b^3*d^5))*x^3 + 1 \\
& 0*(5*a^3*b^3*c*d^4 - a^4*b^2*d^5))*x^2 + 5*(5*a^4*b^2*c*d^4 - a^5*b*d^5))*x* \\
& \log(b*x + a))*\log(d*x + c))/((a^5*b^7*c^5*g^6 - 5*a^6*b^6*c^4*d*g^6 + 10*a^7 \\
& *b^5*c^3*d^2*g^6 - 10*a^8*b^4*c^2*d^3*g^6 + 5*a^9*b^3*c*d^4*g^6 - a^10*b^2* \\
& d^5*g^6 + (b^12*c^5*g^6 - 5*a*b^11*c^4*d*g^6 + 10*a^2*b^10*c^3*d^2*g^6 - 10 \\
& *a^3*b^9*c^2*d^3*g^6 + 5*a^4*b^8*c*d^4*g^6 - a^5*b^7*d^5*g^6))*x^5 + 5*(a*b^ \\
& 11*c^5*g^6 - 5*a^2*b^10*c^4*d*g^6 + 10*a^3*b^9*c^3*d^2*g^6 - 10*a^4*b^8*c^2 \\
& *d^3*g^6 + 5*a^5*b^7*c*d^4*g^6 - a^6*b^6*d^5*g^6))*x^4 + 10*(a^2*b^10*c^5*g^ \\
& 6 - 5*a^3*b^9*c^4*d*g^6 + 10*a^4*b^8*c^3*d^2*g^6 - 10*a^5*b^7*c^2*d^3*g^6 + \\
& 5*a^6*b^6*c*d^4*g^6 - a^7*b^5*d^5*g^6))*x^3 + 10*(a^3*b^9*c^5*g^6 - 5*a^4*b \\
& ^8*c^4*d*g^6 + 10*a^5*b^7*c^3*d^2*g^6 - 10*a^6*b^6*c^2*d^3*g^6 + 5*a^7*b^5* \\
& c*d^4*g^6 - a^8*b^4*d^5*g^6))*x^2 + 5*(a^4*b^8*c^5*g^6 - 5*a^5*b^7*c^4*d*g^6 \\
& + 10*a^6*b^6*c^3*d^2*g^6 - 10*a^7*b^5*c^2*d^3*g^6 + 5*a^8*b^4*c*d^4*g^6 -
\end{aligned}$$

$$\begin{aligned}
& a^9 b^3 d^5 g^6) * x)) * B^2 * c^2 * d * i^3 - 1/18000 * (60 * ((47 * a^2 * b^4 * c^4 - 278 * a^3 \\
& * b^3 * c^3 * d + 822 * a^4 * b^2 * c^2 * d^2 - 278 * a^5 * b * c * d^3 + 47 * a^6 * d^4 + 60 * (10 * b^6 \\
& * c^2 * d^2 - 5 * a * b^5 * c * d^3 + a^2 * b^4 * d^4) * x^4 - 30 * (10 * b^6 * c^3 * d - 95 * a * b^5 * \\
& c^2 * d^2 + 46 * a^2 * b^4 * c * d^3 - 9 * a^3 * b^3 * d^4) * x^3 + 10 * (20 * b^6 * c^4 - 140 * a * b^5 \\
& * c^3 * d + 537 * a^2 * b^4 * c^2 * d^2 - 248 * a^3 * b^3 * c * d^3 + 47 * a^4 * b^2 * d^4) * x^2 + 5 \\
& * (35 * a * b^5 * c^4 - 218 * a^2 * b^4 * c^3 * d + 702 * a^3 * b^3 * c^2 * d^2 - 278 * a^4 * b^2 * c * d^3 \\
& + 47 * a^5 * b * d^4) * x) / ((b^12 * c^4 - 4 * a * b^11 * c^3 * d + 6 * a^2 * b^10 * c^2 * d^2 - 4 * a^3 \\
& * b^9 * c * d^3 + a^4 * b^8 * d^4) * g^6 * x^5 + 5 * (a * b^11 * c^4 - 4 * a^2 * b^10 * c^3 * d + 6 * \\
& a^3 * b^9 * c^2 * d^2 - 4 * a^4 * b^8 * c * d^3 + a^5 * b^7 * d^4) * g^6 * x^4 + 10 * (a^2 * b^10 * c^4 \\
& - 4 * a^3 * b^9 * c^3 * d + 6 * a^4 * b^8 * c^2 * d^2 - 4 * a^5 * b^7 * c * d^3 + a^6 * b^6 * d^4) * g^6 \\
& * x^3 + 10 * (a^3 * b^9 * c^4 - 4 * a^4 * b^8 * c^3 * d + 6 * a^5 * b^7 * c^2 * d^2 - 4 * a^6 * b^6 * c * \\
& d^3 + a^7 * b^5 * d^4) * g^6 * x^2 + 5 * (a^4 * b^8 * c^4 - 4 * a^5 * b^7 * c^3 * d + 6 * a^6 * b^6 * c^2 \\
& * d^2 - 4 * a^7 * b^5 * c * d^3 + a^8 * b^4 * d^4) * g^6 * x + (a^5 * b^7 * c^4 - 4 * a^6 * b^6 * c^3 \\
& * d + 6 * a^7 * b^5 * c^2 * d^2 - 4 * a^8 * b^4 * c * d^3 + a^9 * b^3 * d^4) * g^6) + 60 * (10 * b^2 * \\
& c^2 * d^3 - 5 * a * b * c * d^4 + a^2 * d^5) * \log(b * x + a) / ((b^8 * c^5 - 5 * a * b^7 * c^4 * d + 1 \\
& 0 * a^2 * b^6 * c^3 * d^2 - 10 * a^3 * b^5 * c^2 * d^3 + 5 * a^4 * b^4 * c * d^4 - a^5 * b^3 * d^5) * g^6 \\
&) - 60 * (10 * b^2 * c^2 * d^3 - 5 * a * b * c * d^4 + a^2 * d^5) * \log(d * x + c) / ((b^8 * c^5 - 5 * \\
& a * b^7 * c^4 * d + 10 * a^2 * b^6 * c^3 * d^2 - 10 * a^3 * b^5 * c^2 * d^3 + 5 * a^4 * b^4 * c * d^4 - a \\
& ^5 * b^3 * d^5) * g^6) * \log(b * e * x / (d * x + c) + a * e / (d * x + c)) + (1489 * a^2 * b^5 * c^5 \\
& - 14375 * a^3 * b^4 * c^4 * d + 85000 * a^4 * b^3 * c^3 * d^2 - 85000 * a^5 * b^2 * c^2 * d^3 + 143 \\
& 75 * a^6 * b * c * d^4 - 1489 * a^7 * d^5 + 60 * (1100 * b^7 * c^3 * d^2 - 1425 * a * b^6 * c^2 * d^3 + \\
& 372 * a^2 * b^5 * c * d^4 - 47 * a^3 * b^4 * d^5) * x^4 - 30 * (500 * b^7 * c^4 * d - 9825 * a * b^6 * c^3 \\
& * d^2 + 11937 * a^2 * b^5 * c^2 * d^3 - 2975 * a^3 * b^4 * c * d^4 + 363 * a^4 * b^3 * d^5) * x^3 \\
& + 10 * (400 * b^7 * c^5 - 5450 * a * b^6 * c^4 * d + 49189 * a^2 * b^5 * c^3 * d^2 - 55525 * a^3 * b^4 \\
& * c^2 * d^3 + 12875 * a^4 * b^3 * c * d^4 - 1489 * a^5 * b^2 * d^5) * x^2 - 1800 * (10 * a^5 * b^2 * \\
& c^2 * d^3 - 5 * a^6 * b * c * d^4 + a^7 * d^5 + (10 * b^7 * c^2 * d^3 - 5 * a * b^6 * c * d^4 + a^2 * b^5 \\
& * d^5) * x^5 + 5 * (10 * a * b^6 * c^2 * d^3 - 5 * a^2 * b^5 * c * d^4 + a^3 * b^4 * d^5) * x^4 + 10 \\
& * (10 * a^2 * b^5 * c^2 * d^3 - 5 * a^3 * b^4 * c * d^4 + a^4 * b^3 * d^5) * x^3 + 10 * (10 * a^3 * b^4 * \\
& c^2 * d^3 - 5 * a^4 * b^3 * c * d^4 + a^5 * b^2 * d^5) * x^2 + 5 * (10 * a^4 * b^3 * c^2 * d^3 - 5 * a^5 \\
& * b^2 * c * d^4 + a^6 * b * d^5) * x) * \log(b * x + a)^2 - 1800 * (10 * a^5 * b^2 * c^2 * d^3 - 5 * a^6 \\
& * b * c * d^4 + a^7 * d^5 + (10 * b^7 * c^2 * d^3 - 5 * a * b^6 * c * d^4 + a^2 * b^5 * d^5) * x^5 + \\
& 5 * (10 * a * b^6 * c^2 * d^3 - 5 * a^2 * b^5 * c * d^4 + a^3 * b^4 * d^5) * x^4 + 10 * (10 * a^2 * b^5 * \\
& c^2 * d^3 - 5 * a^3 * b^4 * c * d^4 + a^4 * b^3 * d^5) * x^3 + 10 * (10 * a^3 * b^4 * c^2 * d^3 - 5 * a^4 \\
& * b^3 * c * d^4 + a^5 * b^2 * d^5) * x^2 + 5 * (10 * a^4 * b^3 * c^2 * d^3 - 5 * a^5 * b^2 * c * d^4 + \\
& a^6 * b * d^5) * x) * \log(d * x + c)^2 + 5 * (925 * a * b^6 * c^5 - 9911 * a^2 * b^5 * c^4 * d + 679 \\
& 00 * a^3 * b^4 * c^3 * d^2 - 71800 * a^4 * b^3 * c^2 * d^3 + 14375 * a^5 * b^2 * c * d^4 - 1489 * a^6 \\
& * b * d^5) * x + 60 * (1100 * a^5 * b^2 * c^2 * d^3 - 325 * a^6 * b * c * d^4 + 47 * a^7 * d^5 + (1100 \\
& * b^7 * c^2 * d^3 - 325 * a * b^6 * c * d^4 + 47 * a^2 * b^5 * d^5) * x^5 + 5 * (1100 * a * b^6 * c^2 * d^3 \\
& - 325 * a^2 * b^5 * c * d^4 + 47 * a^3 * b^4 * d^5) * x^4 + 10 * (1100 * a^2 * b^5 * c^2 * d^3 - 32 \\
& 5 * a^3 * b^4 * c * d^4 + 47 * a^4 * b^3 * d^5) * x^3 + 10 * (1100 * a^3 * b^4 * c^2 * d^3 - 325 * a^4 * \\
& b^3 * c * d^4 + 47 * a^5 * b^2 * d^5) * x^2 + 5 * (1100 * a^4 * b^3 * c^2 * d^3 - 325 * a^5 * b^2 * c * d^4 \\
& + 47 * a^6 * b * d^5) * x) * \log(b * x + a) - 60 * (1100 * a^5 * b^2 * c^2 * d^3 - 325 * a^6 * b * c \\
& * d^4 + 47 * a^7 * d^5 + (1100 * b^7 * c^2 * d^3 - 325 * a * b^6 * c * d^4 + 47 * a^2 * b^5 * d^5) * x^5 \\
& + 5 * (1100 * a * b^6 * c^2 * d^3 - 325 * a^2 * b^5 * c * d^4 + 47 * a^3 * b^4 * d^5) * x^4 + 10 * (\\
& 1100 * a^2 * b^5 * c^2 * d^3 - 325 * a^3 * b^4 * c * d^4 + 47 * a^4 * b^3 * d^5) * x^3 + 10 * (1100 * a
\end{aligned}$$

$$\begin{aligned}
& ^3*b^4*c^2*d^3 - 325*a^4*b^3*c*d^4 + 47*a^5*b^2*d^5)*x^2 + 5*(1100*a^4*b^3* \\
& c^2*d^3 - 325*a^5*b^2*c*d^4 + 47*a^6*b*d^5)*x - 60*(10*a^5*b^2*c^2*d^3 - 5* \\
& a^6*b*c*d^4 + a^7*d^5 + (10*b^7*c^2*d^3 - 5*a*b^6*c*d^4 + a^2*b^5*d^5)*x^5 \\
& + 5*(10*a*b^6*c^2*d^3 - 5*a^2*b^5*c*d^4 + a^3*b^4*d^5)*x^4 + 10*(10*a^2*b^5 \\
& *c^2*d^3 - 5*a^3*b^4*c*d^4 + a^4*b^3*d^5)*x^3 + 10*(10*a^3*b^4*c^2*d^3 - 5* \\
& a^4*b^3*c*d^4 + a^5*b^2*d^5)*x^2 + 5*(10*a^4*b^3*c^2*d^3 - 5*a^5*b^2*c*d^4 \\
& + a^6*b*d^5)*x)*\log(b*x + a))*\log(d*x + c))/(a^5*b^8*c^5*g^6 - 5*a^6*b^7*c^ \\
& 4*d*g^6 + 10*a^7*b^6*c^3*d^2*g^6 - 10*a^8*b^5*c^2*d^3*g^6 + 5*a^9*b^4*c*d^4 \\
& *g^6 - a^10*b^3*d^5*g^6 + (b^13*c^5*g^6 - 5*a*b^12*c^4*d*g^6 + 10*a^2*b^11* \\
& c^3*d^2*g^6 - 10*a^3*b^10*c^2*d^3*g^6 + 5*a^4*b^9*c*d^4*g^6 - a^5*b^8*d^5*g^ \\
& ^6)*x^5 + 5*(a*b^12*c^5*g^6 - 5*a^2*b^11*c^4*d*g^6 + 10*a^3*b^10*c^3*d^2*g^ \\
& 6 - 10*a^4*b^9*c^2*d^3*g^6 + 5*a^5*b^8*c*d^4*g^6 - a^6*b^7*d^5*g^6)*x^4 + 1 \\
& 0*(a^2*b^11*c^5*g^6 - 5*a^3*b^10*c^4*d*g^6 + 10*a^4*b^9*c^3*d^2*g^6 - 10*a^ \\
& 5*b^8*c^2*d^3*g^6 + 5*a^6*b^7*c*d^4*g^6 - a^7*b^6*d^5*g^6)*x^3 + 10*(a^3*b^ \\
& 10*c^5*g^6 - 5*a^4*b^9*c^4*d*g^6 + 10*a^5*b^8*c^3*d^2*g^6 - 10*a^6*b^7*c^2* \\
& d^3*g^6 + 5*a^7*b^6*c*d^4*g^6 - a^8*b^5*d^5*g^6)*x^2 + 5*(a^4*b^9*c^5*g^6 - \\
& 5*a^5*b^8*c^4*d*g^6 + 10*a^6*b^7*c^3*d^2*g^6 - 10*a^7*b^6*c^2*d^3*g^6 + 5* \\
& a^8*b^5*c*d^4*g^6 - a^9*b^4*d^5*g^6)*x)*B^2*c*d^2*i^3 - 1/36000*(60*((77*a \\
& ^3*b^4*c^4 - 548*a^4*b^3*c^3*d + 352*a^5*b^2*c^2*d^2 - 148*a^6*b*c*d^3 + 27 \\
& *a^7*d^4 - 60*(10*b^7*c^3*d - 10*a*b^6*c^2*d^2 + 5*a^2*b^5*c*d^3 - a^3*b^4* \\
& d^4)*x^4 + 30*(10*b^7*c^4 - 100*a*b^6*c^3*d + 95*a^2*b^5*c^2*d^2 - 46*a^3*b \\
& ^4*c*d^3 + 9*a^4*b^3*d^4)*x^3 + 10*(50*a*b^6*c^4 - 410*a^2*b^5*c^3*d + 337* \\
& a^3*b^4*c^2*d^2 - 148*a^4*b^3*c*d^3 + 27*a^5*b^2*d^4)*x^2 + 5*(65*a^2*b^5*c \\
& ^4 - 488*a^3*b^4*c^3*d + 352*a^4*b^3*c^2*d^2 - 148*a^5*b^2*c*d^3 + 27*a^6*b \\
& *d^4)*x))/(b^13*c^4 - 4*a*b^12*c^3*d + 6*a^2*b^11*c^2*d^2 - 4*a^3*b^10*c*d^ \\
& 3 + a^4*b^9*d^4)*g^6*x^5 + 5*(a*b^12*c^4 - 4*a^2*b^11*c^3*d + 6*a^3*b^10*c^ \\
& 2*d^2 - 4*a^4*b^9*c*d^3 + a^5*b^8*d^4)*g^6*x^4 + 10*(a^2*b^11*c^4 - 4*a^3*b \\
& ^10*c^3*d + 6*a^4*b^9*c^2*d^2 - 4*a^5*b^8*c*d^3 + a^6*b^7*d^4)*g^6*x^3 + 10 \\
& *(a^3*b^10*c^4 - 4*a^4*b^9*c^3*d + 6*a^5*b^8*c^2*d^2 - 4*a^6*b^7*c*d^3 + a^ \\
& 7*b^6*d^4)*g^6*x^2 + 5*(a^4*b^9*c^4 - 4*a^5*b^8*c^3*d + 6*a^6*b^7*c^2*d^2 - \\
& 4*a^7*b^6*c*d^3 + a^8*b^5*d^4)*g^6*x + (a^5*b^8*c^4 - 4*a^6*b^7*c^3*d + 6* \\
& a^7*b^6*c^2*d^2 - 4*a^8*b^5*c*d^3 + a^9*b^4*d^4)*g^6) - 60*(10*b^3*c^3*d^2 \\
& - 10*a*b^2*c^2*d^3 + 5*a^2*b*c*d^4 - a^3*d^5)*\log(b*x + a)/((b^9*c^5 - 5*a* \\
& b^8*c^4*d + 10*a^2*b^7*c^3*d^2 - 10*a^3*b^6*c^2*d^3 + 5*a^4*b^5*c*d^4 - a^5 \\
& *b^4*d^5)*g^6) + 60*(10*b^3*c^3*d^2 - 10*a*b^2*c^2*d^3 + 5*a^2*b*c*d^4 - a^ \\
& 3*d^5)*\log(d*x + c)/((b^9*c^5 - 5*a*b^8*c^4*d + 10*a^2*b^7*c^3*d^2 - 10*a^3 \\
& *b^6*c^2*d^3 + 5*a^4*b^5*c*d^4 - a^5*b^4*d^5)*g^6))*\log(b*e*x/(d*x + c) + a \\
& *e/(d*x + c)) + (3799*a^3*b^5*c^5 - 51875*a^4*b^4*c^4*d + 63000*a^5*b^3*c^3 \\
& *d^2 - 19000*a^6*b^2*c^2*d^3 + 4625*a^7*b*c*d^4 - 549*a^8*d^5 - 60*(900*b^8 \\
& *c^4*d - 1400*a*b^7*c^3*d^2 + 675*a^2*b^6*c^2*d^3 - 202*a^3*b^5*c*d^4 + 27* \\
& a^4*b^4*d^5)*x^4 + 30*(300*b^8*c^5 - 7700*a*b^7*c^4*d + 11175*a^2*b^6*c^3*d \\
& ^2 - 5017*a^3*b^5*c^2*d^3 + 1425*a^4*b^4*c*d^4 - 183*a^5*b^3*d^5)*x^3 + 10* \\
& (1900*a*b^7*c^5 - 33950*a^2*b^6*c^4*d + 45999*a^3*b^5*c^3*d^2 - 18025*a^4*b \\
& ^4*c^2*d^3 + 4625*a^5*b^3*c*d^4 - 549*a^6*b^2*d^5)*x^2 + 1800*(10*a^5*b^3*c \\
& ^3*d^2 - 10*a^6*b^2*c^2*d^3 + 5*a^7*b*c*d^4 - a^8*d^5 + (10*b^8*c^3*d^2 - 1
\end{aligned}$$

$$\begin{aligned}
& 0*a*b^7*c^2*d^3 + 5*a^2*b^6*c*d^4 - a^3*b^5*d^5)*x^5 + 5*(10*a*b^7*c^3*d^2 \\
& - 10*a^2*b^6*c^2*d^3 + 5*a^3*b^5*c*d^4 - a^4*b^4*d^5)*x^4 + 10*(10*a^2*b^6* \\
& c^3*d^2 - 10*a^3*b^5*c^2*d^3 + 5*a^4*b^4*c*d^4 - a^5*b^3*d^5)*x^3 + 10*(10* \\
& a^3*b^5*c^3*d^2 - 10*a^4*b^4*c^2*d^3 + 5*a^5*b^3*c*d^4 - a^6*b^2*d^5)*x^2 + \\
& 5*(10*a^4*b^4*c^3*d^2 - 10*a^5*b^3*c^2*d^3 + 5*a^6*b^2*c*d^4 - a^7*b*d^5)* \\
& x)*\log(b*x + a)^2 + 1800*(10*a^5*b^3*c^3*d^2 - 10*a^6*b^2*c^2*d^3 + 5*a^7*b \\
& *c*d^4 - a^8*d^5 + (10*b^8*c^3*d^2 - 10*a*b^7*c^2*d^3 + 5*a^2*b^6*c*d^4 - a \\
& ^3*b^5*d^5)*x^5 + 5*(10*a*b^7*c^3*d^2 - 10*a^2*b^6*c^2*d^3 + 5*a^3*b^5*c*d^ \\
& 4 - a^4*b^4*d^5)*x^4 + 10*(10*a^2*b^6*c^3*d^2 - 10*a^3*b^5*c^2*d^3 + 5*a^4* \\
& b^4*c*d^4 - a^5*b^3*d^5)*x^3 + 10*(10*a^3*b^5*c^3*d^2 - 10*a^4*b^4*c^2*d^3 \\
& + 5*a^5*b^3*c*d^4 - a^6*b^2*d^5)*x^2 + 5*(10*a^4*b^4*c^3*d^2 - 10*a^5*b^3*c \\
& ^2*d^3 + 5*a^6*b^2*c*d^4 - a^7*b*d^5)*x)*\log(d*x + c)^2 + 5*(2875*a^2*b^6*c \\
& ^5 - 43451*a^3*b^5*c^4*d + 55500*a^4*b^4*c^3*d^2 - 19000*a^5*b^3*c^2*d^3 + \\
& 4625*a^6*b^2*c*d^4 - 549*a^7*b*d^5)*x - 60*(900*a^5*b^3*c^3*d^2 - 500*a^6*b \\
& ^2*c^2*d^3 + 175*a^7*b*c*d^4 - 27*a^8*d^5 + (900*b^8*c^3*d^2 - 500*a*b^7*c^ \\
& 2*d^3 + 175*a^2*b^6*c*d^4 - 27*a^3*b^5*d^5)*x^5 + 5*(900*a*b^7*c^3*d^2 - 50 \\
& 0*a^2*b^6*c^2*d^3 + 175*a^3*b^5*c*d^4 - 27*a^4*b^4*d^5)*x^4 + 10*(900*a^2*b \\
& ^6*c^3*d^2 - 500*a^3*b^5*c^2*d^3 + 175*a^4*b^4*c*d^4 - 27*a^5*b^3*d^5)*x^3 \\
& + 10*(900*a^3*b^5*c^3*d^2 - 500*a^4*b^4*c^2*d^3 + 175*a^5*b^3*c*d^4 - 27*a^ \\
& 6*b^2*d^5)*x^2 + 5*(900*a^4*b^4*c^3*d^2 - 500*a^5*b^3*c^2*d^3 + 175*a^6*b^2 \\
& *c*d^4 - 27*a^7*b*d^5)*x)*\log(b*x + a) + 60*(900*a^5*b^3*c^3*d^2 - 500*a^6* \\
& b^2*c^2*d^3 + 175*a^7*b*c*d^4 - 27*a^8*d^5 + (900*b^8*c^3*d^2 - 500*a*b^7*c^ \\
& ^2*d^3 + 175*a^2*b^6*c*d^4 - 27*a^3*b^5*d^5)*x^5 + 5*(900*a*b^7*c^3*d^2 - 5 \\
& 00*a^2*b^6*c^2*d^3 + 175*a^3*b^5*c*d^4 - 27*a^4*b^4*d^5)*x^4 + 10*(900*a^2* \\
& b^6*c^3*d^2 - 500*a^3*b^5*c^2*d^3 + 175*a^4*b^4*c*d^4 - 27*a^5*b^3*d^5)*x^3 \\
& + 10*(900*a^3*b^5*c^3*d^2 - 500*a^4*b^4*c^2*d^3 + 175*a^5*b^3*c*d^4 - 27*a \\
& ^6*b^2*d^5)*x^2 + 5*(900*a^4*b^4*c^3*d^2 - 500*a^5*b^3*c^2*d^3 + 175*a^6*b^ \\
& 2*c*d^4 - 27*a^7*b*d^5)*x - 60*(10*a^5*b^3*c^3*d^2 - 10*a^6*b^2*c^2*d^3 + 5 \\
& *a^7*b*c*d^4 - a^8*d^5 + (10*b^8*c^3*d^2 - 10*a*b^7*c^2*d^3 + 5*a^2*b^6*c*d \\
& ^4 - a^3*b^5*d^5)*x^5 + 5*(10*a*b^7*c^3*d^2 - 10*a^2*b^6*c^2*d^3 + 5*a^3*b^ \\
& 5*c*d^4 - a^4*b^4*d^5)*x^4 + 10*(10*a^2*b^6*c^3*d^2 - 10*a^3*b^5*c^2*d^3 + \\
& 5*a^4*b^4*c*d^4 - a^5*b^3*d^5)*x^3 + 10*(10*a^3*b^5*c^3*d^2 - 10*a^4*b^4*c^ \\
& 2*d^3 + 5*a^5*b^3*c*d^4 - a^6*b^2*d^5)*x^2 + 5*(10*a^4*b^4*c^3*d^2 - 10*a^5 \\
& *b^3*c^2*d^3 + 5*a^6*b^2*c*d^4 - a^7*b*d^5)*x)*\log(b*x + a))*\log(d*x + c))/ \\
& (a^5*b^9*c^5*g^6 - 5*a^6*b^8*c^4*d*g^6 + 10*a^7*b^7*c^3*d^2*g^6 - 10*a^8*b^ \\
& 6*c^2*d^3*g^6 + 5*a^9*b^5*c*d^4*g^6 - a^10*b^4*d^5*g^6 + (b^14*c^5*g^6 - 5* \\
& a*b^13*c^4*d*g^6 + 10*a^2*b^12*c^3*d^2*g^6 - 10*a^3*b^11*c^2*d^3*g^6 + 5*a^ \\
& 4*b^10*c*d^4*g^6 - a^5*b^9*d^5*g^6)*x^5 + 5*(a*b^13*c^5*g^6 - 5*a^2*b^12*c^ \\
& 4*d*g^6 + 10*a^3*b^11*c^3*d^2*g^6 - 10*a^4*b^10*c^2*d^3*g^6 + 5*a^5*b^9*c*d \\
& ^4*g^6 - a^6*b^8*d^5*g^6)*x^4 + 10*(a^2*b^12*c^5*g^6 - 5*a^3*b^11*c^4*d*g^6 \\
& + 10*a^4*b^10*c^3*d^2*g^6 - 10*a^5*b^9*c^2*d^3*g^6 + 5*a^6*b^8*c*d^4*g^6 - \\
& a^7*b^7*d^5*g^6)*x^3 + 10*(a^3*b^11*c^5*g^6 - 5*a^4*b^10*c^4*d*g^6 + 10*a^ \\
& 5*b^9*c^3*d^2*g^6 - 10*a^6*b^8*c^2*d^3*g^6 + 5*a^7*b^7*c*d^4*g^6 - a^8*b^6* \\
& d^5*g^6)*x^2 + 5*(a^4*b^10*c^5*g^6 - 5*a^5*b^9*c^4*d*g^6 + 10*a^6*b^8*c^3*d \\
& ^2*g^6 - 10*a^7*b^7*c^2*d^3*g^6 + 5*a^8*b^6*c*d^4*g^6 - a^9*b^5*d^5*g^6)*x)
\end{aligned}$$

$$\begin{aligned}
&) * B^2 * d^3 * i^3 - 1/600 * A * B * d^3 * i^3 * (60 * (10 * b^3 * x^3 + 10 * a * b^2 * x^2 + 5 * a^2 * b * x + a^3) * \log(b * e * x / (d * x + c) + a * e / (d * x + c)) / (b^9 * g^6 * x^5 + 5 * a * b^8 * g^6 * x^4 + 10 * a^2 * b^7 * g^6 * x^3 + 10 * a^3 * b^6 * g^6 * x^2 + 5 * a^4 * b^5 * g^6 * x + a^5 * b^4 * g^6) \\
&) + (77 * a^3 * b^4 * c^4 - 548 * a^4 * b^3 * c^3 * d + 352 * a^5 * b^2 * c^2 * d^2 - 148 * a^6 * b * c * d^3 + 27 * a^7 * d^4 - 60 * (10 * b^7 * c^3 * d - 10 * a * b^6 * c^2 * d^2 + 5 * a^2 * b^5 * c * d^3 - a^3 * b^4 * d^4) * x^4 + 30 * (10 * b^7 * c^4 - 100 * a * b^6 * c^3 * d + 95 * a^2 * b^5 * c^2 * d^2 - 46 * a^3 * b^4 * c * d^3 + 9 * a^4 * b^3 * d^4) * x^3 + 10 * (50 * a * b^6 * c^4 - 410 * a^2 * b^5 * c^3 * d + 337 * a^3 * b^4 * c^2 * d^2 - 148 * a^4 * b^3 * c * d^3 + 27 * a^5 * b^2 * d^4) * x^2 + 5 * (65 * a^2 * b^5 * c^4 - 488 * a^3 * b^4 * c^3 * d + 352 * a^4 * b^3 * c^2 * d^2 - 148 * a^5 * b^2 * c * d^3 + 27 * a^6 * b * d^4) * x) / ((b^13 * c^4 - 4 * a * b^12 * c^3 * d + 6 * a^2 * b^11 * c^2 * d^2 - 4 * a^3 * b^10 * c * d^3 + a^4 * b^9 * d^4) * g^6 * x^5 + 5 * (a * b^12 * c^4 - 4 * a^2 * b^11 * c^3 * d + 6 * a^3 * b^10 * c^2 * d^2 - 4 * a^4 * b^9 * c * d^3 + a^5 * b^8 * d^4) * g^6 * x^4 + 10 * (a^2 * b^11 * c^4 - 4 * a^3 * b^10 * c^3 * d + 6 * a^4 * b^9 * c^2 * d^2 - 4 * a^5 * b^8 * c * d^3 + a^6 * b^7 * d^4) * g^6 * x^3 + 10 * (a^3 * b^10 * c^4 - 4 * a^4 * b^9 * c^3 * d + 6 * a^5 * b^8 * c^2 * d^2 - 4 * a^6 * b^7 * c * d^3 + a^7 * b^6 * d^4) * g^6 * x^2 + 5 * (a^4 * b^9 * c^4 - 4 * a^5 * b^8 * c^3 * d + 6 * a^6 * b^7 * c^2 * d^2 - 4 * a^7 * b^6 * c * d^3 + a^8 * b^5 * d^4) * g^6 * x + (a^5 * b^8 * c^4 - 4 * a^6 * b^7 * c^3 * d + 6 * a^7 * b^6 * c^2 * d^2 - 4 * a^8 * b^5 * c * d^3 + a^9 * b^4 * d^4) * g^6) - 60 * (10 * b^3 * c^3 * d^2 - 10 * a * b^2 * c^2 * d^3 + 5 * a^2 * b * c * d^4 - a^3 * d^5) * \log(b * x + a) / ((b^9 * c^5 - 5 * a * b^8 * c^4 * d + 10 * a^2 * b^7 * c^3 * d^2 - 10 * a^3 * b^6 * c^2 * d^3 + 5 * a^4 * b^5 * c * d^4 - a^5 * b^4 * d^5) * g^6) + 60 * (10 * b^3 * c^3 * d^2 - 10 * a * b^2 * c^2 * d^3 + 5 * a^2 * b * c * d^4 - a^3 * d^5) * \log(d * x + c) / ((b^9 * c^5 - 5 * a * b^8 * c^4 * d + 10 * a^2 * b^7 * c^3 * d^2 - 10 * a^3 * b^6 * c^2 * d^3 + 5 * a^4 * b^5 * c * d^4 - a^5 * b^4 * d^5) * g^6)) - 1/300 * A * B * c * d^2 * i^3 * (60 * (10 * b^2 * x^2 + 5 * a * b * x + a^2) * \log(b * e * x / (d * x + c) + a * e / (d * x + c)) / (b^8 * g^6 * x^5 + 5 * a * b^7 * g^6 * x^4 + 10 * a^2 * b^6 * g^6 * x^3 + 10 * a^3 * b^5 * g^6 * x^2 + 5 * a^4 * b^4 * g^6 * x + a^5 * b^3 * g^6) + (47 * a^2 * b^4 * c^4 - 278 * a^3 * b^3 * c^3 * d + 822 * a^4 * b^2 * c^2 * d^2 - 278 * a^5 * b * c * d^3 + 47 * a^6 * d^4 + 60 * (10 * b^6 * c^2 * d^2 - 5 * a * b^5 * c * d^3 + a^2 * b^4 * d^4) * x^4 - 30 * (10 * b^6 * c^3 * d - 95 * a * b^5 * c^2 * d^2 + 46 * a^2 * b^4 * c * d^3 - 9 * a^3 * b^3 * d^4) * x^3 + 10 * (20 * b^6 * c^4 - 140 * a * b^5 * c^3 * d + 537 * a^2 * b^4 * c^2 * d^2 - 248 * a^3 * b^3 * c * d^3 + 47 * a^4 * b^2 * d^4) * x^2 + 5 * (35 * a * b^5 * c^4 - 218 * a^2 * b^4 * c^3 * d + 702 * a^3 * b^3 * c^2 * d^2 - 278 * a^4 * b^2 * c * d^3 + 47 * a^5 * b * d^4) * x) / ((b^12 * c^4 - 4 * a * b^11 * c^3 * d + 6 * a^2 * b^10 * c^2 * d^2 - 4 * a^3 * b^9 * c * d^3 + a^4 * b^8 * d^4) * g^6 * x^5 + 5 * (a * b^11 * c^4 - 4 * a^2 * b^10 * c^3 * d + 6 * a^3 * b^9 * c^2 * d^2 - 4 * a^4 * b^8 * c * d^3 + a^5 * b^7 * d^4) * g^6 * x^4 + 10 * (a^2 * b^10 * c^4 - 4 * a^3 * b^9 * c^3 * d + 6 * a^4 * b^8 * c^2 * d^2 - 4 * a^5 * b^7 * c * d^3 + a^6 * b^6 * d^4) * g^6 * x^3 + 10 * (a^3 * b^9 * c^4 - 4 * a^4 * b^8 * c^3 * d + 6 * a^5 * b^7 * c^2 * d^2 - 4 * a^6 * b^6 * c * d^3 + a^7 * b^5 * d^4) * g^6 * x^2 + 5 * (a^4 * b^8 * c^4 - 4 * a^5 * b^7 * c^3 * d + 6 * a^6 * b^6 * c^2 * d^2 - 4 * a^7 * b^5 * c * d^3 + a^8 * b^4 * d^4) * g^6 * x + (a^5 * b^7 * c^4 - 4 * a^6 * b^6 * c^3 * d + 6 * a^7 * b^5 * c^2 * d^2 - 4 * a^8 * b^4 * c * d^3 + a^9 * b^3 * d^4) * g^6) + 60 * (10 * b^2 * c^2 * d^3 - 5 * a * b * c * d^4 + a^2 * d^5) * \log(b * x + a) / ((b^8 * c^5 - 5 * a * b^7 * c^4 * d + 10 * a^2 * b^6 * c^3 * d^2 - 10 * a^3 * b^5 * c^2 * d^3 + 5 * a^4 * b^4 * c * d^4 - a^5 * b^3 * d^5) * g^6) - 60 * (10 * b^2 * c^2 * d^3 - 5 * a * b * c * d^4 + a^2 * d^5) * \log(d * x + c) / ((b^8 * c^5 - 5 * a * b^7 * c^4 * d + 10 * a^2 * b^6 * c^3 * d^2 - 10 * a^3 * b^5 * c^2 * d^3 + 5 * a^4 * b^4 * c * d^4 - a^5 * b^3 * d^5) * g^6)) - 1/200 * A * B * c^2 * d * i^3 * (60 * (5 * b * x + a) * \log(b * e * x / (d * x + c) + a * e / (d * x + c)) / (b^7 * g^6 * x^5 + 5 * a * b^6 * g^6 * x^4 + 10 * a^2 * b^5 * g^6 * x^3 + 10 * a^3 * b^4 * g^6 * x^2 + 5 * a^4 * b^3 * g^6 * x + a^5 * b^2 * g^6) + (27 * a * b^4 * c^4 - 148 * a^2 * b^3 * c^3 * d + 35
\end{aligned}$$

$$\begin{aligned}
& 2*a^3*b^2*c^2*d^2 - 548*a^4*b*c*d^3 + 77*a^5*d^4 - 60*(5*b^5*c*d^3 - a*b^4*d^4)*x^4 + 30*(5*b^5*c^2*d^2 - 46*a*b^4*c*d^3 + 9*a^2*b^3*d^4)*x^3 - 10*(10*b^5*c^3*d - 67*a*b^4*c^2*d^2 + 248*a^2*b^3*c*d^3 - 47*a^3*b^2*d^4)*x^2 + 5*(15*b^5*c^4 - 88*a*b^4*c^3*d + 232*a^2*b^3*c^2*d^2 - 428*a^3*b^2*c*d^3 + 77*a^4*b*d^4)*x) / ((b^11*c^4 - 4*a*b^10*c^3*d + 6*a^2*b^9*c^2*d^2 - 4*a^3*b^8*c*d^3 + a^4*b^7*d^4)*g^6*x^5 + 5*(a*b^10*c^4 - 4*a^2*b^9*c^3*d + 6*a^3*b^8*c^2*d^2 - 4*a^4*b^7*c*d^3 + a^5*b^6*d^4)*g^6*x^4 + 10*(a^2*b^9*c^4 - 4*a^3*b^8*c^3*d + 6*a^4*b^7*c^2*d^2 - 4*a^5*b^6*c*d^3 + a^6*b^5*d^4)*g^6*x^3 + 10*(a^3*b^8*c^4 - 4*a^4*b^7*c^3*d + 6*a^5*b^6*c^2*d^2 - 4*a^6*b^5*c*d^3 + a^7*b^4*d^4)*g^6*x^2 + 5*(a^4*b^7*c^4 - 4*a^5*b^6*c^3*d + 6*a^6*b^5*c^2*d^2 - 4*a^7*b^4*c*d^3 + a^8*b^3*d^4)*g^6*x + (a^5*b^6*c^4 - 4*a^6*b^5*c^3*d + 6*a^7*b^4*c^2*d^2 - 4*a^8*b^3*c*d^3 + a^9*b^2*d^4)*g^6) - 60*(5*b*c*d^4 - a*d^5)*log(b*x + a) / ((b^7*c^5 - 5*a*b^6*c^4*d + 10*a^2*b^5*c^3*d^2 - 10*a^3*b^4*c^2*d^3 + 5*a^4*b^3*c*d^4 - a^5*b^2*d^5)*g^6) + 60*(5*b*c*d^4 - a*d^5)*log(d*x + c) / ((b^7*c^5 - 5*a*b^6*c^4*d + 10*a^2*b^5*c^3*d^2 - 10*a^3*b^4*c^2*d^3 + 5*a^4*b^3*c*d^4 - a^5*b^2*d^5)*g^6)) - 1/150*A*B*c^3*i^3*((60*b^4*d^4*x^4 + 12*b^4*c^4 - 63*a*b^3*c^3*d + 137*a^2*b^2*c^2*d^2 - 163*a^3*b*c*d^3 + 137*a^4*d^4 - 30*(b^4*c*d^3 - 9*a*b^3*d^4)*x^3 + 10*(2*b^4*c^2*d^2 - 13*a*b^3*c*d^3 + 47*a^2*b^2*d^4)*x^2 - 5*(3*b^4*c^3*d - 17*a*b^3*c^2*d^2 + 43*a^2*b^2*c*d^3 - 77*a^3*b*d^4)*x) / ((b^10*c^4 - 4*a*b^9*c^3*d + 6*a^2*b^8*c^2*d^2 - 4*a^3*b^7*c*d^3 + a^4*b^6*d^4)*g^6*x^5 + 5*(a*b^9*c^4 - 4*a^2*b^8*c^3*d + 6*a^3*b^7*c^2*d^2 - 4*a^4*b^6*c*d^3 + a^5*b^5*d^4)*g^6*x^4 + 10*(a^2*b^8*c^4 - 4*a^3*b^7*c^3*d + 6*a^4*b^6*c^2*d^2 - 4*a^5*b^5*c*d^3 + a^6*b^4*d^4)*g^6*x^3 + 10*(a^3*b^7*c^4 - 4*a^4*b^6*c^3*d + 6*a^5*b^5*c^2*d^2 - 4*a^6*b^4*c*d^3 + a^7*b^3*d^4)*g^6*x^2 + 5*(a^4*b^6*c^4 - 4*a^5*b^5*c^3*d + 6*a^6*b^4*c^2*d^2 - 4*a^7*b^3*c*d^3 + a^8*b^2*d^4)*g^6*x + (a^5*b^5*c^4 - 4*a^6*b^4*c^3*d + 6*a^7*b^3*c^2*d^2 - 4*a^8*b^2*c*d^3 + a^9*b*d^4)*g^6) + 60*log(b*e*x/(d*x + c) + a*e/(d*x + c)) / (b^6*g^6*x^5 + 5*a*b^5*g^6*x^4 + 10*a^2*b^4*g^6*x^3 + 10*a^3*b^3*g^6*x^2 + 5*a^4*b^2*g^6*x + a^5*b*g^6) + 60*d^5*log(b*x + a) / ((b^6*c^5 - 5*a*b^5*c^4*d + 10*a^2*b^4*c^3*d^2 - 10*a^3*b^3*c^2*d^3 + 5*a^4*b^2*c*d^4 - a^5*b*d^5)*g^6) - 60*d^5*log(d*x + c) / ((b^6*c^5 - 5*a*b^5*c^4*d + 10*a^2*b^4*c^3*d^2 - 10*a^3*b^3*c^2*d^3 + 5*a^4*b^2*c*d^4 - a^5*b*d^5)*g^6)) - 1/5*B^2*c^3*i^3*log(b*e*x/(d*x + c) + a*e/(d*x + c))^2 / (b^6*g^6*x^5 + 5*a*b^5*g^6*x^4 + 10*a^2*b^4*g^6*x^3 + 10*a^3*b^3*g^6*x^2 + 5*a^4*b^2*g^6*x + a^5*b*g^6) - 3/20*(5*b*x + a)*A^2*c^2*d*i^3 / (b^7*g^6*x^5 + 5*a*b^6*g^6*x^4 + 10*a^2*b^5*g^6*x^3 + 10*a^3*b^4*g^6*x^2 + 5*a^4*b^3*g^6*x + a^5*b^2*g^6) - 1/10*(10*b^2*x^2 + 5*a*b*x + a^2)*A^2*c*d^2*i^3 / (b^8*g^6*x^5 + 5*a*b^7*g^6*x^4 + 10*a^2*b^6*g^6*x^3 + 10*a^3*b^5*g^6*x^2 + 5*a^4*b^4*g^6*x + a^5*b^3*g^6) - 1/20*(10*b^3*x^3 + 10*a*b^2*x^2 + 5*a^2*b*x + a^3)*A^2*d^3*i^3 / (b^9*g^6*x^5 + 5*a*b^8*g^6*x^4 + 10*a^2*b^7*g^6*x^3 + 10*a^3*b^6*g^6*x^2 + 5*a^4*b^5*g^6*x + a^5*b^4*g^6) - 1/5*A^2*c^3*i^3 / (b^6*g^6*x^5 + 5*a*b^5*g^6*x^4 + 10*a^2*b^4*g^6*x^3 + 10*a^3*b^3*g^6*x^2 + 5*a^4*b^2*g^6*x + a^5*b*g^6)
\end{aligned}$$

mupad [B] time = 12.64, size = 3720, normalized size = 12.44

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{int}(\left(\frac{c \cdot i + d \cdot i \cdot x}{c + d \cdot x}\right)^3 \cdot (A + B \cdot \log\left(\frac{e \cdot (a + b \cdot x)}{c + d \cdot x}\right))^2 / (a \cdot g + b \cdot g \cdot x)^6, x)$

[Out]
$$-\log\left(\frac{e \cdot (a + b \cdot x)}{c + d \cdot x}\right)^2 \cdot \left(\frac{x \cdot (a \cdot (b \cdot ((B^2 \cdot a \cdot d^3 \cdot i^3) / (20 \cdot b^5 \cdot g^6) + (B^2 \cdot c \cdot d^2 \cdot i^3) / (10 \cdot b^4 \cdot g^6)) + (3 \cdot B^2 \cdot a \cdot d^3 \cdot i^3) / (20 \cdot b^4 \cdot g^6) + (3 \cdot B^2 \cdot c \cdot d^2 \cdot i^3) / (10 \cdot b^3 \cdot g^6)) + b \cdot (a \cdot ((B^2 \cdot a \cdot d^3 \cdot i^3) / (20 \cdot b^5 \cdot g^6) + (B^2 \cdot c \cdot d^2 \cdot i^3) / (10 \cdot b^4 \cdot g^6)) + (3 \cdot B^2 \cdot c \cdot d^2 \cdot i^3) / (20 \cdot b^3 \cdot g^6)) + (3 \cdot B^2 \cdot c^2 \cdot d \cdot i^3) / (5 \cdot b^2 \cdot g^6)) + x^2 \cdot (b \cdot (b \cdot ((B^2 \cdot a \cdot d^3 \cdot i^3) / (20 \cdot b^5 \cdot g^6) + (B^2 \cdot c \cdot d^2 \cdot i^3) / (10 \cdot b^4 \cdot g^6)) + (3 \cdot B^2 \cdot a \cdot d^3 \cdot i^3) / (20 \cdot b^4 \cdot g^6) + (3 \cdot B^2 \cdot c \cdot d^2 \cdot i^3) / (10 \cdot b^3 \cdot g^6)) + (3 \cdot B^2 \cdot a \cdot d^3 \cdot i^3) / (10 \cdot b^3 \cdot g^6) + (3 \cdot B^2 \cdot c \cdot d^2 \cdot i^3) / (5 \cdot b^2 \cdot g^6)) + a \cdot (a \cdot ((B^2 \cdot a \cdot d^3 \cdot i^3) / (20 \cdot b^5 \cdot g^6) + (B^2 \cdot c \cdot d^2 \cdot i^3) / (10 \cdot b^4 \cdot g^6)) + (3 \cdot B^2 \cdot c^2 \cdot d \cdot i^3) / (20 \cdot b^3 \cdot g^6)) + (B^2 \cdot c^3 \cdot i^3) / (5 \cdot b^2 \cdot g^6) + (B^2 \cdot d^3 \cdot i^3 \cdot x^3) / (2 \cdot b^2 \cdot g^6)) / (5 \cdot a^4 \cdot x + a^5 / b + b^4 \cdot x^5 + 10 \cdot a^3 \cdot b \cdot x^2 + 5 \cdot a \cdot b^3 \cdot x^4 + 10 \cdot a^2 \cdot b^2 \cdot x^3) - (B^2 \cdot d^5 \cdot i^3) / (20 \cdot b^4 \cdot g^6 \cdot (a^2 \cdot d^2 + b^2 \cdot c^2 - 2 \cdot a \cdot b \cdot c \cdot d)) - ((200 \cdot A^2 \cdot a^4 \cdot d^4 \cdot i^3 - 800 \cdot A^2 \cdot b^4 \cdot c^4 \cdot i^3 + 61 \cdot B^2 \cdot a^4 \cdot d^4 \cdot i^3 - 64 \cdot B^2 \cdot b^4 \cdot c^4 \cdot i^3 + 180 \cdot A \cdot B \cdot a^4 \cdot d^4 \cdot i^3 - 320 \cdot A \cdot B \cdot b^4 \cdot c^4 \cdot i^3 + 200 \cdot A^2 \cdot a \cdot b^3 \cdot c^3 \cdot d \cdot i^3 + 200 \cdot A^2 \cdot a^3 \cdot b \cdot c \cdot d^3 \cdot i^3 + 61 \cdot B^2 \cdot a \cdot b^3 \cdot c^3 \cdot d \cdot i^3 + 61 \cdot B^2 \cdot a^3 \cdot b \cdot c \cdot d^3 \cdot i^3 + 200 \cdot A^2 \cdot a^2 \cdot b^2 \cdot c^2 \cdot d^2 \cdot i^3 + 61 \cdot B^2 \cdot a^2 \cdot b^2 \cdot c^2 \cdot d^2 \cdot i^3 + 180 \cdot A \cdot B \cdot a^2 \cdot b^2 \cdot c^2 \cdot d^2 \cdot i^3 + 180 \cdot A \cdot B \cdot a \cdot b^3 \cdot c^3 \cdot d \cdot i^3 + 180 \cdot A \cdot B \cdot a^3 \cdot b \cdot c \cdot d^3 \cdot i^3) / (20 \cdot (a \cdot d - b \cdot c)) + (x^4 \cdot (9 \cdot B^2 \cdot b^4 \cdot d^4 \cdot i^3 + 20 \cdot A \cdot B \cdot b^4 \cdot d^4 \cdot i^3)) / (a \cdot d - b \cdot c) + (x^3 \cdot (200 \cdot A^2 \cdot a \cdot b^3 \cdot d^4 \cdot i^3 + 61 \cdot B^2 \cdot a \cdot b^3 \cdot d^4 \cdot i^3 - 200 \cdot A^2 \cdot b^4 \cdot c \cdot d^3 \cdot i^3 + 11 \cdot B^2 \cdot b^4 \cdot c \cdot d^3 \cdot i^3 + 180 \cdot A \cdot B \cdot a \cdot b^3 \cdot d^4 \cdot i^3 - 20 \cdot A \cdot B \cdot b^4 \cdot c \cdot d^3 \cdot i^3) / (2 \cdot (a \cdot d - b \cdot c)) + (x \cdot (200 \cdot A^2 \cdot a^3 \cdot b \cdot d^4 \cdot i^3 + 61 \cdot B^2 \cdot a^3 \cdot b \cdot d^4 \cdot i^3 - 600 \cdot A^2 \cdot b^4 \cdot c^3 \cdot d \cdot i^3 - 39 \cdot B^2 \cdot b^4 \cdot c^3 \cdot d \cdot i^3 + 200 \cdot A^2 \cdot a \cdot b^3 \cdot c^2 \cdot d^2 \cdot i^3 + 200 \cdot A^2 \cdot a^2 \cdot b^2 \cdot c \cdot d^3 \cdot i^3 + 61 \cdot B^2 \cdot a \cdot b^3 \cdot c^2 \cdot d^2 \cdot i^3 + 61 \cdot B^2 \cdot a^2 \cdot b^2 \cdot c \cdot d^3 \cdot i^3 + 180 \cdot A \cdot B \cdot a^3 \cdot b \cdot d^4 \cdot i^3 - 220 \cdot A \cdot B \cdot b^4 \cdot c^3 \cdot d \cdot i^3 + 180 \cdot A \cdot B \cdot a \cdot b^3 \cdot c^2 \cdot d^2 \cdot i^3 + 180 \cdot A \cdot B \cdot a^2 \cdot b^2 \cdot c \cdot d^3 \cdot i^3) / (4 \cdot (a \cdot d - b \cdot c)) + (x^2 \cdot (200 \cdot A^2 \cdot a^2 \cdot b^2 \cdot d^4 \cdot i^3 + 61 \cdot B^2 \cdot a^2 \cdot b^2 \cdot d^4 \cdot i^3 - 400 \cdot A^2 \cdot b^4 \cdot c^2 \cdot d^2 \cdot i^3 - 14 \cdot B^2 \cdot b^4 \cdot c^2 \cdot d^2 \cdot i^3 + 200 \cdot A^2 \cdot a \cdot b^3 \cdot c \cdot d^3 \cdot i^3 + 61 \cdot B^2 \cdot a \cdot b^3 \cdot c \cdot d^3 \cdot i^3 + 180 \cdot A \cdot B \cdot a^2 \cdot b^2 \cdot d^4 \cdot i^3 - 120 \cdot A \cdot B \cdot b^4 \cdot c^2 \cdot d^2 \cdot i^3 + 180 \cdot A \cdot B \cdot a \cdot b^3 \cdot c \cdot d^3 \cdot i^3) / (2 \cdot (a \cdot d - b \cdot c))) / (200 \cdot a^5 \cdot b^4 \cdot g^6 + 200 \cdot b^9 \cdot g^6 \cdot x^5 + 1000 \cdot a^4 \cdot b^5 \cdot g^6 \cdot x + 1000 \cdot a \cdot b^8 \cdot g^6 \cdot x^4 + 2000 \cdot a^3 \cdot b^6 \cdot g^6 \cdot x^2 + 2000 \cdot a^2 \cdot b^7 \cdot g^6 \cdot x^3) - (\log\left(\frac{e \cdot (a + b \cdot x)}{c + d \cdot x}\right)) \cdot \left(\frac{x^3 \cdot ((A \cdot B \cdot d^2 \cdot i^3) / (b^2 \cdot g^6) + (B^2 \cdot d^5 \cdot i^3 \cdot ((b^4 \cdot c^2 + 5 \cdot a^2 \cdot b^2 \cdot d^2 - 6 \cdot a \cdot b^3 \cdot c \cdot d) / (5 \cdot d^3) + b \cdot (b \cdot (b \cdot ((5 \cdot a^2 \cdot d^2 + b^2 \cdot c^2 - 6 \cdot a \cdot b \cdot c \cdot d) / (20 \cdot b \cdot d^3) + (a \cdot (a \cdot d - b \cdot c)) / (5 \cdot b \cdot d^2)) + (5 \cdot a^2 \cdot d^2 + b^2 \cdot c^2 - 6 \cdot a \cdot b \cdot c \cdot d) / (10 \cdot d^3) + (2 \cdot a \cdot (a \cdot d - b \cdot c)) / (5 \cdot d^2)) - a \cdot ((b^2 \cdot c - a \cdot b \cdot d) / (5 \cdot d^2) - (2 \cdot b \cdot (a \cdot d - b \cdot c)) / (5 \cdot d^2)) + (3 \cdot (b^3 \cdot c^2 + 5 \cdot a^2 \cdot b \cdot d^2 - 6 \cdot a \cdot b^2 \cdot c \cdot d) / (20 \cdot d^3)) - a \cdot (b \cdot ((b^2 \cdot c - a \cdot b \cdot d) / (5 \cdot d^2) - (2 \cdot b \cdot (a \cdot d - b \cdot c)) / (5 \cdot d^2)) + (b^3 \cdot c - a \cdot b^2 \cdot d) / (5 \cdot d^2)))) / (10 \cdot b^4 \cdot g^6 \cdot (a^2 \cdot d^2 + b^2 \cdot c^2 - 2 \cdot a \cdot b \cdot c \cdot d)) + a \cdot (a \cdot ((B \cdot d \cdot i^3 \cdot (6 \cdot A$$

$$\begin{aligned}
& *b*c - B*a*d + B*b*c)) / (30*b^5*g^6) + (A*B*a*d^2*i^3) / (10*b^5*g^6) + (B*i^3 * (6*A*b^2*c^2 - B*a^2*d^2 + B*b^2*c^2)) / (20*b^5*g^6) + x * (b * (a * ((B*d*i^3 * (6*A*b*c - B*a*d + B*b*c)) / (30*b^5*g^6) + (A*B*a*d^2*i^3) / (10*b^5*g^6)) + (B*i^3 * (6*A*b^2*c^2 - B*a^2*d^2 + B*b^2*c^2)) / (20*b^5*g^6)) + a * (b * ((B*d*i^3 * (6*A*b*c - B*a*d + B*b*c)) / (30*b^5*g^6) + (A*B*a*d^2*i^3) / (10*b^5*g^6)) + (B*d*i^3 * (6*A*b*c - B*a*d + B*b*c)) / (10*b^4*g^6) + (3*A*B*a*d^2*i^3) / (10*b^4*g^6)) + (B*i^3 * (6*A*b^2*c^2 - B*a^2*d^2 + B*b^2*c^2)) / (5*b^4*g^6) + (B^2*d^5*i^3 * ((10*a^4*d^4 + b^4*c^4 + 15*a^2*b^2*c^2*d^2 - 6*a*b^3*c^3*d - 20*a^3*b*c*d^3) / (5*d^5) + b * (a * (a * ((5*a^2*d^2 + b^2*c^2 - 6*a*b*c*d) / (20*b*d^3) + (a * (a*d - b*c)) / (5*b*d^2)) + (10*a^3*d^3 - b^3*c^3 + 6*a*b^2*c^2*d - 15*a^2*b*c*d^2) / (30*b*d^4)) + (10*a^4*d^4 + b^4*c^4 + 15*a^2*b^2*c^2*d^2 - 6*a*b^3*c^3*d - 20*a^3*b*c*d^3) / (20*b*d^5)) + a * (b * (a * ((5*a^2*d^2 + b^2*c^2 - 6*a*b*c*d) / (20*b*d^3) + (a * (a*d - b*c)) / (5*b*d^2)) + (10*a^3*d^3 - b^3*c^3 + 6*a*b^2*c^2*d - 15*a^2*b*c*d^2) / (30*b*d^4)) + a * (b * ((5*a^2*d^2 + b^2*c^2 - 6*a*b*c*d) / (20*b*d^3) + (a * (a*d - b*c)) / (5*b*d^2)) + (5*a^2*d^2 + b^2*c^2 - 6*a*b*c*d) / (10*d^3) + (2*a * (a*d - b*c)) / (5*d^2)) + (10*a^3*d^3 - b^3*c^3 + 6*a*b^2*c^2*d - 15*a^2*b*c*d^2) / (10*d^4)))) / (10*b^4*g^6 * (a^2*d^2 + b^2*c^2 - 2*a*b*c*d))) + x^2 * (b * (b * ((B*d*i^3 * (6*A*b*c - B*a*d + B*b*c)) / (30*b^5*g^6) + (A*B*a*d^2*i^3) / (10*b^5*g^6)) + (B*d*i^3 * (6*A*b*c - B*a*d + B*b*c)) / (10*b^4*g^6) + (3*A*B*a*d^2*i^3) / (10*b^4*g^6)) + (B*d*i^3 * (6*A*b*c - B*a*d + B*b*c)) / (5*b^3*g^6) + (3*A*B*a*d^2*i^3) / (5*b^3*g^6) + (B^2*d^5*i^3 * (a * (b * ((5*a^2*d^2 + b^2*c^2 - 6*a*b*c*d) / (20*b*d^3) + (a * (a*d - b*c)) / (5*b*d^2)) + (5*a^2*d^2 + b^2*c^2 - 6*a*b*c*d) / (10*d^3) + (2*a * (a*d - b*c)) / (5*d^2)) - a * ((b^2*c - a*b*d) / (5*d^2) - (2*b * (a*d - b*c)) / (5*d^2)) + (3 * (b^3*c^2 + 5*a^2*b*d^2 - 6*a*b^2*c*d) / (20*d^3)) - (b^4*c^3 - 10*a^3*b*d^3 + 15*a^2*b^2*c*d^2 - 6*a*b^3*c^2*d) / (5*d^4) + b * (b * (a * ((5*a^2*d^2 + b^2*c^2 - 6*a*b*c*d) / (20*b*d^3) + (a * (a*d - b*c)) / (5*b*d^2)) + (10*a^3*d^3 - b^3*c^3 + 6*a*b^2*c^2*d - 15*a^2*b*c*d^2) / (30*b*d^4)) + a * (b * ((5*a^2*d^2 + b^2*c^2 - 6*a*b*c*d) / (20*b*d^3) + (a * (a*d - b*c)) / (5*b*d^2)) + (5*a^2*d^2 + b^2*c^2 - 6*a*b*c*d) / (10*d^3) + (2*a * (a*d - b*c)) / (5*d^2)) + (10*a^3*d^3 - b^3*c^3 + 6*a*b^2*c^2*d - 15*a^2*b*c*d^2) / (10*d^4)))) / (10*b^4*g^6 * (a^2*d^2 + b^2*c^2 - 2*a*b*c*d))) + (B*i^3 * (4*A*b^3*c^3 - B*a^3*d^3 + B*b^3*c^3 - B*a*b^2*c^2*d + B*a^2*b*c*d^2)) / (10*b^5*d*g^6) + (B^2*d^5*i^3 * (a * (a * (a * ((5*a^2*d^2 + b^2*c^2 - 6*a*b*c*d) / (20*b*d^3) + (a * (a*d - b*c)) / (5*b*d^2)) + (10*a^3*d^3 - b^3*c^3 + 6*a*b^2*c^2*d - 15*a^2*b*c*d^2) / (30*b*d^4)) + (10*a^4*d^4 + b^4*c^4 + 15*a^2*b^2*c^2*d^2 - 6*a*b^3*c^3*d - 20*a^3*b*c*d^3) / (20*b*d^5)) + (5*a^5*d^5 - b^5*c^5 - 15*a^2*b^3*c^3*d^2 + 20*a^3*b^2*c^2*d^3 + 6*a*b^4*c^4*d - 15*a^4*b*c*d^4) / (5*b*d^6))) / (10*b^4*g^6 * (a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) - (B^2*d^5*i^3 * x^4 * (b * (b * ((b^2*c - a*b*d) / (5*d^2) - (2*b * (a*d - b*c)) / (5*d^2)) + (b^3*c - a*b^2*d) / (5*d^2)) + (b^4*c - a*b^3*d) / (5*d^2))) / (10*b^4*g^6 * (a^2*d^2 + b^2*c^2 - 2*a*b*c*d))) / ((5*a^4*x) / d + a^5 / (b*d) + (b^4*x^5) / d + (10*a^3*b*x^2) / d + (5*a*b^3*x^4) / d + (10*a^2*b^2*x^3) / d) - (B*d^5*i^3 * atan(((2*b*d*x - (200*b^6*c^2*g^6 - 200*a^2*b^4*d^2*g^6) / (200*b^4*g^6 * (a*d - b*c))) * 1i) / (a*d - b*c)) * (20*A + 9*B) * 1i) / (100*b^4*g^6 * (a*d - b*c)^2)
\end{aligned}$$

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)**6,x)

[Out] Timed out

$$3.83 \quad \int \frac{(ci+dx)^3 \left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)^2}{(ag+bgx)^7} dx$$

Optimal. Leaf size=463

$$\frac{b^2 i^3 (c+dx)^6 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)^2}{6g^7 (a+bx)^6 (bc-ad)^3} - \frac{b^2 B i^3 (c+dx)^6 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{18g^7 (a+bx)^6 (bc-ad)^3} - \frac{d^2 i^3 (c+dx)^4 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{4g^7 (a+bx)^4 (bc-ad)^3}$$

[Out] $-1/32*B^2*d^2*i^3*(d*x+c)^4/(-a*d+b*c)^3/g^7/(b*x+a)^4+4/125*b*B^2*d*i^3*(d*x+c)^5/(-a*d+b*c)^3/g^7/(b*x+a)^5-1/108*b^2*B^2*i^3*(d*x+c)^6/(-a*d+b*c)^3/g^7/(b*x+a)^6-1/8*B*d^2*i^3*(d*x+c)^4*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^3/g^7/(b*x+a)^4+4/25*b*B*d*i^3*(d*x+c)^5*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^3/g^7/(b*x+a)^5-1/18*b^2*B*i^3*(d*x+c)^6*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^3/g^7/(b*x+a)^6-1/4*d^2*i^3*(d*x+c)^4*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/(-a*d+b*c)^3/g^7/(b*x+a)^4+2/5*b*d*i^3*(d*x+c)^5*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/(-a*d+b*c)^3/g^7/(b*x+a)^5-1/6*b^2*i^3*(d*x+c)^6*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/(-a*d+b*c)^3/g^7/(b*x+a)^6$

Rubi [C] time = 6.08, antiderivative size = 1152, normalized size of antiderivative = 2.49, number of steps used = 162, number of rules used = 11, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}} = 0.262$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{B^2 i^3 \log^2(a+bx)d^6}{60b^4(bc-ad)^3g^7} + \frac{B^2 i^3 \log^2(c+dx)d^6}{60b^4(bc-ad)^3g^7} - \frac{37B^2 i^3 \log(a+bx)d^6}{1800b^4(bc-ad)^3g^7} - \frac{B i^3 \log(a+bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right) \right) d^6}{30b^4(bc-ad)^3g^7} + \frac{37B}{180}$$

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x]])^2)/(a*g + b*g*x)^7, x]

[Out] $-(B^2*(b*c - a*d)^3*i^3)/(108*b^4*g^7*(a + b*x)^6) - (53*B^2*d*(b*c - a*d)^2*i^3)/(2250*b^4*g^7*(a + b*x)^5) - (73*B^2*d^2*(b*c - a*d)*i^3)/(7200*b^4*g^7*(a + b*x)^4) + (53*B^2*d^3*i^3)/(5400*b^4*g^7*(a + b*x)^3) - (23*B^2*d^4*i^3)/(3600*b^4*(b*c - a*d)*g^7*(a + b*x)^2) - (37*B^2*d^5*i^3)/(1800*b^4*(b*c - a*d)^2*g^7*(a + b*x)) - (37*B^2*d^6*i^3*Log[a + b*x])/(1800*b^4*(b*c - a*d)^3*g^7) + (B^2*d^6*i^3*Log[a + b*x]^2)/(60*b^4*(b*c - a*d)^3*g^7) - (B*(b*c - a*d)^3*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(18*b^4*g^7*(a + b*x)^6) - (13*B*d*(b*c - a*d)^2*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(75*b^4*g^7*(a + b*x)^5) - (19*B*d^2*(b*c - a*d)*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(120*b^4*g^7*(a + b*x)^4) - (B*d^3*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x]]))/(90*b^4*g^7*(a + b*x)^3) + (B*d^4*i^3*(A + B*Log[(e*(a +$

$$\begin{aligned} & b*x))/((c + d*x])))/(60*b^4*(b*c - a*d)*g^7*(a + b*x)^2) - (B*d^5*i^3*(A + B \\ & *Log[(e*(a + b*x))/(c + d*x])))/(30*b^4*(b*c - a*d)^2*g^7*(a + b*x)) - (B*d \\ & ^6*i^3*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x])))/(30*b^4*(b*c - a* \\ & d)^3*g^7) - ((b*c - a*d)^3*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2)/(6*b \\ & ^4*g^7*(a + b*x)^6) - (3*d*(b*c - a*d)^2*i^3*(A + B*Log[(e*(a + b*x))/(c + \\ & d*x]))^2)/(5*b^4*g^7*(a + b*x)^5) - (3*d^2*(b*c - a*d)*i^3*(A + B*Log[(e*(a \\ & + b*x))/(c + d*x]))^2)/(4*b^4*g^7*(a + b*x)^4) - (d^3*i^3*(A + B*Log[(e*(a \\ & + b*x))/(c + d*x]))^2)/(3*b^4*g^7*(a + b*x)^3) + (37*B^2*d^6*i^3*Log[c + d \\ & *x))/(1800*b^4*(b*c - a*d)^3*g^7) - (B^2*d^6*i^3*Log[-((d*(a + b*x))/(b*c - \\ & a*d))]*Log[c + d*x))/(30*b^4*(b*c - a*d)^3*g^7) + (B*d^6*i^3*(A + B*Log[(e \\ & *(a + b*x))/(c + d*x]))*Log[c + d*x))/(30*b^4*(b*c - a*d)^3*g^7) + (B^2*d^6 \\ & *i^3*Log[c + d*x]^2)/(60*b^4*(b*c - a*d)^3*g^7) - (B^2*d^6*i^3*Log[a + b*x] \\ & *Log[(b*(c + d*x))/(b*c - a*d)))/(30*b^4*(b*c - a*d)^3*g^7) - (B^2*d^6*i^3* \\ & PolyLog[2, -((d*(a + b*x))/(b*c - a*d)))/(30*b^4*(b*c - a*d)^3*g^7) - (B^2 \\ & *d^6*i^3*PolyLog[2, (b*(c + d*x))/(b*c - a*d)))/(30*b^4*(b*c - a*d)^3*g^7) \end{aligned}$$

Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]/(x_), x_Symbol] := -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```


Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e^n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_)^(m_.
)), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunci
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(83c + 83dx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{(ag + bgx)^7} dx &= \int \left(\frac{571787(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{b^3 g^7 (a + bx)^7} + \frac{1715361d(bc - ad)}{b^3 g^7} \right) dx \\
&= \frac{(571787d^3) \int \frac{\left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{(a+bx)^4} dx}{b^3 g^7} + \frac{(1715361d^2(bc - ad)) \int \frac{(A+B)}{a+bx} dx}{b^3 g^7} \\
&= -\frac{571787(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{6b^4 g^7 (a + bx)^6} - \frac{1715361d(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{5b^4 g^7 (a + bx)^5} \\
&= -\frac{571787(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{6b^4 g^7 (a + bx)^6} - \frac{1715361d(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{5b^4 g^7 (a + bx)^5} \\
&= -\frac{571787(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{6b^4 g^7 (a + bx)^6} - \frac{1715361d(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{5b^4 g^7 (a + bx)^5} \\
&= -\frac{571787(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{6b^4 g^7 (a + bx)^6} - \frac{1715361d(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{5b^4 g^7 (a + bx)^5} \\
&= -\frac{571787B(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{18b^4 g^7 (a + bx)^6} - \frac{7433231Bd(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{75b^4 g^7 (a + bx)^5} \\
&= -\frac{571787B(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{18b^4 g^7 (a + bx)^6} - \frac{7433231Bd(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{75b^4 g^7 (a + bx)^5} \\
&= -\frac{571787B(bc - ad)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{18b^4 g^7 (a + bx)^6} - \frac{7433231Bd(bc - ad)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{75b^4 g^7 (a + bx)^5} \\
&= -\frac{571787B^2(bc - ad)^3}{108b^4 g^7 (a + bx)^6} - \frac{30304711B^2d(bc - ad)^2}{2250b^4 g^7 (a + bx)^5} - \frac{41740451B^2d^2}{7200b^4 g^7 (a + bx)^4} \\
&= -\frac{571787B^2(bc - ad)^3}{108b^4 g^7 (a + bx)^6} - \frac{30304711B^2d(bc - ad)^2}{2250b^4 g^7 (a + bx)^5} - \frac{41740451B^2d^2}{7200b^4 g^7 (a + bx)^4} \\
&= -\frac{571787B^2(bc - ad)^3}{108b^4 g^7 (a + bx)^6} - \frac{30304711B^2d(bc - ad)^2}{2250b^4 g^7 (a + bx)^5} - \frac{41740451B^2d^2}{7200b^4 g^7 (a + bx)^4} \\
&= -\frac{571787B^2(bc - ad)^3}{108b^4 g^7 (a + bx)^6} - \frac{30304711B^2d(bc - ad)^2}{2250b^4 g^7 (a + bx)^5} - \frac{41740451B^2d^2}{7200b^4 g^7 (a + bx)^4}
\end{aligned}$$

Mathematica [C] time = 6.25, size = 2583, normalized size = 5.58

Result too large to show

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b*g*x)^7, x]

[Out] (i^3*(8100*a^2*B^2*d^2*(b*c - a*d)^4 - 1000*B^2*(b*c - a*d)^6 + 3744*a*B^2*d*(-(b*c) + a*d)^5 + 16200*a*b*B^2*d^2*(b*c - a*d)^4*x - 3744*b*B^2*d*(b*c - a*d)^5*x + 8100*b^2*B^2*d^2*(b*c - a*d)^4*x^2 + 4680*a*B^2*d^2*(b*c - a*d)^4*(a + b*x) + 1200*B^2*d*(b*c - a*d)^5*(a + b*x) + 10800*a^2*B^2*d^3*(-(b*c) + a*d)^3*(a + b*x) + 4680*b*B^2*d^2*(b*c - a*d)^4*x*(a + b*x) + 21600*a*b*B^2*d^3*(-(b*c) + a*d)^3*x*(a + b*x) - 10800*b^2*B^2*d^3*(b*c - a*d)^3*x^2*(a + b*x) + 16200*a^2*B^2*d^4*(b*c - a*d)^2*(a + b*x)^2 - 13875*B^2*d^2*(b*c - a*d)^4*(a + b*x)^2 + 20640*a*B^2*d^3*(-(b*c) + a*d)^3*(a + b*x)^2 + 32400*a*b*B^2*d^4*(b*c - a*d)^2*x*(a + b*x)^2 - 20640*b*B^2*d^3*(b*c - a*d)^3*x*(a + b*x)^2 + 16200*b^2*B^2*d^4*(b*c - a*d)^2*x^2*(a + b*x)^2 + 63360*a*B^2*d^4*(b*c - a*d)^2*(a + b*x)^3 + 32500*B^2*d^3*(b*c - a*d)^3*(a + b*x)^3 + 32400*a^2*B^2*d^5*(-(b*c) + a*d)*(a + b*x)^3 + 63360*b*B^2*d^4*(b*c - a*d)^2*x*(a + b*x)^3 + 64800*a*b*B^2*d^5*(-(b*c) + a*d)*x*(a + b*x)^3 - 32400*b^2*B^2*d^5*(b*c - a*d)*x^2*(a + b*x)^3 - 129600*a*b*B^2*c*d^5*(a + b*x)^4 + 129600*a^2*B^2*d^6*(a + b*x)^4 - 80250*B^2*d^4*(b*c - a*d)^2*(a + b*x)^4 + 126720*a*B^2*d^5*(-(b*c) + a*d)*(a + b*x)^4 - 129600*b^2*B^2*c*d^5*x*(a + b*x)^4 + 129600*a*b*B^2*d^6*x*(a + b*x)^4 - 126720*b*B^2*d^5*(b*c - a*d)*x*(a + b*x)^4 + 126000*b*B^2*c*d^5*(a + b*x)^5 - 126000*a*B^2*d^6*(a + b*x)^5 + 160500*B^2*d^5*(b*c - a*d)*(a + b*x)^5 - 32400*a^2*B^2*d^6*(a + b*x)^4*Log[a + b*x] - 64800*a*b*B^2*d^6*x*(a + b*x)^4*Log[a + b*x] - 32400*b^2*B^2*d^6*x^2*(a + b*x)^4*Log[a + b*x] - 256320*a*B^2*d^6*(a + b*x)^5*Log[a + b*x] - 256320*b*B^2*d^6*x*(a + b*x)^5*Log[a + b*x] + 286500*B^2*d^6*(a + b*x)^6*Log[a + b*x] - 6000*B*(b*c - a*d)^6*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 25920*a*B*d*(-(b*c) + a*d)^5*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 25920*b*B*d*(b*c - a*d)^5*x*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 32400*a*B*d^2*(b*c - a*d)^4*(a + b*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 7200*B*d*(b*c - a*d)^5*(a + b*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 32400*b*B*d^2*(b*c - a*d)^4*x*(a + b*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 49500*B*d^2*(b*c - a*d)^4*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 43200*a*B*d^3*(-(b*c) + a*d)^3*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 43200*b*B*d^3*(b*c - a*d)^3*x*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 64800*a*B*d^4*(b*c - a*d)^2*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 42000*B*d^3*(b*c - a*d)^3*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 64800*b*B*d^4*(b*c - a*d)^2*x*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 63000*B*d^4*(b*c - a*d)^2*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 129600*a*B*d^5*(-(b*c) + a*d)*(a + b*x)^4*(A + B*Log

$$\begin{aligned}
& \left[\frac{e^{(a+bx)}}{(c+dx)} \right] - 129600*b*B*d^5*(b*c - a*d)*x*(a+bx)^4*(A + \\
& B*\text{Log}\left[\frac{e^{(a+bx)}}{(c+dx)}\right] + 126000*B*d^5*(b*c - a*d)*(a+bx)^5*(A + \\
& B*\text{Log}\left[\frac{e^{(a+bx)}}{(c+dx)}\right] - 129600*a*B*d^6*(a+bx)^5*\text{Log}[a+bx]* \\
& (A + B*\text{Log}\left[\frac{e^{(a+bx)}}{(c+dx)}\right]) - 129600*b*B*d^6*x*(a+bx)^5*\text{Log}[a + \\
& bx]*(A + B*\text{Log}\left[\frac{e^{(a+bx)}}{(c+dx)}\right]) + 126000*B*d^6*(a+bx)^6*\text{Log}[a \\
& + bx]*(A + B*\text{Log}\left[\frac{e^{(a+bx)}}{(c+dx)}\right]) - 18000*(b*c - a*d)^6*(A + B*L \\
& \text{og}\left[\frac{e^{(a+bx)}}{(c+dx)}\right]^2 + 64800*d*(-(b*c) + a*d)^5*(a+bx)*(A + B* \\
& \text{Log}\left[\frac{e^{(a+bx)}}{(c+dx)}\right]^2 - 81000*d^2*(b*c - a*d)^4*(a+bx)^2*(A + \\
& B*\text{Log}\left[\frac{e^{(a+bx)}}{(c+dx)}\right]^2 + 36000*d^3*(-(b*c) + a*d)^3*(a+bx)^3* \\
& (A + B*\text{Log}\left[\frac{e^{(a+bx)}}{(c+dx)}\right])^2 + 32400*a^2*B^2*d^6*(a+bx)^4*\text{Log}[\\
& c + dx] + 64800*a*b*B^2*d^6*x*(a+bx)^4*\text{Log}[c + dx] + 32400*b^2*B^2*d^6 \\
& *x^2*(a+bx)^4*\text{Log}[c + dx] + 256320*a*B^2*d^6*(a+bx)^5*\text{Log}[c + dx] + \\
& 256320*b*B^2*d^6*x*(a+bx)^5*\text{Log}[c + dx] - 286500*B^2*d^6*(a+bx)^6*L \\
& \text{og}[c + dx] + 129600*a*B*d^6*(a+bx)^5*(A + B*\text{Log}\left[\frac{e^{(a+bx)}}{(c+dx)}\right] \\
&)*\text{Log}[c + dx] + 129600*b*B*d^6*x*(a+bx)^5*(A + B*\text{Log}\left[\frac{e^{(a+bx)}}{(c \\
& + dx)}\right])*\text{Log}[c + dx] - 126000*B*d^6*(a+bx)^6*(A + B*\text{Log}\left[\frac{e^{(a+bx)}}{(c \\
& + dx)}\right])*\text{Log}[c + dx] + 64800*a*B^2*d^6*(a+bx)^5*(\text{Log}[a+bx]* \\
& (\text{Log}[a+bx] - 2*\text{Log}\left[\frac{b*(c+dx)}{(b*c - a*d)}\right]) - 2*\text{PolyLog}[2, (d*(a+bx))/(-(\\
& b*c) + a*d)]) + 64800*b*B^2*d^6*x*(a+bx)^5*(\text{Log}[a+bx]* \\
& (\text{Log}[a+bx] - 2*\text{Log}\left[\frac{b*(c+dx)}{(b*c - a*d)}\right]) - 2*\text{PolyLog}[2, (d*(a+bx))/(-(b*c) + a \\
& *d)]) - 63000*B^2*d^6*(a+bx)^6*(\text{Log}[a+bx]* \\
& (\text{Log}[a+bx] - 2*\text{Log}\left[\frac{b*(c+dx)}{(b*c - a*d)}\right]) - 2*\text{PolyLog}[2, (d*(a+bx))/(-(b*c) + a*d)]) - 6480 \\
& 0*a*B^2*d^6*(a+bx)^5*((2*\text{Log}\left[\frac{d*(a+bx)}{-(b*c) + a*d}\right]) - \text{Log}[c + dx \\
&])*\text{Log}[c + dx] + 2*\text{PolyLog}[2, (b*(c+dx))/(b*c - a*d)]) - 64800*b*B^2*d^ \\
& 6*x*(a+bx)^5*((2*\text{Log}\left[\frac{d*(a+bx)}{-(b*c) + a*d}\right]) - \text{Log}[c + dx])* \\
& \text{Log}[c + dx] + 2*\text{PolyLog}[2, (b*(c+dx))/(b*c - a*d)]) + 63000*B^2*d^6*(a+bx \\
&)^6*((2*\text{Log}\left[\frac{d*(a+bx)}{-(b*c) + a*d}\right]) - \text{Log}[c + dx])* \\
& \text{Log}[c + dx] + 2* \\
& \text{PolyLog}[2, (b*(c+dx))/(b*c - a*d)))]/(108000*b^4*(b*c - a*d)^3*g^7*(a + \\
& bx)^6)
\end{aligned}$$

fricas [B] time = 0.88, size = 1610, normalized size = 3.48

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^7,x, algorithm="fricas")

[Out]
$$\begin{aligned}
& -1/108000*(60*((60*A*B + 37*B^2)*b^6*c*d^5 - (60*A*B + 37*B^2)*a*b^5*d^6)*i \\
& ^3*x^5 - 30*((60*A*B - 23*B^2)*b^6*c^2*d^4 - 36*(20*A*B + 9*B^2)*a*b^5*c*d^ \\
& 5 + (660*A*B + 347*B^2)*a^2*b^4*d^6)*i^3*x^4 + 20*((1800*A^2 + 60*A*B - 53* \\
& B^2)*b^6*c^3*d^3 - 27*(200*A^2 + 20*A*B - 11*B^2)*a*b^5*c^2*d^4 + 675*(8*A^ \\
& 2 + 4*A*B + B^2)*a^2*b^4*c*d^5 - (1800*A^2 + 2220*A*B + 919*B^2)*a^3*b^3*d^ \\
& 6)*i^3*x^3 + 15*((5400*A^2 + 1140*A*B + 73*B^2)*b^6*c^4*d^2 - 72*(200*A^2 + \\
& 60*A*B + 7*B^2)*a*b^5*c^3*d^3 + 1350*(8*A^2 + 4*A*B + B^2)*a^2*b^4*c^2*d^4
\end{aligned}$$

$$\begin{aligned}
& - (1800A^2 + 2220AB + 919B^2)a^4b^2d^6i^3x^2 + 6(8(1350A^2 + 390AB + 53B^2)b^6c^5d - 45(600A^2 + 220AB + 39B^2)ab^5c^4d^2 \\
& + 2250(8A^2 + 4AB + B^2)a^2b^4c^3d^3 - (1800A^2 + 2220AB + 919B^2)a^5b^2d^6)i^3x + (1000(18A^2 + 6AB + B^2)b^6c^6 - 1728(25A^2 \\
& + 10AB + 2B^2)ab^5c^5d + 3375(8A^2 + 4AB + B^2)a^2b^4c^4d^2 - (1800A^2 + 2220AB + 919B^2)a^6d^6)i^3 \\
& + 1800(B^2b^6d^6i^3x^6 + 6B^2ab^5d^6i^3x^5 + 15B^2a^2b^4d^6i^3x^4 + 20(B^2b^6c^3d^3 - 3B^2ab^5c^2d^4 + 3B^2a^2b^4c^2d^5)i^3x^3 \\
& + 15(3B^2b^6c^4d^2 - 8B^2ab^5c^3d^3 + 6B^2a^2b^4c^2d^4)i^3x^2 + 6(6B^2b^6c^5d - 15B^2ab^5c^4d^2 + 10B^2a^2b^4c^3d^3)i^3x \\
& + (10B^2b^6c^6 - 24B^2ab^5c^5d + 15B^2a^2b^4c^4d^2)i^3) \log((bex + ae)/(dx + c))^2 + 60((60AB + 37B^2)b^6d^6i^3x^6 + 6(10B^2b^6cd^5 + 3(20AB + 9B^2)ab^5d^6)i^3x^5 \\
& - 15(2B^2b^6c^2d^4 - 24B^2ab^5cd^5 - 15(4AB + B^2)a^2b^4d^6)i^3x^4 + 20((60AB + B^2)b^6c^3d^3 - 9(20AB + B^2)ab^5c^2d^4 + 45(4AB + B^2)a^2b^4cd^5)i^3x^3 \\
& + 15((180AB + 19B^2)b^6c^4d^2 - 24(20AB + 3B^2)ab^5c^3d^3 + 90(4AB + B^2)a^2b^4c^2d^4)i^3x^2 + 6(4(90AB + 13B^2)b^6c^5d - 15(60AB + 11B^2)ab^5c^4d^2 \\
& + 150(4AB + B^2)a^2b^4c^3d^3)i^3x + (100(6AB + B^2)b^6c^6 - 288(5AB + B^2)ab^5c^5d + 225(4AB + B^2)a^2b^4c^4d^2)i^3) \log((bex + ae)/(dx + c)) / ((b^13c^3 - 3ab^12c^2d + 3a^2b^11c^2d^2 - a^3b^10d^3)g^7x^6 + 6(ab^12c^3 - 3a^2b^11c^2d + 3a^3b^10cd^2 - a^4b^9d^3)g^7x^5 + 15(a^2b^11c^3 - 3a^3b^10c^2d + 3a^4b^9cd^2 - a^5b^8d^3)g^7x^4 + 20(a^3b^10c^3 - 3a^4b^9c^2d + 3a^5b^8cd^2 - a^6b^7d^3)g^7x^3 + 15(a^4b^9c^3 - 3a^5b^8c^2d + 3a^6b^7cd^2 - a^7b^6d^3)g^7x^2 + 6(a^5b^8c^3 - 3a^6b^7c^2d + 3a^7b^6cd^2 - a^8b^5d^3)g^7x + (a^6b^7c^3 - 3a^7b^6c^2d + 3a^8b^5cd^2 - a^9b^4d^3)g^7)
\end{aligned}$$

giac [A] time = 3.69, size = 727, normalized size = 1.57

$$\left(18000 B^2 b^2 i e^7 \log\left(\frac{bx+ae}{dx+c}\right)^2 - \frac{43200 (bx+ae) B^2 b d i e^6 \log\left(\frac{bx+ae}{dx+c}\right)^2}{dx+c} + \frac{27000 (bx+ae)^2 B^2 d^2 i e^5 \log\left(\frac{bx+ae}{dx+c}\right)^2}{(dx+c)^2} + 36000 A B b^2 i e^7 \log\left(\frac{bx+ae}{dx+c}\right) \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^7,x, algorithm="giac")

[Out] 1/108000*(18000*B^2*b^2*i*e^7*log((b*x*e + a*e)/(d*x + c))^2 - 43200*(b*x*e + a*e)*B^2*b*d*i*e^6*log((b*x*e + a*e)/(d*x + c))^2/(d*x + c) + 27000*(b*x*e + a*e)^2*B^2*d^2*i*e^5*log((b*x*e + a*e)/(d*x + c))^2/(d*x + c)^2 + 36000*A*B*b^2*i*e^7*log((b*x*e + a*e)/(d*x + c)) + 6000*B^2*b^2*i*e^7*log((b*x*e + a*e)/(d*x + c)))

$$\begin{aligned}
& e + a*e)/(d*x + c)) - 86400*(b*x*e + a*e)*A*B*b*d*i*e^6*\log((b*x*e + a*e)/(d*x + c))/(d*x + c) - 17280*(b*x*e + a*e)*B^2*b*d*i*e^6*\log((b*x*e + a*e)/(d*x + c))/(d*x + c) + 54000*(b*x*e + a*e)^2*A*B*d^2*i*e^5*\log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 + 13500*(b*x*e + a*e)^2*B^2*d^2*i*e^5*\log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 + 18000*A^2*b^2*i*e^7 + 6000*A*B*b^2*i*e^7 + 10000*B^2*b^2*i*e^7 - 43200*(b*x*e + a*e)*A^2*b*d*i*e^6/(d*x + c) - 17280*(b*x*e + a*e)*A*B*b*d*i*e^6/(d*x + c) - 3456*(b*x*e + a*e)*B^2*b*d*i*e^6/(d*x + c) + 27000*(b*x*e + a*e)^2*A^2*d^2*i*e^5/(d*x + c)^2 + 13500*(b*x*e + a*e)^2*A*B*d^2*i*e^5/(d*x + c)^2 + 3375*(b*x*e + a*e)^2*B^2*d^2*i*e^5/(d*x + c)^2*(b*c/((b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))/((b*x*e + a*e)^6*b^2*c^2*g^7/(d*x + c)^6 - 2*(b*x*e + a*e)^6*a*b*c*d*g^7/(d*x + c)^6 + (b*x*e + a*e)^6*a^2*d^2*g^7/(d*x + c)^6)
\end{aligned}$$

maple [B] time = 0.06, size = 2762, normalized size = 5.97

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^7,x)

[Out]
$$\begin{aligned}
& -4/5*d^2*e^5*i^3/(a*d-b*c)^4/g^7*A*B*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+4/5*d*e^5*i^3/(a*d-b*c)^4/g^7*A*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+1/3*d*e^6*i^3/(a*d-b*c)^4/g^7*A*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^6*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-1/2*d^2*e^4*i^3/(a*d-b*c)^4/g^7*A*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*c-1/6*e^6*i^3/(a*d-b*c)^4/g^7*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^6*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c-4/125*d^2*e^5*i^3/(a*d-b*c)^4/g^7*B^2*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*a+1/8*d^3*e^4*i^3/(a*d-b*c)^4/g^7*A*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*a-1/32*d^2*e^4*i^3/(a*d-b*c)^4/g^7*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*b*c-2/5*d^2*e^5*i^3/(a*d-b*c)^4/g^7*A^2*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*a+2/5*d*e^5*i^3/(a*d-b*c)^4/g^7*A^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*c+1/6*d*e^6*i^3/(a*d-b*c)^4/g^7*A^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^6*a+1/4*d^3*e^4*i^3/(a*d-b*c)^4/g^7*A^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*a+1/32*d^3*e^4*i^3/(a*d-b*c)^4/g^7*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*a-1/108*e^6*i^3/(a*d-b*c)^4/g^7*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^6*c-1/6*e^6*i^3/(a*d-b*c)^4/g^7*A^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^6*c-1/18*e^6*i^3/(a*d-b*c)^4/g^7*A*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^6*c+4/125*d*e^5*i^3/(a*d-b*c)^4/g^7*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*c+1/108*d*e^6*i^3/(a*d-b*c)^4/g^7*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^6*a+1/4*d^3*e^4*i^3/(a*d-b*c)^4/g^7*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a+1/8*d^3*e^4*i^3/(a*d-b*c)^4/g^7*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-1/4*d^2*e^4*i
\end{aligned}$$

$$\begin{aligned} &^3/(a*d-b*c)^4/g^7*A^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*b*c-1/18*e \\ &^6*i^3/(a*d-b*c)^4/g^7*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^6*\ln \\ &(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-2/5*d^2*e^5*i^3/(a*d-b*c)^4/g^7*B^2*b/(1/(d \\ &*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a+1/ \\ &2*d^3*e^4*i^3/(a*d-b*c)^4/g^7*A*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4 \\ &* \ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+1/18*d*e^6*i^3/(a*d-b*c)^4/g^7*A*B*b^2/(\\ &1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^6*a-1/3*e^6*i^3/(a*d-b*c)^4/g^7*A*B* \\ &b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^6*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d \\ &e)*c+2/5*d*e^5*i^3/(a*d-b*c)^4/g^7*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e \\ &+b/d*e)^5*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c-4/25*d^2*e^5*i^3/(a*d-b*c)^4/ \\ &g^7*B^2*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*\ln(b/d*e+(a*d-b*c)/(d*x \\ &+c)/d*e)*a+1/18*d*e^6*i^3/(a*d-b*c)^4/g^7*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)* \\ &b*c/d*e+b/d*e)^6*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-4/25*d^2*e^5*i^3/(a*d-b* \\ &c)^4/g^7*A*B*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*a-1/8*d^2*e^4*i^3/ \\ &(a*d-b*c)^4/g^7*A*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*b*c+4/25*d*e^ \\ &5*i^3/(a*d-b*c)^4/g^7*A*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*c-1 \\ &/4*d^2*e^4*i^3/(a*d-b*c)^4/g^7*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^ \\ &4*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b*c-1/8*d^2*e^4*i^3/(a*d-b*c)^4/g^7*B^2 \\ &/ (1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)* \\ &b*c+4/25*d*e^5*i^3/(a*d-b*c)^4/g^7*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e \\ &+b/d*e)^5*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+1/6*d*e^6*i^3/(a*d-b*c)^4/g^7*B \\ &^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^6*\ln(b/d*e+(a*d-b*c)/(d*x+c) \\ &/d*e)^2*a \end{aligned}$$

maxima [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^7,x, algorithm="maxima")

[Out] Timed out

mupad [B] time = 14.17, size = 6275, normalized size = 13.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x)^7,x)

[Out] ((1800*A^2*a^5*d^5*i^3 + 18000*A^2*b^5*c^5*i^3 + 919*B^2*a^5*d^5*i^3 + 1000*B^2*b^5*c^5*i^3 + 2220*A*B*a^5*d^5*i^3 + 6000*A*B*b^5*c^5*i^3 - 25200*A^2*a*b^4*c^4*d*i^3 + 1800*A^2*a^4*b*c*d^4*i^3 - 2456*B^2*a*b^4*c^4*d*i^3 + 919

$$\begin{aligned}
& *B^2*a^4*b*c*d^4*i^3 + 1800*A^2*a^2*b^3*c^3*d^2*i^3 + 1800*A^2*a^3*b^2*c^2*d^3*i^3 + 919*B^2*a^2*b^3*c^3*d^2*i^3 + 919*B^2*a^3*b^2*c^2*d^3*i^3 + 2220* \\
& A*B*a^2*b^3*c^3*d^2*i^3 + 2220*A*B*a^3*b^2*c^2*d^3*i^3 - 11280*A*B*a*b^4*c^4*d^4*i^3 + 2220*A*B*a^4*b*c*d^4*i^3)/(60*(a*d - b*c)) + (x^4*(347*B^2*a*b^4* \\
& d^5*i^3 + 23*B^2*b^5*c*d^4*i^3 + 660*A*B*a*b^4*d^5*i^3 - 60*A*B*b^5*c*d^4*i^3))/((2*(a*d - b*c)) + (x^2*(1800*A^2*a^3*b^2*d^5*i^3 + 919*B^2*a^3*b^2*d^5 \\
& *i^3 + 5400*A^2*b^5*c^3*d^2*i^3 + 73*B^2*b^5*c^3*d^2*i^3 - 9000*A^2*a*b^4*c^2*d^3*i^3 + 1800*A^2*a^2*b^3*c*d^4*i^3 - 431*B^2*a*b^4*c^2*d^3*i^3 + 919*B \\
& ^2*a^2*b^3*c*d^4*i^3 + 2220*A*B*a^3*b^2*d^5*i^3 + 1140*A*B*b^5*c^3*d^2*i^3 - 3180*A*B*a*b^4*c^2*d^3*i^3 + 2220*A*B*a^2*b^3*c*d^4*i^3)))/(4*(a*d - b*c)) \\
& + (x^3*(1800*A^2*a^2*b^3*d^5*i^3 + 919*B^2*a^2*b^3*d^5*i^3 + 1800*A^2*b^5*c^2*d^3*i^3 - 53*B^2*b^5*c^2*d^3*i^3 - 3600*A^2*a*b^4*c*d^4*i^3 + 244*B^2*a \\
& *b^4*c*d^4*i^3 + 2220*A*B*a^2*b^3*d^5*i^3 + 60*A*B*b^5*c^2*d^3*i^3 - 480*A*B*a*b^4*c*d^4*i^3))/(3*(a*d - b*c)) + (x*(1800*A^2*a^4*b*d^5*i^3 + 919*B^2* \\
& a^4*b*d^5*i^3 + 10800*A^2*b^5*c^4*d^4*i^3 + 424*B^2*b^5*c^4*d^4*i^3 - 16200*A^2 \\
& *a*b^4*c^3*d^2*i^3 + 1800*A^2*a^3*b^2*c*d^4*i^3 - 1331*B^2*a*b^4*c^3*d^2*i^3 + 919*B^2*a^3*b^2*c*d^4*i^3 + 2220*A*B*a^4*b*d^5*i^3 + 3120*A*B*b^5*c^4*d \\
& *i^3 + 1800*A^2*a^2*b^3*c^2*d^3*i^3 + 919*B^2*a^2*b^3*c^2*d^3*i^3 - 6780*A \\
& B*a*b^4*c^3*d^2*i^3 + 2220*A*B*a^3*b^2*c*d^4*i^3 + 2220*A*B*a^2*b^3*c^2*d^3 \\
& *i^3))/(10*(a*d - b*c)) + (d*x^5*(37*B^2*b^5*d^4*i^3 + 60*A*B*b^5*d^4*i^3)) \\
& /((a*d - b*c))/(x*(10800*a^5*b^6*c*g^7 - 10800*a^6*b^5*d*g^7) - x^5*(10800*a \\
& ^2*b^9*d*g^7 - 10800*a*b^10*c*g^7) + x^6*(1800*b^11*c*g^7 - 1800*a*b^10*d*g \\
& ^7) + x^2*(27000*a^4*b^7*c*g^7 - 27000*a^5*b^6*d*g^7) + x^4*(27000*a^2*b^9* \\
& c*g^7 - 27000*a^3*b^8*d*g^7) + x^3*(36000*a^3*b^8*c*g^7 - 36000*a^4*b^7*d*g \\
& ^7) + 1800*a^6*b^5*c*g^7 - 1800*a^7*b^4*d*g^7) - \log((e*(a + b*x))/(c + d*x \\
&))^2*((x*(a*(b*((B^2*a*d^3*i^3)/(60*b^5*g^7) + (B^2*c*d^2*i^3)/(20*b^4*g^7) \\
&) + (B^2*a*d^3*i^3)/(15*b^4*g^7) + (B^2*c*d^2*i^3)/(5*b^3*g^7)) + b*(a*((B^ \\
& 2*a*d^3*i^3)/(60*b^5*g^7) + (B^2*c*d^2*i^3)/(20*b^4*g^7)) + (B^2*c^2*d^2*i^3) \\
& /((10*b^3*g^7)) + (B^2*c^2*d^2*i^3)/(2*b^2*g^7)) + x^2*(b*(b*((B^2*a*d^3*i^3)/(\\
& 60*b^5*g^7) + (B^2*c*d^2*i^3)/(20*b^4*g^7)) + (B^2*a*d^3*i^3)/(15*b^4*g^7) \\
& + (B^2*c*d^2*i^3)/(5*b^3*g^7)) + (B^2*a*d^3*i^3)/(6*b^3*g^7) + (B^2*c*d^2* \\
& i^3)/(2*b^2*g^7)) + a*(a*((B^2*a*d^3*i^3)/(60*b^5*g^7) + (B^2*c*d^2*i^3)/(2 \\
& 0*b^4*g^7)) + (B^2*c^2*d^2*i^3)/(10*b^3*g^7)) + (B^2*c^3*i^3)/(6*b^2*g^7) + (\\
& B^2*d^3*i^3*x^3)/(3*b^2*g^7))/(6*a^5*x + a^6/b + b^5*x^6 + 15*a^4*b*x^2 + 6 \\
& *a*b^4*x^5 + 20*a^3*b^2*x^3 + 15*a^2*b^3*x^4) - (B^2*d^6*i^3)/(60*b^4*g^7*(\\
& a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2)) - (\log((e*(a + b*x))/(c \\
& + d*x))*a*(a*((B*d^3*i^3*(9*A*b*c - B*a*d + B*b*c))/(90*b^5*g^7) + (A*B*a* \\
& d^2*i^3)/(30*b^5*g^7)) + (B*i^3*(36*A*b^2*c^2 - 3*B*a^2*d^2 + 5*B*b^2*c^2 - \\
& 2*B*a*b*c*d))/(180*b^5*g^7)) + x^2*(b*(b*((B*d^3*i^3*(9*A*b*c - B*a*d + B*b* \\
& c))/(90*b^5*g^7) + (A*B*a*d^2*i^3)/(30*b^5*g^7)) + (2*B*d^3*i^3*(9*A*b*c - B* \\
& a*d + B*b*c))/(45*b^4*g^7) + (2*A*B*a*d^2*i^3)/(15*b^4*g^7)) + (B*d^3*i^3*(9* \\
& A*b*c - B*a*d + B*b*c))/(9*b^3*g^7) + (A*B*a*d^2*i^3)/(3*b^3*g^7) + (B^2*d^ \\
& 6*i^3*(b*((20*a^4*d^4 + b^4*c^4 + 21*a^2*b^2*c^2*d^2 - 7*a*b^3*c^3*d - 35*a \\
& ^3*b*c*d^3)/(15*d^5) + b*(a*(a*((6*a^2*d^2 + b^2*c^2 - 7*a*b*c*d)/(30*b*d^3 \\
&) + (a*(a*d - b*c))/(6*b*d^2)) + (15*a^3*d^3 - b^3*c^3 + 7*a*b^2*c^2*d - 21
\end{aligned}$$

$$\begin{aligned}
& *a^2*b*c*d^2)/(60*b*d^4)) + (20*a^4*d^4 + b^4*c^4 + 21*a^2*b^2*c^2*d^2 - 7* \\
& a*b^3*c^3*d - 35*a^3*b*c*d^3)/(60*b*d^5)) + a*(b*(a*((6*a^2*d^2 + b^2*c^2 - \\
& 7*a*b*c*d)/(30*b*d^3) + (a*(a*d - b*c))/(6*b*d^2)) + (15*a^3*d^3 - b^3*c^3 \\
& + 7*a*b^2*c^2*d - 21*a^2*b*c*d^2)/(60*b*d^4)) + a*(b*((6*a^2*d^2 + b^2*c^2 \\
& - 7*a*b*c*d)/(30*b*d^3) + (a*(a*d - b*c))/(6*b*d^2)) + (6*a^2*d^2 + b^2*c^ \\
& 2 - 7*a*b*c*d)/(15*d^3) + (a*(a*d - b*c))/(3*d^2)) + (15*a^3*d^3 - b^3*c^3 \\
& + 7*a*b^2*c^2*d - 21*a^2*b*c*d^2)/(20*d^4))) + a*(a*(b*(b*((6*a^2*d^2 + b^2 \\
& *c^2 - 7*a*b*c*d)/(30*b*d^3) + (a*(a*d - b*c))/(6*b*d^2)) + (6*a^2*d^2 + b^ \\
& 2*c^2 - 7*a*b*c*d)/(15*d^3) + (a*(a*d - b*c))/(3*d^2)) - a*((b^2*c - a*b*d) \\
& / (6*d^2) - (b*(a*d - b*c))/(3*d^2)) + (b^3*c^2 + 6*a^2*b*d^2 - 7*a*b^2*c*d) \\
& / (10*d^3)) - (b^4*c^3 - 15*a^3*b*d^3 + 21*a^2*b^2*c*d^2 - 7*a*b^3*c^2*d)/(1 \\
& 0*d^4) + b*(b*(a*((6*a^2*d^2 + b^2*c^2 - 7*a*b*c*d)/(30*b*d^3) + (a*(a*d - \\
& b*c))/(6*b*d^2)) + (15*a^3*d^3 - b^3*c^3 + 7*a*b^2*c^2*d - 21*a^2*b*c*d^2)/ \\
& (60*b*d^4)) + a*(b*((6*a^2*d^2 + b^2*c^2 - 7*a*b*c*d)/(30*b*d^3) + (a*(a*d \\
& - b*c))/(6*b*d^2)) + (6*a^2*d^2 + b^2*c^2 - 7*a*b*c*d)/(15*d^3) + (a*(a*d - \\
& b*c))/(3*d^2)) + (15*a^3*d^3 - b^3*c^3 + 7*a*b^2*c^2*d - 21*a^2*b*c*d^2)/(\\
& 20*d^4))) + (b^5*c^4 + 20*a^4*b*d^4 - 35*a^3*b^2*c*d^3 + 21*a^2*b^3*c^2*d^2 \\
& - 7*a*b^4*c^3*d)/(6*d^5)))/(30*b^4*g^7*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d \\
& - 3*a^2*b*c*d^2)) + x*(b*(a*((B*d*i^3*(9*A*b*c - B*a*d + B*b*c))/(90*b^5*g \\
& ^7) + (A*B*a*d^2*i^3)/(30*b^5*g^7)) + (B*i^3*(36*A*b^2*c^2 - 3*B*a^2*d^2 + \\
& 5*B*b^2*c^2 - 2*B*a*b*c*d))/(180*b^5*g^7)) + a*(b*((B*d*i^3*(9*A*b*c - B*a \\
& d + B*b*c))/(90*b^5*g^7) + (A*B*a*d^2*i^3)/(30*b^5*g^7)) + (2*B*d*i^3*(9*A* \\
& b*c - B*a*d + B*b*c))/(45*b^4*g^7) + (2*A*B*a*d^2*i^3)/(15*b^4*g^7)) + (B*i \\
& ^3*(36*A*b^2*c^2 - 3*B*a^2*d^2 + 5*B*b^2*c^2 - 2*B*a*b*c*d))/(36*b^4*g^7) + \\
& (B^2*d^6*i^3*(a*((20*a^4*d^4 + b^4*c^4 + 21*a^2*b^2*c^2*d^2 - 7*a*b^3*c^3* \\
& d - 35*a^3*b*c*d^3)/(15*d^5) + b*(a*(a*((6*a^2*d^2 + b^2*c^2 - 7*a*b*c*d)/(\\
& 30*b*d^3) + (a*(a*d - b*c))/(6*b*d^2)) + (15*a^3*d^3 - b^3*c^3 + 7*a*b^2*c^ \\
& 2*d - 21*a^2*b*c*d^2)/(60*b*d^4)) + (20*a^4*d^4 + b^4*c^4 + 21*a^2*b^2*c^2* \\
& d^2 - 7*a*b^3*c^3*d - 35*a^3*b*c*d^3)/(60*b*d^5)) + a*(b*(a*((6*a^2*d^2 + b \\
& ^2*c^2 - 7*a*b*c*d)/(30*b*d^3) + (a*(a*d - b*c))/(6*b*d^2)) + (15*a^3*d^3 - \\
& b^3*c^3 + 7*a*b^2*c^2*d - 21*a^2*b*c*d^2)/(60*b*d^4)) + a*(b*((6*a^2*d^2 + \\
& b^2*c^2 - 7*a*b*c*d)/(30*b*d^3) + (a*(a*d - b*c))/(6*b*d^2)) + (6*a^2*d^2 \\
& + b^2*c^2 - 7*a*b*c*d)/(15*d^3) + (a*(a*d - b*c))/(3*d^2)) + (15*a^3*d^3 - \\
& b^3*c^3 + 7*a*b^2*c^2*d - 21*a^2*b*c*d^2)/(20*d^4))) + (15*a^5*d^5 - b^5*c^ \\
& 5 - 21*a^2*b^3*c^3*d^2 + 35*a^3*b^2*c^2*d^3 + 7*a*b^4*c^4*d - 35*a^4*b*c*d^ \\
& 4)/(6*d^6) + b*(a*(a*(a*((6*a^2*d^2 + b^2*c^2 - 7*a*b*c*d)/(30*b*d^3) + (a \\
& (a*d - b*c))/(6*b*d^2)) + (15*a^3*d^3 - b^3*c^3 + 7*a*b^2*c^2*d - 21*a^2*b* \\
& c*d^2)/(60*b*d^4)) + (20*a^4*d^4 + b^4*c^4 + 21*a^2*b^2*c^2*d^2 - 7*a*b^3*c \\
& ^3*d - 35*a^3*b*c*d^3)/(60*b*d^5)) + (15*a^5*d^5 - b^5*c^5 - 21*a^2*b^3*c^3 \\
& *d^2 + 35*a^3*b^2*c^2*d^3 + 7*a*b^4*c^4*d - 35*a^4*b*c*d^4)/(30*b*d^6))))/(\\
& 30*b^4*g^7*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2)) + x^3*((2* \\
& A*B*d^2*i^3)/(3*b^2*g^7) + (B^2*d^6*i^3*(b*(a*(b*(b*((6*a^2*d^2 + b^2*c^2 - \\
& 7*a*b*c*d)/(30*b*d^3) + (a*(a*d - b*c))/(6*b*d^2)) + (6*a^2*d^2 + b^2*c^2 \\
& - 7*a*b*c*d)/(15*d^3) + (a*(a*d - b*c))/(3*d^2)) - a*((b^2*c - a*b*d)/(6*d^ \\
& 2) - (b*(a*d - b*c))/(3*d^2)) + (b^3*c^2 + 6*a^2*b*d^2 - 7*a*b^2*c*d)/(10*d
\end{aligned}$$

$$\begin{aligned}
&^3)) - (b^4*c^3 - 15*a^3*b*d^3 + 21*a^2*b^2*c*d^2 - 7*a*b^3*c^2*d)/(10*d^4) \\
&+ b*(b*(a*((6*a^2*d^2 + b^2*c^2 - 7*a*b*c*d)/(30*b*d^3) + (a*(a*d - b*c))/ \\
&(6*b*d^2)) + (15*a^3*d^3 - b^3*c^3 + 7*a*b^2*c^2*d - 21*a^2*b*c*d^2)/(60*b* \\
&d^4)) + a*(b*((6*a^2*d^2 + b^2*c^2 - 7*a*b*c*d)/(30*b*d^3) + (a*(a*d - b*c) \\
&)/(6*b*d^2)) + (6*a^2*d^2 + b^2*c^2 - 7*a*b*c*d)/(15*d^3) + (a*(a*d - b*c)) \\
&/(3*d^2)) + (15*a^3*d^3 - b^3*c^3 + 7*a*b^2*c^2*d - 21*a^2*b*c*d^2)/(20*d^4 \\
&))) - (b^5*c^3 - 15*a^3*b^2*d^3 + 21*a^2*b^3*c*d^2 - 7*a*b^4*c^2*d)/(6*d^4) \\
&+ a*((2*(b^4*c^2 + 6*a^2*b^2*d^2 - 7*a*b^3*c*d))/(15*d^3) + b*(b*(b*((6*a^ \\
&2*d^2 + b^2*c^2 - 7*a*b*c*d)/(30*b*d^3) + (a*(a*d - b*c))/(6*b*d^2)) + (6*a \\
&^2*d^2 + b^2*c^2 - 7*a*b*c*d)/(15*d^3) + (a*(a*d - b*c))/(3*d^2)) - a*((b^2 \\
&*c - a*b*d)/(6*d^2) - (b*(a*d - b*c))/(3*d^2)) + (b^3*c^2 + 6*a^2*b*d^2 - 7 \\
&*a*b^2*c*d)/(10*d^3) - a*(b*((b^2*c - a*b*d)/(6*d^2) - (b*(a*d - b*c))/(3*d \\
&d^2)) + (b^3*c - a*b^2*d)/(6*d^2))))/(30*b^4*g^7*(a^3*d^3 - b^3*c^3 + 3*a* \\
&b^2*c^2*d - 3*a^2*b*c*d^2)) + (B*i^3*(60*A*b^3*c^3 - 6*B*a^3*d^3 + 11*B*b^ \\
&3*c^3 - 8*B*a*b^2*c^2*d + 3*B*a^2*b*c*d^2))/(180*b^5*d*g^7) + (B^2*d^6*i^3* \\
&(a*(a*(a*(a*((6*a^2*d^2 + b^2*c^2 - 7*a*b*c*d)/(30*b*d^3) + (a*(a*d - b*c)) \\
&)/(6*b*d^2)) + (15*a^3*d^3 - b^3*c^3 + 7*a*b^2*c^2*d - 21*a^2*b*c*d^2)/(60*b \\
&*d^4)) + (20*a^4*d^4 + b^4*c^4 + 21*a^2*b^2*c^2*d^2 - 7*a*b^3*c^3*d - 35*a^ \\
&3*b*c*d^3)/(60*b*d^5)) + (15*a^5*d^5 - b^5*c^5 - 21*a^2*b^3*c^3*d^2 + 35*a^ \\
&3*b^2*c^2*d^3 + 7*a*b^4*c^4*d - 35*a^4*b*c*d^4)/(30*b*d^6)) + (6*a^6*d^6 + \\
&b^6*c^6 + 21*a^2*b^4*c^4*d^2 - 35*a^3*b^3*c^3*d^3 + 35*a^4*b^2*c^2*d^4 - 7* \\
&a*b^5*c^5*d - 21*a^5*b*c*d^5)/(6*b*d^7)))/(30*b^4*g^7*(a^3*d^3 - b^3*c^3 + \\
&3*a*b^2*c^2*d - 3*a^2*b*c*d^2)) - (B^2*d^6*i^3*x^5*((b^5*c - a*b^4*d)/(6*d^ \\
&2) + b*(b*(b*((b^2*c - a*b*d)/(6*d^2) - (b*(a*d - b*c))/(3*d^2)) + (b^3*c - \\
&a*b^2*d)/(6*d^2)) + (b^4*c - a*b^3*d)/(6*d^2)))/(30*b^4*g^7*(a^3*d^3 - b^ \\
&3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2)) + (B^2*d^6*i^3*x^4*((b^5*c^2 + 6*a^ \\
&2*b^3*d^2 - 7*a*b^4*c*d)/(6*d^3) + b*((2*(b^4*c^2 + 6*a^2*b^2*d^2 - 7*a*b^3 \\
&*c*d))/(15*d^3) + b*(b*(b*((6*a^2*d^2 + b^2*c^2 - 7*a*b*c*d)/(30*b*d^3) + (\\
&a*(a*d - b*c))/(6*b*d^2)) + (6*a^2*d^2 + b^2*c^2 - 7*a*b*c*d)/(15*d^3) + (a \\
&*(a*d - b*c))/(3*d^2)) - a*((b^2*c - a*b*d)/(6*d^2) - (b*(a*d - b*c))/(3*d^ \\
&2)) + (b^3*c^2 + 6*a^2*b*d^2 - 7*a*b^2*c*d)/(10*d^3) - a*(b*((b^2*c - a*b* \\
&d)/(6*d^2) - (b*(a*d - b*c))/(3*d^2)) + (b^3*c - a*b^2*d)/(6*d^2))) - a*(b* \\
&(b*((b^2*c - a*b*d)/(6*d^2) - (b*(a*d - b*c))/(3*d^2)) + (b^3*c - a*b^2*d)/ \\
&(6*d^2)) + (b^4*c - a*b^3*d)/(6*d^2)))/(30*b^4*g^7*(a^3*d^3 - b^3*c^3 + 3* \\
&a*b^2*c^2*d - 3*a^2*b*c*d^2)))/(6*a^5*x)/d + a^6/(b*d) + (b^5*x^6)/d + (1 \\
&5*a^4*b*x^2)/d + (6*a*b^4*x^5)/d + (20*a^3*b^2*x^3)/d + (15*a^2*b^3*x^4)/d \\
&- (B*d^6*i^3*atan((B*d^6*i^3*(60*A + 37*B)*(1800*b^7*c^3*g^7 + 1800*a^3*b^ \\
&4*d^3*g^7 - 1800*a*b^6*c^2*d*g^7 - 1800*a^2*b^5*c*d^2*g^7)*1i)/(1800*b^4*g^ \\
&7*(37*B^2*d^6*i^3 + 60*A*B*d^6*i^3)*(a*d - b*c)^3) + (B*d^7*i^3*x*(60*A + 3 \\
&7*B)*(b^6*c^2*g^7 + a^2*b^4*d^2*g^7 - 2*a*b^5*c*d*g^7)*2i)/(b^3*g^7*(37*B^2 \\
&*d^6*i^3 + 60*A*B*d^6*i^3)*(a*d - b*c)^3))*(60*A + 37*B)*1i)/(900*b^4*g^7*(\\
&a*d - b*c)^3)
\end{aligned}$$

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)**7,x)
```

```
[Out] Timed out
```

$$3.84 \quad \int \frac{(ag+bgx)^3 \left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)^2}{ci+dx} dx$$

Optimal. Leaf size=718

$$\frac{b^3 g^3 (c+dx)^3 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)^2}{3d^4 i} - \frac{3b^2 g^3 (c+dx)^2 (bc-ad) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)^2}{2d^4 i} - \frac{b^2 B g^3 (c+dx)^2 (bc-ad)}{3d^4 i}$$

[Out] $1/3*b*B^2*(-a*d+b*c)^2*g^3*x/d^3/i+1/3*B^2*(-a*d+b*c)^3*g^3*\ln((b*x+a)/(d*x+c))/d^4/i+7/3*B*(-a*d+b*c)^2*g^3*(b*x+a)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/d^3/i-1/3*b^2*B*(-a*d+b*c)*g^3*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/d^4/i+6*B*(-a*d+b*c)^3*g^3*\ln((-a*d+b*c)/b/(d*x+c))*(A+B*\ln(e*(b*x+a)/(d*x+c)))/d^4/i+3*(-a*d+b*c)^2*g^3*(b*x+a)*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/d^3/i-3/2*b^2*(-a*d+b*c)*g^3*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/d^4/i+1/3*b^3*g^3*(d*x+c)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/d^4/i+(-a*d+b*c)^3*g^3*\ln((-a*d+b*c)/b/(d*x+c))*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/d^4/i-2*B^2*(-a*d+b*c)^3*g^3*\ln(d*x+c)/d^4/i-7/3*B*(-a*d+b*c)^3*g^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))*\ln(1-b*(d*x+c)/d/(b*x+a))/d^4/i+6*B^2*(-a*d+b*c)^3*g^3*\text{polylog}(2,d*(b*x+a)/b/(d*x+c))/d^4/i+2*B*(-a*d+b*c)^3*g^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))*\text{polylog}(2,d*(b*x+a)/b/(d*x+c))/d^4/i+7/3*B^2*(-a*d+b*c)^3*g^3*\text{polylog}(2,b*(d*x+c)/d/(b*x+a))/d^4/i-2*B^2*(-a*d+b*c)^3*g^3*\text{polylog}(3,d*(b*x+a)/b/(d*x+c))/d^4/i$

Rubi [B] time = 5.62, antiderivative size = 1828, normalized size of antiderivative = 2.55, number of steps used = 106, number of rules used = 28, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}} = 0.667$, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 2486, 31, 43, 6688, 6742, 2499, 2396, 2433, 2374, 6589, 2302, 30, 2500, 2375, 2317, 2440, 2434}

result too large to display

Antiderivative was successfully verified.

[In] Int[((a*g + b*g*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2)/(c*i + d*i*x), x]

[Out] $(5*A*b*B*(b*c - a*d)^2*g^3*x)/(3*d^3*i) + (b*B^2*(b*c - a*d)^2*g^3*x)/(3*d^3*i) - (a*B^2*(b*c - a*d)^2*g^3*\text{Log}[a + b*x]^2)/(d^3*i) + (B^2*(b*c - a*d)^3*g^3*\text{Log}[a + b*x]*\text{Log}[(c + d*x)^{-1}]^2)/(d^4*i) - (B^2*(b*c - a*d)^3*g^3*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[(c + d*x)^{-1}]^2)/(d^4*i) + (5*B^2*(b*c - a*d)^2*g^3*(a + b*x)*\text{Log}[(e*(a + b*x))/(c + d*x)]/(3*d^3*i) - (B*(b*c - a*d)*g^3*(a + b*x)^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(3*d^2*i) + (2*a*B*(b*c - a*d)^2*g^3*\text{Log}[a + b*x]*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(d^3*i) + (b*(b*c - a*d)^2*g^3*x*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]))^2)/(d^3*i) - ((b*c - a*d)*g^3*(a + b*x)^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]))^2$

$$\begin{aligned}
& 2)/(2*d^2*i) + (g^3*(a + b*x)^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)])^2)/(3*d*i) - (2*B^2*(b*c - a*d)^3*g^3*\text{Log}[c + d*x])/(d^4*i) + (2*b*B^2*c*(b*c - a*d)^2*g^3*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c + d*x])/(d^4*i) + (5*B^2*(b*c - a*d)^3*g^3*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c + d*x])/(3*d^4*i) \\
& - (2*b*B*c*(b*c - a*d)^2*g^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)])*\text{Log}[c + d*x])/(d^4*i) - (5*B*(b*c - a*d)^3*g^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)])*\text{Log}[c + d*x])/(3*d^4*i) - (b*B^2*c*(b*c - a*d)^2*g^3*\text{Log}[c + d*x]^2)/(d^4*i) \\
& - (5*B^2*(b*c - a*d)^3*g^3*\text{Log}[c + d*x]^2)/(6*d^4*i) + (2*a*B^2*(b*c - a*d)^2*g^3*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)])/(d^3*i) - (B^2*(b*c - a*d)^3*g^3*\text{Log}[a + b*x]^2*\text{Log}[(b*(c + d*x))/(b*c - a*d)])/(d^4*i) + (B^2*(b*c - a*d)^3*g^3*\text{Log}[a + b*x]^2*\text{Log}[i*(c + d*x)])/(d^4*i) + (2*B^2*(b*c - a*d)^3*g^3*\text{Log}[a + b*x]*\text{Log}[(c + d*x)^{-1}]*\text{Log}[i*(c + d*x)])/(d^4*i) - (A*B*(b*c - a*d)^3*g^3*\text{Log}[i*(c + d*x)]^2)/(d^4*i) + (B^2*(b*c - a*d)^3*g^3*\text{Log}[a + b*x]*\text{Log}[i*(c + d*x)]^2)/(d^4*i) - (B^2*(b*c - a*d)^3*g^3*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[i*(c + d*x)]^2)/(d^4*i) - (B^2*(b*c - a*d)^3*g^3*\text{Log}[i*(c + d*x)]^3)/(3*d^4*i) + (2*A*B*(b*c - a*d)^3*g^3*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c*i + d*i*x])/(d^4*i) - (2*B^2*(b*c - a*d)^3*g^3*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*(\text{Log}[a + b*x] + \text{Log}[(c + d*x)^{-1}] - \text{Log}[(e*(a + b*x))/(c + d*x)])*\text{Log}[c*i + d*i*x])/(d^4*i) - ((b*c - a*d)^3*g^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)])^2*\text{Log}[c*i + d*i*x])/(d^4*i) + (B^2*(b*c - a*d)^3*g^3*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c*i + d*i*x]^2)/(d^4*i) - (B^2*(b*c - a*d)^3*g^3*\text{Log}[(e*(a + b*x))/(c + d*x)]*\text{Log}[c*i + d*i*x]^2)/(d^4*i) + (2*a*B^2*(b*c - a*d)^2*g^3*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))])/(d^3*i) - (2*B^2*(b*c - a*d)^3*g^3*\text{Log}[a + b*x]*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))])/(d^4*i) + (2*b*B^2*c*(b*c - a*d)^2*g^3*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/(d^4*i) + (2*A*B*(b*c - a*d)^3*g^3*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/(d^4*i) + (5*B^2*(b*c - a*d)^3*g^3*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/(3*d^4*i) + (2*B^2*(b*c - a*d)^3*g^3*\text{Log}[(c + d*x)^{-1}]*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/(d^4*i) - (2*B^2*(b*c - a*d)^3*g^3*(\text{Log}[a + b*x] + \text{Log}[(c + d*x)^{-1}] - \text{Log}[(e*(a + b*x))/(c + d*x)])*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/(d^4*i) + (2*B^2*(b*c - a*d)^3*g^3*\text{PolyLog}[3, -((d*(a + b*x))/(b*c - a*d))])/(d^4*i) + (2*B^2*(b*c - a*d)^3*g^3*\text{PolyLog}[3, (b*(c + d*x))/(b*c - a*d)])/(d^4*i)
\end{aligned}$$

Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] := Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && NeQ[m, -1]
```

Rule 31

Int[((a_) + (b_)*(x_))⁽⁻¹⁾, x_Symbol] := Simp[Log[RemoveContent[a + b*x, x]]/b, x] /; FreeQ[{a, b}, x]

Rule 43

Int[((a_) + (b_)*(x_))^(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)ⁿ, x], x] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && (!IntegerQ[n] || (EqQ[c, 0] && LeQ[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])

Rule 2301

Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)/(x_), x_Symbol] := Simp[(a + b*Log[c*xⁿ])²/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2302

Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)^(p_)/(x_), x_Symbol] := Dist[1/(b*n), Subst[Int[x^p, x], x, a + b*Log[c*xⁿ]], x] /; FreeQ[{a, b, c, n, p}, x]

Rule 2317

Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)^(p_)/((d_) + (e_)*(x_)), x_Symbol] := Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*xⁿ])^p)/e, x] - Dist[(b*n*p)/e, Int[(Log[1 + (e*x)/d]*(a + b*Log[c*xⁿ])^(p - 1)]/x, x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]

Rule 2374

Int[(Log[(d_)*((e_) + (f_)*(x_)^(m_)))]*((a_) + Log[(c_)*(x_)^(n_)])*(b_)^(p_)/(x_), x_Symbol] := -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*xⁿ])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*xⁿ])^(p - 1)]/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0] && EqQ[d*e, 1]

Rule 2375

Int[(Log[(d_)*((e_) + (f_)*(x_)^(m_))^(r_)]*((a_) + Log[(c_)*(x_)^(n_)])*(b_)^(p_)/(x_), x_Symbol] := Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[c*xⁿ])^(p + 1)/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m - 1)*(a + b*Log[c*xⁿ])^(p + 1)]/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d, e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
```



```
bol] := Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(e*i - d*j)/e + (j*x)/e]^m)], x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)*(i_.) + (j_.)*(x_)]^(m_.)]*(g_.))/(x_), x_Symbol] := Simp[Log[x]*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Log[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x]*(f + g*Log[h*(i + j*x)^m))]/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)*(i_.) + (j_.)*(x_)]^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] := Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f + g*Log[h*(-((j*k - i*l)/l) + (j*x)/l]^m)], x], x, k + l*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)]^(r_.)]^(s_.), x_Symbol] := Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)]^(r_.)]*(s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)]^(m_.))/(j_.) + (k_.)*(x_)), x_Symbol] := Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dist[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x), x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r}, x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)]^(r_.)]*(s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))/(j_.) + (k_.)*(x_)), x_Symbol] := Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r] - Log[(a
```

$+ b*x)^{(p*r)}] - \text{Log}[(c + d*x)^{(q*r)}], \text{Int}[(s + t*\text{Log}[i*(g + h*x)^n])/(j + k*x), x], x] + (\text{Int}[(\text{Log}[(a + b*x)^{(p*r)}]*(s + t*\text{Log}[i*(g + h*x)^n])/(j + k*x), x] + \text{Int}[(\text{Log}[(c + d*x)^{(q*r)}]*(s + t*\text{Log}[i*(g + h*x)^n])/(j + k*x), x]) /; \text{FreeQ}\{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r\}, x] \&\& \text{NeQ}[b*c - a*d, 0]$

Rule 2523

$\text{Int}[(a + \text{Log}[c*(Rf_x)^p]*b)^n, x_Symbol] := \text{Simp}[x*(a + b*\text{Log}[c*Rf_x^p])^n, x] - \text{Dist}[b*n*p, \text{Int}[\text{SimplifyIntegrand}[(x*(a + b*\text{Log}[c*Rf_x^p])^n - 1)*D[Rf_x, x])/Rf_x, x], x] /; \text{FreeQ}\{a, b, c, p\}, x] \&\& \text{RationalFunctionQ}[Rf_x, x] \&\& \text{IGtQ}[n, 0]$

Rule 2524

$\text{Int}[(a + \text{Log}[c*(Rf_x)^p]*b)^n/((d + e*x)), x_Symbol] := \text{Simp}[(\text{Log}[d + e*x]*(a + b*\text{Log}[c*Rf_x^p])^n)/e, x] - \text{Dist}[(b*n*p)/e, \text{Int}[(\text{Log}[d + e*x]*(a + b*\text{Log}[c*Rf_x^p])^n - 1)*D[Rf_x, x])/Rf_x, x], x] /; \text{FreeQ}\{a, b, c, d, e, p\}, x] \&\& \text{RationalFunctionQ}[Rf_x, x] \&\& \text{IGtQ}[n, 0]$

Rule 2525

$\text{Int}[(a + \text{Log}[c*(Rf_x)^p]*b)^n*((d + e*x))^m, x_Symbol] := \text{Simp}[(d + e*x)^{m+1}*(a + b*\text{Log}[c*Rf_x^p])^n/(e*(m+1)), x] - \text{Dist}[(b*n*p)/(e*(m+1)), \text{Int}[\text{SimplifyIntegrand}[(d + e*x)^{m+1}*(a + b*\text{Log}[c*Rf_x^p])^n - 1)*D[Rf_x, x])/Rf_x, x], x] /; \text{FreeQ}\{a, b, c, d, e, m, p\}, x] \&\& \text{RationalFunctionQ}[Rf_x, x] \&\& \text{IGtQ}[n, 0] \&\& (\text{EqQ}[n, 1] || \text{IntegerQ}[m]) \&\& \text{NeQ}[m, -1]$

Rule 2528

$\text{Int}[(a + \text{Log}[c*(Rf_x)^p]*b)^n*(Rg_x), x_Symbol] := \text{With}[\{u = \text{ExpandIntegrand}[(a + b*\text{Log}[c*Rf_x^p])^n, Rg_x, x]\}, \text{Int}[u, x] /; \text{SumQ}[u]] /; \text{FreeQ}\{a, b, c, p\}, x] \&\& \text{RationalFunctionQ}[Rf_x, x] \&\& \text{RationalFunctionQ}[Rg_x, x] \&\& \text{IGtQ}[n, 0]$

Rule 6589

$\text{Int}[\text{PolyLog}[n, (a + b*x)^p]/((d + e*x)), x_Symbol] := \text{Simp}[\text{PolyLog}[n + 1, c*(a + b*x)^p]/(e*p), x] /; \text{FreeQ}\{a, b, c, d, e, n, p\}, x] \&\& \text{EqQ}[b*d, a*e]$

Rule 6688

```
Int[u_, x_Symbol] :=> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl  
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :=> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]  
]
```

Rubi steps

$$\begin{aligned}
\int \frac{(ag + bgx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{84c + 84dx} dx &= \int \left(\frac{b(bc - ad)^2 g^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{84d^3} + \frac{(-bc + ad)^3 g^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{d^3(84c + 84dx)} \right) dx \\
&= \frac{(bg) \int (ag + bgx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 dx}{84d} - \frac{(b(bc - ad)g^2) \int (ag + bgx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 dx}{168d^2} \\
&= \frac{b(bc - ad)^2 g^3 x \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{84d^3} - \frac{(bc - ad)g^3 (a + bx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{168d^2} \\
&= \frac{b(bc - ad)^2 g^3 x \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{84d^3} - \frac{(bc - ad)g^3 (a + bx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{168d^2} \\
&= \frac{b(bc - ad)^2 g^3 x \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{84d^3} - \frac{(bc - ad)g^3 (a + bx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{168d^2} \\
&= \frac{b(bc - ad)^2 g^3 x \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{84d^3} - \frac{(bc - ad)g^3 (a + bx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{168d^2} \\
&= \frac{5AbB(bc - ad)^2 g^3 x}{252d^3} - \frac{B(bc - ad)g^3 (a + bx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{252d^2} + \frac{5AbB(bc - ad)^2 g^3 x}{252d^3} - \frac{5B^2(bc - ad)^2 g^3 (a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{252d^3} - \frac{B(bc - ad)g^3 (a + bx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{252d^2} \\
&= \frac{5AbB(bc - ad)^2 g^3 x}{252d^3} + \frac{5B^2(bc - ad)^2 g^3 (a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{252d^3} - \frac{B(bc - ad)g^3 (a + bx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{252d^2} \\
&= \frac{5AbB(bc - ad)^2 g^3 x}{252d^3} + \frac{5B^2(bc - ad)^2 g^3 (a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{252d^3} - \frac{B(bc - ad)g^3 (a + bx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{252d^2} \\
&= \frac{5AbB(bc - ad)^2 g^3 x}{252d^3} + \frac{bB^2(bc - ad)^2 g^3 x}{252d^3} + \frac{5B^2(bc - ad)^2 g^3 (a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{252d^3} - \frac{B(bc - ad)g^3 (a + bx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{252d^2} \\
&= \frac{5AbB(bc - ad)^2 g^3 x}{252d^3} + \frac{bB^2(bc - ad)^2 g^3 x}{252d^3} + \frac{5B^2(bc - ad)^2 g^3 (a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{252d^3} - \frac{B(bc - ad)g^3 (a + bx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{252d^2} \\
&= \frac{5AbB(bc - ad)^2 g^3 x}{252d^3} + \frac{bB^2(bc - ad)^2 g^3 x}{252d^3} - \frac{aB^2(bc - ad)^2 g^3 \log^2(a + bx)}{84d^3}
\end{aligned}$$

$$= \frac{5AbB(bc - ad)^2 g^3 x}{252d^3} + \frac{bB^2(bc - ad)^2 g^3 x}{252d^3} - \frac{aB^2(bc - ad)^2 g^3 \log^2(a + bx)}{84d^3}$$

Mathematica [B] time = 1.90, size = 4802, normalized size = 6.69

Result too large to show

Antiderivative was successfully verified.

[In] Integrate[((a*g + b*g*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2)/(c*i + d*i*x),x]

[Out] $(g^3(36A^2b^3B^2c^3 - 144A^2b^2B^2c^2d - 66A^2b^2B^2c^2d + 216A^2A^2b^2B^2c^2d^2 + 162A^2b^2B^2c^2d^2 - 108A^3A^2B^2d^3 - 108A^3B^2d^3 + 18A^2b^3c^2d^2x + 30A^2b^3B^2c^2d^2x + 6b^3B^2c^2d^2x - 54A^2A^2b^2c^2d^2x - 72A^2A^2b^2B^2c^2d^2x - 12A^2b^2B^2c^2d^2x + 54A^2A^2b^2d^3x + 42A^2A^2b^2B^2d^3x + 6A^2b^2B^2d^3x - 9A^2b^3c^2d^2x^2 - 6A^2b^3B^2c^2d^2x^2 + 27A^2A^2b^2d^3x^2 + 6A^2A^2b^2B^2d^3x^2 + 6A^2b^3d^3x^3 - 36b^3B^2c^3\text{Log}[a/b + x] + 36A^2A^2b^2B^2c^2d\text{Log}[a/b + x] + 174A^2b^2B^2c^2d\text{Log}[a/b + x] - 108A^2A^2b^2B^2c^2d\text{Log}[a/b + x] - 297A^2b^2B^2c^2d^2\text{Log}[a/b + x] + 108A^3A^2B^2d^3\text{Log}[a/b + x] + 167A^3B^2d^3\text{Log}[a/b + x] - 18A^2b^2B^2c^2d\text{Log}[a/b + x]^2 + 63A^2b^2B^2c^2d\text{Log}[a/b + x]^2 - 75A^3B^2d^3\text{Log}[a/b + x]^2 - 36A^2b^3B^2c^3\text{Log}[c/d + x] - 49b^3B^2c^3\text{Log}[c/d + x] + 108A^2A^2b^2B^2c^2d\text{Log}[c/d + x] + 45A^2b^2B^2c^2d\text{Log}[c/d + x] - 108A^2A^2b^2B^2c^2d\text{Log}[c/d + x] + 108A^2b^2B^2c^2d\text{Log}[c/d + x] - 108A^3B^2d^3\text{Log}[c/d + x] + 36b^3B^2c^3\text{Log}[a/b + x]\text{Log}[c/d + x] - 108A^2b^2B^2c^2d\text{Log}[a/b + x]\text{Log}[c/d + x] + 90A^2b^2B^2c^2d\text{Log}[a/b + x]\text{Log}[c/d + x] + 42A^3B^2d^3\text{Log}[a/b + x]\text{Log}[c/d + x] + 18A^2b^3B^2c^3\text{Log}[c/d + x]^2 - 3b^3B^2c^3\text{Log}[c/d + x]^2 - 54A^2A^2b^2B^2c^2d\text{Log}[c/d + x]^2 + 27A^2b^2B^2c^2d\text{Log}[c/d + x]^2 + 54A^2A^2b^2B^2c^2d\text{Log}[c/d + x]^2 - 54A^2b^2B^2c^2d\text{Log}[c/d + x]^2 - 18A^3A^2B^2d^3\text{Log}[c/d + x]^2 + 12b^3B^2c^3\text{Log}[c/d + x]^3 - 36A^2b^2B^2c^2d\text{Log}[c/d + x]^3 + 36A^2b^2B^2c^2d\text{Log}[c/d + x]^3 + 18A^2A^2b^2B^2c^2d\text{Log}[a + b*x] + 15A^2b^2B^2c^2d\text{Log}[a + b*x] - 42A^3A^2B^2d^3\text{Log}[a + b*x] - 23A^3B^2d^3\text{Log}[a + b*x] - 18A^2b^2B^2c^2d\text{Log}[a/b + x]\text{Log}[a + b*x] + 42A^3B^2d^3\text{Log}[a/b + x]\text{Log}[a + b*x] + 18A^2b^2B^2c^2d\text{Log}[c/d + x]\text{Log}[a + b*x] - 42A^3B^2d^3\text{Log}[c/d + x]\text{Log}[a + b*x] - 18b^3B^2c^3\text{Log}[c/d + x]^2\text{Log}[(d*(a + b*x))/(-(b*c) + a*d)] + 54A^2b^2B^2c^2d\text{Log}[c/d + x]^2\text{Log}[(d*(a + b*x))/(-(b*c) + a*d)] - 54A^2b^2B^2c^2d\text{Log}[c/d + x]^2\text{Log}[(d*(a + b*x))/(-(b*c) + a*d)] + 36b^3B^2c^3\text{Log}[(e*(a + b*x))/(c + d*x)] - 144A^2b^2B^2c^2d\text{Log}[(e*(a + b*x))/(c + d*x)] + 216A^2b^2B^2c^2d\text{Log}[(e*(a + b*x))/(c + d*x)] - 108A^3B^2d^3\text{Log}[(e*(a + b*x))/(c + d*x)] + 36A^2b^3B^2c^2d^2x\text{Log}[(e*(a + b*x))/(c + d*x)] + 30b^3B^2c^2d^2x\text{Log}[(e*(a + b*x))/(c + d*x)] - 108A^2A^2b^2B^2c^2d^2x\text{Log}[(e*(a + b*x))/(c + d*x)] - 72A^2b^2B^2c^2d^2x\text{Log}[(e*(a + b*x))/(c + d*x)] + 108A^2A^2b^2B^2d^3x\text{Log}[(e*(a + b*x))/(c + d*x)] + 42A^2b^2B^2d^3x\text{Log}[(e*(a + b*x))/(c + d*x)] - 18A^2b^3B^2c^2d^2x^2\text{Log}[(e*(a + b*x))/(c + d*x)] - 6b^3B^2c^2d^2x^2\text{Log}[(e*(a + b*x))/(c + d*x)] + 54A^2A^2b^2B^2d^3x^2\text{Log}[(e*(a + b*x))/(c + d$

$$\begin{aligned}
& *x)] + 6*a*b^2*B^2*d^3*x^2*Log[(e*(a + b*x))/(c + d*x)] + 12*A*b^3*B*d^3*x^3*Log[(e*(a + b*x))/(c + d*x)] + 36*a*b^2*B^2*c^2*d*Log[a/b + x]*Log[(e*(a + b*x))/(c + d*x)] - 108*a^2*b*B^2*c*d^2*Log[a/b + x]*Log[(e*(a + b*x))/(c + d*x)] + 108*a^3*B^2*d^3*Log[a/b + x]*Log[(e*(a + b*x))/(c + d*x)] - 36*b^3*B^2*c^3*Log[c/d + x]*Log[(e*(a + b*x))/(c + d*x)] + 108*a*b^2*B^2*c^2*d*Log[c/d + x]*Log[(e*(a + b*x))/(c + d*x)] - 108*a^2*b*B^2*c*d^2*Log[c/d + x]*Log[(e*(a + b*x))/(c + d*x)] + 18*b^3*B^2*c^3*Log[c/d + x]^2*Log[(e*(a + b*x))/(c + d*x)] - 54*a*b^2*B^2*c^2*d*Log[c/d + x]^2*Log[(e*(a + b*x))/(c + d*x)] + 54*a^2*b*B^2*c*d^2*Log[c/d + x]^2*Log[(e*(a + b*x))/(c + d*x)] + 18*a^2*b*B^2*c*d^2*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)] - 42*a^3*B^2*d^3*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)] + 18*b^3*B^2*c^2*d*x*Log[(e*(a + b*x))/(c + d*x)]^2 - 54*a*b^2*B^2*c*d^2*x*Log[(e*(a + b*x))/(c + d*x)]^2 + 54*a^2*b*B^2*d^3*x*Log[(e*(a + b*x))/(c + d*x)]^2 - 9*b^3*B^2*c*d^2*x^2*Log[(e*(a + b*x))/(c + d*x)]^2 + 27*a*b^2*B^2*d^3*x^2*Log[(e*(a + b*x))/(c + d*x)]^2 + 6*b^3*B^2*d^3*x^3*Log[(e*(a + b*x))/(c + d*x)]^2 - 18*A^2*b^3*c^3*Log[c + d*x] - 30*A*b^3*B*c^3*Log[c + d*x] + 49*b^3*B^2*c^3*Log[c + d*x] + 54*a*A^2*b^2*c^2*d*Log[c + d*x] + 54*a*A*b^2*B*c^2*d*Log[c + d*x] - 111*a*b^2*B^2*c^2*d*Log[c + d*x] - 54*a^2*A^2*b*c*d^2*Log[c + d*x] + 66*a^2*b*B^2*c*d^2*Log[c + d*x] + 18*a^3*A^2*d^3*Log[c + d*x] + 36*A*b^3*B*c^3*Log[a/b + x]*Log[c + d*x] + 30*b^3*B^2*c^3*Log[a/b + x]*Log[c + d*x] - 108*a*A*b^2*B*c^2*d*Log[a/b + x]*Log[c + d*x] - 54*a*b^2*B^2*c^2*d*Log[a/b + x]*Log[c + d*x] + 108*a^2*A*b*B*c*d^2*Log[a/b + x]*Log[c + d*x] - 36*a^3*A*B*d^3*Log[a/b + x]*Log[c + d*x] - 18*b^3*B^2*c^3*Log[a/b + x]^2*Log[c + d*x] + 54*a*b^2*B^2*c^2*d*Log[a/b + x]^2*Log[c + d*x] - 54*a^2*b*B^2*c*d^2*Log[a/b + x]^2*Log[c + d*x] - 36*A*b^3*B*c^3*Log[c/d + x]*Log[c + d*x] - 30*b^3*B^2*c^3*Log[c/d + x]*Log[c + d*x] + 108*a*A*b^2*B*c^2*d*Log[c/d + x]*Log[c + d*x] + 54*a*b^2*B^2*c^2*d*Log[c/d + x]*Log[c + d*x] - 108*a^2*A*b*B*c*d^2*Log[c/d + x]*Log[c + d*x] + 36*a^3*A*B*d^3*Log[c/d + x]*Log[c + d*x] + 36*b^3*B^2*c^3*Log[a/b + x]*Log[c/d + x]*Log[c + d*x] - 108*a*b^2*B^2*c^2*d*Log[a/b + x]*Log[c/d + x]*Log[c + d*x] + 108*a^2*b*B^2*c*d^2*Log[a/b + x]*Log[c/d + x]*Log[c + d*x] - 18*b^3*B^2*c^3*Log[c/d + x]^2*Log[c + d*x] + 54*a*b^2*B^2*c^2*d*Log[c/d + x]^2*Log[c + d*x] - 54*a^2*b*B^2*c*d^2*Log[c/d + x]^2*Log[c + d*x] - 36*A*b^3*B*c^3*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x] - 30*b^3*B^2*c^3*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x] + 108*a*A*b^2*B*c^2*d*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x] + 54*a*b^2*B^2*c^2*d*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x] - 108*a^2*A*b*B*c*d^2*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x] + 36*a^3*A*B*d^3*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x] + 36*b^3*B^2*c^3*Log[a/b + x]*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x] - 108*a*b^2*B^2*c^2*d*Log[a/b + x]*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x] + 108*a^2*b*B^2*c*d^2*Log[a/b + x]*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x] - 36*b^3*B^2*c^3*Log[c/d + x]*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x] + 108*a*b^2*B^2*c^2*d*Log[c/d + x]*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x] - 108*a^2*b*B^2*c*d^2*Log[c/d + x]*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x] - 18*b^3*B^2*c^3*Log[(e*(a + b*x))/(c + d*x)]^2*Log[c + d*x] + 54*a*b^2*B^2*c^2*d*Log[(e*(a + b*x))/(c + d*x)]^2*Log[c + d*x] - 54*a^2*b*B^2*c*d^2*
\end{aligned}$$

$$\begin{aligned} & \text{Log}[(e*(a + b*x))/(c + d*x)]^2 * \text{Log}[c + d*x] - 36*A*b^3*B*c^3 * \text{Log}[a/b + x] * \text{Log}[(b*(c + d*x))/(b*c - a*d)] \\ & - 66*b^3*B^2*c^3 * \text{Log}[a/b + x] * \text{Log}[(b*(c + d*x))/(b*c - a*d)] + 108*a*A*b^2*B*c^2*d * \text{Log}[a/b + x] * \text{Log}[(b*(c + d*x))/(b*c - a*d)] \\ & + 198*a*b^2*B^2*c^2*d * \text{Log}[a/b + x] * \text{Log}[(b*(c + d*x))/(b*c - a*d)] - 108*a^2*A*b*B*c*d^2 * \text{Log}[a/b + x] * \text{Log}[(b*(c + d*x))/(b*c - a*d)] \\ & - 198*a^2*b*B^2*c*d^2 * \text{Log}[a/b + x] * \text{Log}[(b*(c + d*x))/(b*c - a*d)] + 36*a^3*A*B*d^3 * \text{Log}[a/b + x] * \text{Log}[(b*(c + d*x))/(b*c - a*d)] \\ & + 66*a^3*B^2*d^3 * \text{Log}[a/b + x] * \text{Log}[(b*(c + d*x))/(b*c - a*d)] + 18*b^3*B^2*c^3 * \text{Log}[a/b + x]^2 * \text{Log}[(b*(c + d*x))/(b*c - a*d)] \\ & - 54*a*b^2*B^2*c^2*d * \text{Log}[a/b + x]^2 * \text{Log}[(b*(c + d*x))/(b*c - a*d)] + 54*a^2*b*B^2*c*d^2 * \text{Log}[a/b + x]^2 * \text{Log}[(b*(c + d*x))/(b*c - a*d)] \\ & - 36*b^3*B^2*c^3 * \text{Log}[a/b + x] * \text{Log}[c/d + x] * \text{Log}[(b*(c + d*x))/(b*c - a*d)] + 108*a*b^2*B^2*c^2*d * \text{Log}[a/b + x] * \text{Log}[c/d + x] * \text{Log}[(b*(c + d*x))/(b*c - a*d)] \\ & - 108*a^2*b*B^2*c*d^2 * \text{Log}[a/b + x] * \text{Log}[c/d + x] * \text{Log}[(b*(c + d*x))/(b*c - a*d)] - 36*b^3*B^2*c^3 * \text{Log}[a/b + x] * \text{Log}[(e*(a + b*x))/(c + d*x)] * \text{Log}[(b*(c + d*x))/(b*c - a*d)] \\ & + 108*a*b^2*B^2*c^2*d * \text{Log}[a/b + x] * \text{Log}[(e*(a + b*x))/(c + d*x)] * \text{Log}[(b*(c + d*x))/(b*c - a*d)] - 108*a^2*b*B^2*c*d^2 * \text{Log}[a/b + x] * \text{Log}[(e*(a + b*x))/(c + d*x)] * \text{Log}[(b*(c + d*x))/(b*c - a*d)] \\ & - 18*a^3*B^2*d^3 * \text{Log}[(e*(a + b*x))/(c + d*x)]^2 * \text{Log}[(b*c - a*d)/(b*c + b*d*x)] - 6*B*((6*A + 11*B)*(b*c - a*d)^3 + 6*b*B*c*(b^2*c^2 - 3*a*b*c*d + 3*a^2*d^2) * \text{Log}[c/d + x] + 6*b*B*c*(b^2*c^2 - 3*a*b*c*d + 3*a^2*d^2) * \text{Log}[(e*(a + b*x))/(c + d*x)]) * \text{PolyLog}[2, (d*(a + b*x))/(-(b*c) + a*d)] - 36*a^3*B^2*d^3 * \text{Log}[(e*(a + b*x))/(c + d*x)] * \text{PolyLog}[2, (d*(a + b*x))/(b*(c + d*x))] - 36*b^3*B^2*c^3 * \text{Log}[c/d + x] * \text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)] + 108*a*b^2*B^2*c^2*d * \text{Log}[c/d + x] * \text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)] - 108*a^2*b*B^2*c*d^2 * \text{Log}[c/d + x] * \text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)] + 36*b^3*B^2*c^3 * \text{PolyLog}[3, (d*(a + b*x))/(-(b*c) + a*d)] - 108*a*b^2*B^2*c^2*d * \text{PolyLog}[3, (d*(a + b*x))/(-(b*c) + a*d)] + 108*a^2*b*B^2*c*d^2 * \text{PolyLog}[3, (d*(a + b*x))/(-(b*c) + a*d)] + 36*a^3*B^2*d^3 * \text{PolyLog}[3, (d*(a + b*x))/(b*(c + d*x))] + 36*b^3*B^2*c^3 * \text{PolyLog}[3, (b*(c + d*x))/(b*c - a*d)] - 108*a*b^2*B^2*c^2*d * \text{PolyLog}[3, (b*(c + d*x))/(b*c - a*d)] + 108*a^2*b*B^2*c*d^2 * \text{PolyLog}[3, (b*(c + d*x))/(b*c - a*d)])) / (18*d^4*i) \end{aligned}$$

fricas [F] time = 0.72, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{A^2 b^3 g^3 x^3 + 3 A^2 a b^2 g^3 x^2 + 3 A^2 a^2 b g^3 x + A^2 a^3 g^3 + (B^2 b^3 g^3 x^3 + 3 B^2 a b^2 g^3 x^2 + 3 B^2 a^2 b g^3 x + B^2 a^3 g^3)}{dix + ci} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i),x, algorithm="fricas")

[Out] integral((A^2*b^3*g^3*x^3 + 3*A^2*a*b^2*g^3*x^2 + 3*A^2*a^2*b*g^3*x + A^2*a^3*g^3 + (B^2*b^3*g^3*x^3 + 3*B^2*a*b^2*g^3*x^2 + 3*B^2*a^2*b*g^3*x + B^2*a

$^3g^3) \cdot \log((b \cdot e \cdot x + a \cdot e)/(d \cdot x + c))^2 + 2 \cdot (A \cdot B \cdot b^3 \cdot g^3 \cdot x^3 + 3 \cdot A \cdot B \cdot a \cdot b^2 \cdot g^3 \cdot x^2 + 3 \cdot A \cdot B \cdot a^2 \cdot b \cdot g^3 \cdot x + A \cdot B \cdot a^3 \cdot g^3) \cdot \log((b \cdot e \cdot x + a \cdot e)/(d \cdot x + c)) / (d \cdot i \cdot x + c \cdot i), x)$

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i),x, algorithm="giac")

[Out] Timed out

maple [F] time = 2.28, size = 0, normalized size = 0.00

$$\int \frac{(bgx + ag)^3 \left(B \ln \left(\frac{bx+a}{dx+c} \right) + A \right)^2}{dix + ci} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(d*i*x+c*i),x)

[Out] int((b*g*x+a*g)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(d*i*x+c*i),x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$3 A^2 a^2 b g^3 \left(\frac{x}{di} - \frac{c \log(dx + c)}{d^2 i} \right) - \frac{1}{6} A^2 b^3 g^3 \left(\frac{6 c^3 \log(dx + c)}{d^4 i} - \frac{2 d^2 x^3 - 3 c d x^2 + 6 c^2 x}{d^3 i} \right) + \frac{3}{2} A^2 a b^2 g^3 \left(\frac{2 c^2 \log(dx + c)}{d^3 i} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i),x, algorithm="maxima")

[Out] $3 \cdot A^2 \cdot a^2 \cdot b \cdot g^3 \cdot (x/(d \cdot i) - c \cdot \log(d \cdot x + c)/(d^2 \cdot i)) - 1/6 \cdot A^2 \cdot b^3 \cdot g^3 \cdot (6 \cdot c^3 \cdot \log(d \cdot x + c)/(d^4 \cdot i) - (2 \cdot d^2 \cdot x^3 - 3 \cdot c \cdot d \cdot x^2 + 6 \cdot c^2 \cdot x)/(d^3 \cdot i)) + 3/2 \cdot A^2 \cdot a \cdot b^2 \cdot g^3 \cdot (2 \cdot c^2 \cdot \log(d \cdot x + c)/(d^3 \cdot i) + (d \cdot x^2 - 2 \cdot c \cdot x)/(d^2 \cdot i)) + A^2 \cdot a^3 \cdot g^3 \cdot \log(d \cdot i \cdot x + c \cdot i)/(d \cdot i) - 1/6 \cdot (2 \cdot (b^3 \cdot c^3 \cdot g^3 - 3 \cdot a \cdot b^2 \cdot c^2 \cdot d \cdot g^3 + 3 \cdot a^2 \cdot b \cdot c \cdot d^2 \cdot g^3 - a^3 \cdot d^3 \cdot g^3) \cdot B^2 \cdot \log(d \cdot x + c)^3 - (2 \cdot B^2 \cdot b^3 \cdot d^3 \cdot g^3 \cdot x^3 - 3 \cdot (b^3 \cdot c \cdot d^2 \cdot g^3 - 3 \cdot a \cdot b^2 \cdot d^3 \cdot g^3) \cdot B^2 \cdot x^2 + 6 \cdot (b^3 \cdot c^2 \cdot d \cdot g^3 - 3 \cdot a \cdot b^2 \cdot c \cdot d^2 \cdot g^3 + 3 \cdot a^2 \cdot b \cdot d^3 \cdot g^3) \cdot B^2 \cdot x) \cdot \log(d \cdot x + c)^2)/(d^4 \cdot i) - \text{integrate}(-1/3 \cdot (3 \cdot B^2 \cdot a^3 \cdot d^2 \cdot g^3 \cdot \log(e)^2 + 6 \cdot A \cdot B \cdot a^3 \cdot d^2 \cdot g^3 \cdot \log(e) + 3 \cdot (B^2 \cdot b^3 \cdot d^2 \cdot g^3 \cdot \log(e)^2 + 2 \cdot A \cdot B \cdot b^3 \cdot d^2 \cdot g^3 \cdot \log(e))) \cdot x^3 + 9 \cdot (B^2 \cdot a \cdot b^2 \cdot d^2 \cdot g^3 \cdot \log(e)^2 + 2 \cdot A \cdot B \cdot a \cdot b^2 \cdot d^2 \cdot g^3 \cdot \log(e)) \cdot x^2 + 3 \cdot (B^2 \cdot b^3 \cdot d^2 \cdot g^3 \cdot x^3 + 3 \cdot B^2 \cdot a \cdot b^2 \cdot d^2 \cdot g^3 \cdot x^2 + 3 \cdot B^2 \cdot a^2 \cdot b \cdot d^2 \cdot g^3 \cdot x + 3 \cdot B^2 \cdot a^3 \cdot d^2 \cdot g^3) \cdot \log(e) \cdot x) / (d^4 \cdot i)$

$$\begin{aligned} &^2g^3x^2 + 3B^2a^2bd^2g^3x + B^2a^3d^2g^3) \log(bx + a)^2 + 9(B \\ &^2a^2bd^2g^3 \log(e)^2 + 2ABa^2bd^2g^3 \log(e))x + 6(B^2a^3d^2g^3 \\ &^3 \log(e) + ABa^3d^2g^3 + (B^2b^3d^2g^3 \log(e) + ABb^3d^2g^3)x \\ &^3 + 3(B^2ab^2d^2g^3 \log(e) + ABab^2d^2g^3)x^2 + 3(B^2a^2bd^2 \\ &^2g^3 \log(e) + ABa^2bd^2g^3)x) \log(bx + a) - (6B^2a^3d^2g^3 \log(\\ &e) + 6ABa^3d^2g^3 + 2(3ABb^3d^2g^3 + (3g^3 \log(e) + g^3)B^2b^ \\ &^3d^2)x^3 + 3(6ABab^2d^2g^3 - (b^3cdg^3 - 3(2g^3 \log(e) + g^3) \\ &a^2bd^2)B^2)x^2 + 6(3ABa^2bd^2g^3 + (b^3c^2g^3 - 3ab^2cdg^3 + 3(g^3 \log(e) + g^3)a^2bd^2)B^2)x \\ &+ 6(B^2b^3d^2g^3x^3 + 3B^2a^2bd^2g^3x^2 + 3B^2a^3d^2g^3) \log(bx + a \\ &)) \log(dx + c) / (d^3ix + c^2i), x) \end{aligned}$$

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ag + bgx)^3 \left(A + B \ln \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{ci + dix} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((a*g + b*g*x)^3*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(c*i + d*i*x), x)

[Out] int(((a*g + b*g*x)^3*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(c*i + d*i*x), x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)**3*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(d*i*x+c*i), x)

[Out] Timed out

$$3.85 \quad \int \frac{(ag+bgx)^2 \left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)^2}{ci+dix} dx$$

Optimal. Leaf size=536

$$\frac{b^2 g^2 (c+dx)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)^2}{2d^3 i} - \frac{2B g^2 (bc-ad)^2 \text{Li}_2\left(\frac{d(a+bx)}{b(c+dx)}\right) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{d^3 i} - \frac{g^2 (bc-ad)^2 \log\left(\frac{bc-ad}{b(c+dx)}\right)}{d^3}$$

[Out] $-B*(-a*d+b*c)*g^2*(b*x+a)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/d^2/i-4*B*(-a*d+b*c)^2*g^2*\ln((-a*d+b*c)/b/(d*x+c))*(A+B*\ln(e*(b*x+a)/(d*x+c)))/d^3/i-2*(-a*d+b*c)*g^2*(b*x+a)*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/d^2/i+1/2*b^2*g^2*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/d^3/i-(-a*d+b*c)^2*g^2*\ln((-a*d+b*c)/b/(d*x+c))*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/d^3/i+B^2*(-a*d+b*c)^2*g^2*\ln(d*x+c)/d^3/i+B*(-a*d+b*c)^2*g^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))*\ln(1-b*(d*x+c)/d/(b*x+a))/d^3/i-4*B^2*(-a*d+b*c)^2*g^2*\text{polylog}(2,d*(b*x+a)/b/(d*x+c))/d^3/i-2*B*(-a*d+b*c)^2*g^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))*\text{polylog}(2,d*(b*x+a)/b/(d*x+c))/d^3/i-B^2*(-a*d+b*c)^2*g^2*\text{polylog}(2,b*(d*x+c)/d/(b*x+a))/d^3/i+2*B^2*(-a*d+b*c)^2*g^2*\text{polylog}(3,d*(b*x+a)/b/(d*x+c))/d^3/i$

Rubi [B] time = 4.82, antiderivative size = 1666, normalized size of antiderivative = 3.11, number of steps used = 86, number of rules used = 27, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}} = 0.643$, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 2486, 31, 6688, 6742, 2499, 2396, 2433, 2374, 6589, 2302, 30, 2500, 2375, 2317, 2440, 2434}

result too large to display

Antiderivative was successfully verified.

[In] Int[((a*g + b*g*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2)/(c*i + d*i*x), x]

[Out] $-((A*b*B*(b*c - a*d)*g^2*x)/(d^2*i)) + (a*B^2*(b*c - a*d)*g^2*\text{Log}[a + b*x]^2)/(d^2*i) - (B^2*(b*c - a*d)^2*g^2*\text{Log}[a + b*x]*\text{Log}[(c + d*x)^{-1}]^2)/(d^3*i) + (B^2*(b*c - a*d)^2*g^2*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[(c + d*x)^{-1}]^2)/(d^3*i) - (B^2*(b*c - a*d)*g^2*(a + b*x)*\text{Log}[(e*(a + b*x))/(c + d*x)]/(d^2*i) - (2*a*B*(b*c - a*d)*g^2*\text{Log}[a + b*x]*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]))/(d^2*i) - (b*(b*c - a*d)*g^2*x*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]))^2)/(d^2*i) + (g^2*(a + b*x)^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]))^2)/(2*d*i) + (B^2*(b*c - a*d)^2*g^2*\text{Log}[c + d*x]/(d^3*i) - (2*b*B^2*c*(b*c - a*d)*g^2*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c + d*x]/(d^3*i) - (B^2*(b*c - a*d)^2*g^2*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c + d*x]/(d^3*i) + (2*b*B*c*(b*c - a*d)*g^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]))*\text{Log}[c + d*x]/(d^3*i) + (B*(b*c - a*d)^2*g^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]))*\text{Log}$

$$\begin{aligned}
& [c + d*x])/(d^3*i) + (b*B^2*c*(b*c - a*d)*g^2*\text{Log}[c + d*x]^2)/(d^3*i) + (B^2*(b*c - a*d)^2*g^2*\text{Log}[c + d*x]^2)/(2*d^3*i) - (2*a*B^2*(b*c - a*d)*g^2*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)])/(d^2*i) + (B^2*(b*c - a*d)^2*g^2*\text{Log}[a + b*x]^2*\text{Log}[(b*(c + d*x))/(b*c - a*d)])/(d^3*i) - (B^2*(b*c - a*d)^2*g^2*\text{Log}[a + b*x]^2*\text{Log}[i*(c + d*x)])/(d^3*i) - (2*B^2*(b*c - a*d)^2*g^2*\text{Log}[a + b*x]*\text{Log}[(c + d*x)^{-1}]*\text{Log}[i*(c + d*x)])/(d^3*i) + (A*B*(b*c - a*d)^2*g^2*\text{Log}[i*(c + d*x)]^2)/(d^3*i) - (B^2*(b*c - a*d)^2*g^2*\text{Log}[a + b*x]*\text{Log}[i*(c + d*x)]^2)/(d^3*i) + (B^2*(b*c - a*d)^2*g^2*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[i*(c + d*x)]^2)/(d^3*i) + (B^2*(b*c - a*d)^2*g^2*\text{Log}[i*(c + d*x)]^3)/(3*d^3*i) - (2*A*B*(b*c - a*d)^2*g^2*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c*i + d*i*x])/(d^3*i) + (2*B^2*(b*c - a*d)^2*g^2*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*(\text{Log}[a + b*x] + \text{Log}[(c + d*x)^{-1}] - \text{Log}[(e*(a + b*x))/(c + d*x)])*\text{Log}[c*i + d*i*x])/(d^3*i) + ((b*c - a*d)^2*g^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)])^2*\text{Log}[c*i + d*i*x])/(d^3*i) - (B^2*(b*c - a*d)^2*g^2*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c*i + d*i*x]^2)/(d^3*i) + (B^2*(b*c - a*d)^2*g^2*\text{Log}[(e*(a + b*x))/(c + d*x)]*\text{Log}[c*i + d*i*x]^2)/(d^3*i) - (2*a*B^2*(b*c - a*d)*g^2*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))]/(d^2*i) + (2*B^2*(b*c - a*d)^2*g^2*\text{Log}[a + b*x]*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))]/(d^3*i) - (2*b*B^2*c*(b*c - a*d)*g^2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]/(d^3*i) - (2*A*B*(b*c - a*d)^2*g^2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]/(d^3*i) - (B^2*(b*c - a*d)^2*g^2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]/(d^3*i) - (2*B^2*(b*c - a*d)^2*g^2*\text{Log}[(c + d*x)^{-1}]*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]/(d^3*i) + (2*B^2*(b*c - a*d)^2*g^2*(\text{Log}[a + b*x] + \text{Log}[(c + d*x)^{-1}] - \text{Log}[(e*(a + b*x))/(c + d*x)])*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]/(d^3*i) - (2*B^2*(b*c - a*d)^2*g^2*\text{PolyLog}[3, -((d*(a + b*x))/(b*c - a*d))]/(d^3*i) - (2*B^2*(b*c - a*d)^2*g^2*\text{PolyLog}[3, (b*(c + d*x))/(b*c - a*d)]/(d^3*i)
\end{aligned}$$

Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 30

```
Int[(x_)^(m_), x_Symbol] := Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && NeQ[m, -1]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^{-1}, x_Symbol] := Simp[Log[RemoveContent[a + b*x, x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Lo
```

$g[c*x^n]^2/(2*b*n), x] /; \text{FreeQ}\{a, b, c, n\}, x]$

Rule 2302

$\text{Int}[(a_.) + \text{Log}[c_.*(x_)^{(n_.)}]*(b_.)]^{(p_.)}/(x_), x_Symbol] \text{ :> } \text{Dist}[1/(b*n), \text{Subst}[\text{Int}[x^p, x], x, a + b*\text{Log}[c*x^n]], x] /; \text{FreeQ}\{a, b, c, n, p\}, x]$

Rule 2317

$\text{Int}[(a_.) + \text{Log}[c_.*(x_)^{(n_.)}]*(b_.)]^{(p_.)}/((d_) + (e_.)*(x_)), x_Symbol] \text{ :> } \text{Simp}[(\text{Log}[1 + (e*x)/d]*(a + b*\text{Log}[c*x^n])^p)/e, x] - \text{Dist}[(b*n*p)/e, \text{Int}[(\text{Log}[1 + (e*x)/d]*(a + b*\text{Log}[c*x^n])^{(p-1)})/x, x], x] /; \text{FreeQ}\{a, b, c, d, e, n\}, x] \&\& \text{IGtQ}[p, 0]$

Rule 2374

$\text{Int}[(\text{Log}[(d_.)*((e_) + (f_.)*(x_)^{(m_.)})])*(a_.) + \text{Log}[c_.*(x_)^{(n_.)}]*(b_.)]^{(p_.)}/(x_), x_Symbol] \text{ :> } -\text{Simp}[(\text{PolyLog}[2, -(d*f*x^m)]*(a + b*\text{Log}[c*x^n])^p)/m, x] + \text{Dist}[(b*n*p)/m, \text{Int}[(\text{PolyLog}[2, -(d*f*x^m)]*(a + b*\text{Log}[c*x^n])^{(p-1)})/x, x], x] /; \text{FreeQ}\{a, b, c, d, e, f, m, n\}, x] \&\& \text{IGtQ}[p, 0] \&\& \text{EqQ}[d*e, 1]$

Rule 2375

$\text{Int}[(\text{Log}[(d_.)*((e_) + (f_.)*(x_)^{(m_.)})]^{(r_.)}*(a_.) + \text{Log}[c_.*(x_)^{(n_.)}]*(b_.)]^{(p_.)}/(x_), x_Symbol] \text{ :> } \text{Simp}[(\text{Log}[d*(e + f*x^m)^r]*(a + b*\text{Log}[c*x^n])^{(p+1)})/(b*n*(p+1)), x] - \text{Dist}[(f*m*r)/(b*n*(p+1)), \text{Int}[(x^{(m-1)}*(a + b*\text{Log}[c*x^n])^{(p+1)})/(e + f*x^m), x], x] /; \text{FreeQ}\{a, b, c, d, e, f, r, m, n\}, x] \&\& \text{IGtQ}[p, 0] \&\& \text{NeQ}[d*e, 1]$

Rule 2390

$\text{Int}[(a_.) + \text{Log}[c_.*((d_) + (e_.)*(x_)^{(n_.)})]*(b_.)]^{(p_.)*((f_) + (g_.)*(x_)^{(q_.)})}/(x_), x_Symbol] \text{ :> } \text{Dist}[1/e, \text{Subst}[\text{Int}[(f*x)/d]^q*(a + b*\text{Log}[c*x^n])^p, x], x, d + e*x], x] /; \text{FreeQ}\{a, b, c, d, e, f, g, n, p, q\}, x] \&\& \text{EqQ}[e*f - d*g, 0]$

Rule 2391

$\text{Int}[\text{Log}[(c_.)*((d_) + (e_.)*(x_)^{(n_.)})]/(x_), x_Symbol] \text{ :> } -\text{Simp}[\text{PolyLog}[2, -(c*e*x^n)]/n, x] /; \text{FreeQ}\{c, d, e, n\}, x] \&\& \text{EqQ}[c*d, 1]$

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e^n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)/((f_.) + (g_.
)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e^n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] := Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
e*i - d*j)/e + (j*x)/e]^m)], x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int((((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] := Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n])/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m))]/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_.) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] :>
Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q]^r]^s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q]^r])/((k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2523

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a +
b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*
RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, p}, x] && Rat
ionalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol]
:> Simp[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol]
:> With[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_Symbol]
:> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6688

```
Int[u_, x_Symbol]
:> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; SimplifyIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol]
:> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]]
```

Rubi steps

$$\begin{aligned}
\int \frac{(ag + bgx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{85c + 85dx} dx &= \int \left(-\frac{b(bc - ad)g^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{85d^2} + \frac{(bc - ad)^2 g^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{d^2(85c + 85dx)} \right) dx \\
&= \frac{(bg) \int (ag + bgx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 dx}{85d} - \frac{(b(bc - ad)g^2) \int \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 dx}{85d^2} \\
&= -\frac{b(bc - ad)g^2 x \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{85d^2} + \frac{g^2(a + bx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{170d} \\
&= -\frac{b(bc - ad)g^2 x \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{85d^2} + \frac{g^2(a + bx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{170d} \\
&= -\frac{b(bc - ad)g^2 x \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{85d^2} + \frac{g^2(a + bx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{170d} \\
&= -\frac{AbB(bc - ad)g^2 x}{85d^2} - \frac{2aB(bc - ad)g^2 \log(a + bx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{85d^2} \\
&= -\frac{AbB(bc - ad)g^2 x}{85d^2} - \frac{B^2(bc - ad)g^2(a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{85d^2} - \frac{2aB(bc - ad)g^2 \log(a + bx)}{85d^2} \\
&= -\frac{AbB(bc - ad)g^2 x}{85d^2} - \frac{B^2(bc - ad)g^2(a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{85d^2} - \frac{2aB(bc - ad)g^2 \log(a + bx)}{85d^2} \\
&= -\frac{AbB(bc - ad)g^2 x}{85d^2} - \frac{B^2(bc - ad)g^2(a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{85d^2} - \frac{2aB(bc - ad)g^2 \log(a + bx)}{85d^2} \\
&= -\frac{AbB(bc - ad)g^2 x}{85d^2} + \frac{aB^2(bc - ad)g^2 \log^2(a + bx)}{85d^2} - \frac{B^2(bc - ad)g^2(a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{85d^2} - \frac{2aB(bc - ad)g^2 \log(a + bx)}{85d^2}
\end{aligned}$$

$$-\frac{AbB(bc - ad)g^2 x}{85d^2} - \frac{aB^2(bc - ad)g^2 \log^2(a + bx)}{85d^2} - \frac{B^2(bc - ad)g^2(a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{85d^2} - \frac{2aB(bc - ad)g^2 \log(a + bx)}{85d^2}$$

Mathematica [B] time = 1.73, size = 1514, normalized size = 2.82

result too large to display

Antiderivative was successfully verified.

[In] Integrate[((a*g + b*g*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2)/(c*i + d*i*x),x]

[Out] $(g^2(-2A^2b*d*(b*c - 2a*d)*x + A^2b^2*d^2*x^2 + 2A^2*(b*c - a*d)^2*Log[c + d*x] + 2A*B*(-2b^2*c^2 + 2a*b*c*d - b^2*c*d*x + a*b*d^2*x + 2b^2*c^2*Log[c/d + x] - b^2*c^2*Log[c/d + x]^2 - a^2*d^2*Log[a + b*x] - 2b^2*c*d*x*Log[(e*(a + b*x))/(c + d*x)] + b^2*d^2*x^2*Log[(e*(a + b*x))/(c + d*x)] + b^2*c^2*Log[c + d*x] + 2b^2*c^2*Log[c/d + x]*Log[c + d*x] + 2b^2*c^2*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x] - 2b*c*Log[a/b + x]*(a*d + b*c*Log[c + d*x] - b*c*Log[(b*(c + d*x))/(b*c - a*d)]) + 2b^2*c^2*PolyLog[2, (d*(a + b*x))/(-b*c) + a*d]) - 2a^2*A*B*d^2*(Log[c/d + x]^2 + 2*(Log[a/b + x] - Log[c/d + x] - Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x] - 2*(Log[a/b + x]*Log[(b*(c + d*x))/(b*c - a*d)] + PolyLog[2, (d*(a + b*x))/(-b*c) + a*d])) - 4a*A*B*d*(-2*d*(a + b*x)*(-1 + Log[a/b + x]) + 2*b*(c + d*x)*(-1 + Log[c/d + x]) - b*c*Log[c/d + x]^2 + 2*b*(Log[a/b + x] - Log[c/d + x] - Log[(e*(a + b*x))/(c + d*x)]*(d*x - c*Log[c + d*x]) + 2*b*c*(Log[a/b + x]*Log[(b*(c + d*x))/(b*c - a*d)] + PolyLog[2, (d*(a + b*x))/(-b*c) + a*d])) + 4a*B^2*d*(d*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)]^2 + b*c*Log[(e*(a + b*x))/(c + d*x)]^2*Log[(b*c - a*d)/(b*c + b*d*x)] - (b*c - a*d)*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-b*c) + a*d] - 2*Log[(e*(a + b*x))/(c + d*x)] + Log[(b*c - a*d)/(b*c + b*d*x)] - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]) + 2*b*c*(Log[(e*(a + b*x))/(c + d*x)]*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))] - PolyLog[3, (d*(a + b*x))/(b*(c + d*x))]) + B^2*(2*d*(-b*c) + a*d)*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)] - 2a^2*d^2*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)] + b^2*d^2*x^2*Log[(e*(a + b*x))/(c + d*x)]^2 - 2b*c*d*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)]^2 + 2*(b*c - a*d)^2*Log[c + d*x] - 2b^2*c^2*Log[(e*(a + b*x))/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] - 2b^2*c^2*Log[(e*(a + b*x))/(c + d*x)]^2*Log[(b*c - a*d)/(b*c + b*d*x)] + a^2*d^2*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-b*c) + a*d]) + b^2*c^2*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-b*c) + a*d] + Log[(b*c - a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]) + 2*b*c*(b*c - a*d)*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-b*c) + a*d] - 2*Log[(e*(a + b*x))/(c + d*x)] + Log[(b*c - a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]) - 4b^2*c^2*(Log[(e*(a + b*x))/(c + d*x)]*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))] - PolyLog[3, (d*(a + b*x))/(b*(c + d*x))]) - 2a^2*B^2*d^2*(Log[(e*(a + b*x))/(c + d*x)]^2*Log[(b*c - a*d)/(b*c + b*d*x)] + 2*Log[(e*(a + b*x))/(c + d*x)]*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))]) - 2*PolyLog[3, (d*(a + b*x))/(b*(c + d*x))]))/(2*d^3*i)$

fricas [F] time = 0.70, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{A^2 b^2 g^2 x^2 + 2 A^2 a b g^2 x + A^2 a^2 g^2 + (B^2 b^2 g^2 x^2 + 2 B^2 a b g^2 x + B^2 a^2 g^2) \log\left(\frac{bex+ae}{dx+c}\right)^2 + 2 (ABb^2 g^2 x^2 + 2 ABa^2 g^2 x + A^2 B^2 g^2)}{dix + ci} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i),x, algorithm="fricas")

[Out] integral((A^2*b^2*g^2*x^2 + 2*A^2*a*b*g^2*x + A^2*a^2*g^2 + (B^2*b^2*g^2*x^2 + 2*B^2*a*b*g^2*x + B^2*a^2*g^2)*log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*B*b^2*g^2*x^2 + 2*A*B*a*b*g^2*x + A*B*a^2*g^2)*log((b*e*x + a*e)/(d*x + c)))/(d*i*x + c*i), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i),x, algorithm="giac")

[Out] Timed out

maple [F] time = 1.96, size = 0, normalized size = 0.00

$$\int \frac{(bgx + ag)^2 \left(B \ln\left(\frac{bx+a}{dx+c}\right) + A \right)^2}{dix + ci} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(d*i*x+c*i),x)

[Out] int((b*g*x+a*g)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(d*i*x+c*i),x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$2 A^2 a b g^2 \left(\frac{x}{di} - \frac{c \log(dx + c)}{d^2 i} \right) + \frac{1}{2} A^2 b^2 g^2 \left(\frac{2 c^2 \log(dx + c)}{d^3 i} + \frac{dx^2 - 2 cx}{d^2 i} \right) + \frac{A^2 a^2 g^2 \log(dix + ci)}{di} + \frac{2 (b^2 c^2 g^2 - 2 a b c g^2)}{d^2 i}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i),x, algorithm="maxima")

[Out] $2A^2abg^2(x/(d*i) - c\log(d*x + c)/(d^2*i)) + 1/2A^2b^2g^2(2c^2\log(d*x + c)/(d^3*i) + (d*x^2 - 2c*x)/(d^2*i)) + A^2a^2g^2\log(d*i*x + c*i)/(d*i) + 1/6(2(b^2c^2g^2 - 2a*b*c*dg^2 + a^2d^2g^2)B^2\log(d*x + c)^3 + 3(B^2b^2d^2g^2x^2 - 2(b^2c*dg^2 - 2a*b*d^2g^2)B^2x)\log(d*x + c)^2)/(d^3*i) - \text{integrate}(- (B^2a^2dg^2\log(e)^2 + 2ABa^2dg^2\log(e) + (B^2b^2dg^2\log(e)^2 + 2ABb^2dg^2\log(e))x^2 + (B^2b^2dg^2x^2 + 2B^2a*b*dg^2x + B^2a^2dg^2)\log(b*x + a)^2 + 2(B^2a*b*dg^2\log(e)^2 + 2ABa*b*dg^2\log(e))x + 2(B^2a^2dg^2\log(e) + ABa^2dg^2 + (B^2b^2dg^2\log(e) + ABb^2dg^2)x^2 + 2(B^2a*b*dg^2\log(e) + ABa*b*dg^2)x)\log(b*x + a) - (2B^2a^2dg^2\log(e) + 2ABa^2dg^2 + (2ABb^2dg^2 + (2g^2\log(e) + g^2)B^2b^2d)x^2 + 2(2ABa*b*dg^2 - (b^2c*g^2 - 2(g^2\log(e) + g^2)a*b*d)B^2)x + 2(B^2b^2dg^2x^2 + 2B^2a*b*dg^2x + B^2a^2dg^2)\log(b*x + a))\log(d*x + c))/(d^2*i*x + c*d*i), x)$

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ag + bgx)^2 \left(A + B \ln \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{ci + dix} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((a*g + b*g*x)^2*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(c*i + d*i*x), x)

[Out] int(((a*g + b*g*x)^2*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(c*i + d*i*x), x)

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$g^2 \left(\int \frac{A^2 a^2}{c+dx} dx + \int \frac{A^2 b^2 x^2}{c+dx} dx + \int \frac{B^2 a^2 \log \left(\frac{ae}{c+dx} + \frac{bex}{c+dx} \right)^2}{c+dx} dx + \int \frac{2ABa^2 \log \left(\frac{ae}{c+dx} + \frac{bex}{c+dx} \right)}{c+dx} dx + \int \frac{2A^2 abx}{c+dx} dx + \int \frac{B^2 b^2 x^2 \log \left(\frac{ae}{c+dx} + \frac{bex}{c+dx} \right)}{c+dx} dx \right)$$

i

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)**2*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(d*i*x+c*i),x)

[Out] $g^2 * (\text{Integral}(A^2 a^2 / (c + d*x), x) + \text{Integral}(A^2 b^2 x^2 / (c + d*x), x) + \text{Integral}(B^2 a^2 * \log(a*e/(c + d*x) + b*e*x/(c + d*x)) ** 2 / (c + d*x), x) + \text{Integral}(2*A*B*a^2 * \log(a*e/(c + d*x) + b*e*x/(c + d*x)) / (c + d*x), x) + \text{Integral}(2*A^2*a*b*x / (c + d*x), x) + \text{Integral}(B^2*b^2*x^2 * \log(a*e/($

$c + d*x) + b*e*x/(c + d*x)**2/(c + d*x), x) + \text{Integral}(2*A*B*b**2*x**2*\log$
 $(a*e/(c + d*x) + b*e*x/(c + d*x))/(c + d*x), x) + \text{Integral}(2*B**2*a*b*x*\log$
 $(a*e/(c + d*x) + b*e*x/(c + d*x)**2/(c + d*x), x) + \text{Integral}(4*A*B*a*b*x*\log$
 $(a*e/(c + d*x) + b*e*x/(c + d*x))/(c + d*x), x))/i$

$$3.86 \quad \int \frac{(ag+bgx) \left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)^2}{ci+dix} dx$$

Optimal. Leaf size=283

$$\frac{2Bg(bc-ad)\text{Li}_2\left(\frac{d(a+bx)}{b(c+dx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{d^2i} + \frac{2Bg(bc-ad)\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{d^2i} + \frac{g(bc-ad)\log\left(\frac{e(a+bx)}{c+dx}\right)}{d^2i}$$

[Out] 2*B*(-a*d+b*c)*g*ln((-a*d+b*c)/b/(d*x+c))*(A+B*ln(e*(b*x+a)/(d*x+c)))/d^2/i +g*(b*x+a)*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/d/i+(-a*d+b*c)*g*ln((-a*d+b*c)/b/(d*x+c))*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/d^2/i+2*B^2*(-a*d+b*c)*g*polylog(2,d*(b*x+a)/b/(d*x+c))/d^2/i+2*B*(-a*d+b*c)*g*(A+B*ln(e*(b*x+a)/(d*x+c)))*polylog(2,d*(b*x+a)/b/(d*x+c))/d^2/i-2*B^2*(-a*d+b*c)*g*polylog(3,d*(b*x+a)/b/(d*x+c))/d^2/i

Rubi [B] time = 4.13, antiderivative size = 1072, normalized size of antiderivative = 3.79, number of steps used = 68, number of rules used = 24, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.600$, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2500, 2433, 2375, 2317, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

$$\frac{B^2(bc-ad)g\log^3(c+dx)}{3d^2i} + \frac{B^2(bc-ad)g\log(a+bx)\log^2(c+dx)}{d^2i} - \frac{B^2(bc-ad)g\log\left(\frac{e(a+bx)}{c+dx}\right)\log^2(c+dx)}{d^2i} - \frac{A}{d^2i}$$

Antiderivative was successfully verified.

[In] Int[((a*g + b*g*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(c*i + d*i*x),x]

[Out] -((a*B^2*g*Log[a + b*x]^2)/(d*i)) + (B^2*(b*c - a*d)*g*Log[a + b*x]*Log[(c + d*x)^(-1)]^2)/(d^2*i) - (B^2*(b*c - a*d)*g*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[(c + d*x)^(-1)]^2)/(d^2*i) + (2*a*B*g*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(d*i) + (b*g*x*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(d*i) + (B^2*(b*c - a*d)*g*Log[a + b*x]^2*Log[c + d*x])/(d^2*i) + (2*b*B^2*c*g*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(d^2*i) + (2*A*B*(b*c - a*d)*g*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(d^2*i) + (2*B^2*(b*c - a*d)*g*Log[a + b*x]*Log[(c + d*x)^(-1)]*Log[c + d*x])/(d^2*i) - (2*B^2*(b*c - a*d)*g*Log[-((d*(a + b*x))/(b*c - a*d))]*(Log[a + b*x] + Log[(c + d*x)^(-1)] - Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x])/(d^2*i) - (2*b*B*c*g*(A + B*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x])/(d^2*i) - ((b*c - a*d)*g*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2*Log[c + d*x])/(d^2*i) - (b*B^2*c*g*Log[c + d*x]^2)/(d^2*i) - (A*B*(b*c - a*d)*g*Log[c + d*x]^2)/(d^2*i) + (B^2*(b*c - a*d)*g*Log[a + b*x]*Log[c + d*x]^2)/(d^2*i) - (B^2*(b*c - a*d)*g*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x]^2)/(d^2*i) - (B^2*(b*c - a*d)*g*Log[c + d*x]^3)/(3*d^2*i) + (2*a*B^2*g*Log[a + b*x]*Log[(b*(c + d*x))/(b*c

$$\begin{aligned}
& - a*d)]/(d*i) - (B^2*(b*c - a*d)*g*\text{Log}[a + b*x]^2*\text{Log}[(b*(c + d*x))/(b*c \\
& - a*d)]/(d^2*i) + (2*a*B^2*g*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))]/(d* \\
& i) - (2*B^2*(b*c - a*d)*g*\text{Log}[a + b*x]*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a* \\
& d))]/(d^2*i) + (2*b*B^2*c*g*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]/(d^2*i) \\
& + (2*A*B*(b*c - a*d)*g*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]/(d^2*i) + (2 \\
& *B^2*(b*c - a*d)*g*\text{Log}[(c + d*x)^{-1}]*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d) \\
&]/(d^2*i) - (2*B^2*(b*c - a*d)*g*(\text{Log}[a + b*x] + \text{Log}[(c + d*x)^{-1}] - \text{Log} \\
& [(e*(a + b*x))/(c + d*x)])*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]/(d^2*i) + \\
& (2*B^2*(b*c - a*d)*g*\text{PolyLog}[3, -((d*(a + b*x))/(b*c - a*d))]/(d^2*i) + (\\
& 2*B^2*(b*c - a*d)*g*\text{PolyLog}[3, (b*(c + d*x))/(b*c - a*d)]/(d^2*i)
\end{aligned}$$

Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 30

```
Int[(x_)^(m_), x_Symbol] := Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] := Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] := Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] := -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
```

&& EqQ[d*e, 1]

Rule 2375

Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*(a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)]/(x_), x_Symbol] := Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m - 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d, e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*((f_) + (g_.)*(x_)^(q_.)), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2396

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])^p/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol]
:= With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n]^p, RFx, x]},
Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol]
:= Dist[1/e, Subst[Int[(k*x)/d]^r*(a + b*Log[c*x^n]^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m)), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] := Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n]*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m)))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] :=
Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n]*(f +
g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)
]^(r_.))*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.)
+ (k_.)*(x_)), x_Symbol] := Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q]^r)/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500


```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2523

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a +
b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*
RFx^p]))^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, p}, x] && Rat
ionalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p]))^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\begin{aligned}
\int \frac{(ag + bgx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{86c + 86dx} dx &= \int \left(\frac{bg \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{86d} + \frac{(-bc + ad)g \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{86d(c + dx)} \right) dx \\
&= \frac{(bg) \int \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 dx}{86d} - \frac{((bc - ad)g) \int \frac{\left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 dx}{c+dx}}{86d} \\
&= \frac{bgx \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{86d} - \frac{(bc - ad)g \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 \log(c - dx)}{86d^2} \\
&= \frac{bgx \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{86d} - \frac{(bc - ad)g \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 \log(c - dx)}{86d^2} \\
&= \frac{bgx \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{86d} - \frac{(bc - ad)g \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 \log(c - dx)}{86d^2} \\
&= \frac{bgx \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{86d} - \frac{(bc - ad)g \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 \log(c - dx)}{86d^2} \\
&= \frac{aBg \log(a + bx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{43d} + \frac{bgx \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{86d} \\
&= \frac{aBg \log(a + bx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{43d} + \frac{bgx \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{86d} \\
&= \frac{aBg \log(a + bx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{43d} + \frac{bgx \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{86d} \\
&= \frac{aBg \log(a + bx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{43d} + \frac{bgx \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{86d} \\
&= \frac{aBg \log(a + bx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{43d} + \frac{bgx \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{86d} \\
&= \frac{aB^2g \log^2(a + bx)}{86d} + \frac{aBg \log(a + bx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{43d} + \frac{bgx \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{86d}
\end{aligned}$$

Mathematica [B] time = 0.72, size = 646, normalized size = 2.28

$$g \left(A^2(bc - ad) \log(c + dx) + aABd \left(2 \log(c + dx) \left(-\log\left(\frac{e(a+bx)}{c+dx}\right) + \log\left(\frac{a}{b} + x\right) - \log\left(\frac{c}{d} + x\right) \right) - 2 \left(\text{Li}_2\left(\frac{d(a+bx)}{ad-bc}\right) \right. \right. \right.$$

Antiderivative was successfully verified.

[In] Integrate[((a*g + b*g*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(c*i + d*i*x), x]

[Out] -((g*(-(A^2*b*d*x) + A^2*(b*c - a*d)*Log[c + d*x] + a*A*B*d*(Log[c/d + x]^2 + 2*(Log[a/b + x] - Log[c/d + x] - Log[(e*(a + b*x))/(c + d*x]))*Log[c + d*x] - 2*(Log[a/b + x]*Log[(b*(c + d*x))/(b*c - a*d)] + PolyLog[2, (d*(a + b*x))/(-b*c + a*d)])) + A*B*(-2*d*(a + b*x)*(-1 + Log[a/b + x]) + 2*b*(c + d*x)*(-1 + Log[c/d + x]) - b*c*Log[c/d + x]^2 + 2*b*(Log[a/b + x] - Log[c/d + x] - Log[(e*(a + b*x))/(c + d*x]))*(d*x - c*Log[c + d*x]) + 2*b*c*(Log[a/b + x]*Log[(b*(c + d*x))/(b*c - a*d)] + PolyLog[2, (d*(a + b*x))/(-b*c + a*d)])) - B^2*(d*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)]^2 + b*c*Log[(e*(a + b*x))/(c + d*x)]^2*Log[(b*c - a*d)/(b*c + b*d*x)] - (b*c - a*d)*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-b*c + a*d)] - 2*Log[(e*(a + b*x))/(c + d*x)] + Log[(b*c - a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)] + 2*b*c*(Log[(e*(a + b*x))/(c + d*x)]*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))] - PolyLog[3, (d*(a + b*x))/(b*(c + d*x))])) + a*B^2*d*(Log[(e*(a + b*x))/(c + d*x)]^2*Log[(b*c - a*d)/(b*c + b*d*x)] + 2*Log[(e*(a + b*x))/(c + d*x)]*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))] - 2*PolyLog[3, (d*(a + b*x))/(b*(c + d*x))])))/(d^2*i)

fricas [F] time = 0.99, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{A^2bgx + A^2ag + (B^2bgx + B^2ag) \log\left(\frac{bex+ae}{dx+c}\right)^2 + 2(ABbgx + ABag) \log\left(\frac{bex+ae}{dx+c}\right)}{dix + ci}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i), x, algorithm="fricas")

[Out] integral((A^2*b*g*x + A^2*a*g + (B^2*b*g*x + B^2*a*g)*log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*B*b*g*x + A*B*a*g)*log((b*e*x + a*e)/(d*x + c)))/(d*i*x + c*i), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i),x, algorithm="giac")

[Out] Timed out

maple [F] time = 1.74, size = 0, normalized size = 0.00

$$\int \frac{(bgx + ag) \left(B \ln \left(\frac{(bx+a)e}{dx+c} \right) + A \right)^2}{dix + ci} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(d*i*x+c*i),x)

[Out] int((b*g*x+a*g)*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(d*i*x+c*i),x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$A^2bg \left(\frac{x}{di} - \frac{c \log(dx+c)}{d^2i} \right) + \frac{A^2ag \log(dix+ci)}{di} + \frac{3B^2bdgx \log(dx+c)^2 - (bcg - adg)B^2 \log(dx+c)^3}{3d^2i} - \int -\frac{B^2c}{d^2i} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i),x, algorithm="maxima")

[Out] A^2*b*g*(x/(d*i) - c*log(d*x + c)/(d^2*i)) + A^2*a*g*log(d*i*x + c*i)/(d*i) + 1/3*(3*B^2*b*d*g*x*log(d*x + c)^2 - (b*c*g - a*d*g)*B^2*log(d*x + c)^3)/(d^2*i) - integrate(-(B^2*a*g*log(e)^2 + 2*A*B*a*g*log(e) + (B^2*b*g*x + B^2*a*g)*log(b*x + a)^2 + (B^2*b*g*log(e)^2 + 2*A*B*b*g*log(e))*x + 2*(B^2*a*g*log(e) + A*B*a*g + (B^2*b*g*log(e) + A*B*b*g)*x)*log(b*x + a) - 2*(B^2*a*g*log(e) + A*B*a*g + ((g*log(e) + g)*B^2*b + A*B*b*g)*x + (B^2*b*g*x + B^2*a*g)*log(b*x + a))*log(d*x + c))/(d*i*x + c*i), x)

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ag + bgx) \left(A + B \ln \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{ci + dix} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((a*g + b*g*x)*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(c*i + d*i*x),x)

```
[Out] int(((a*g + b*g*x)*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(c*i + d*i*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$g \left(\int \frac{A^2 a}{c+dx} dx + \int \frac{A^2 bx}{c+dx} dx + \int \frac{B^2 a \log\left(\frac{ae}{c+dx} + \frac{bex}{c+dx}\right)^2}{c+dx} dx + \int \frac{2ABa \log\left(\frac{ae}{c+dx} + \frac{bex}{c+dx}\right)}{c+dx} dx + \int \frac{B^2 bx \log\left(\frac{ae}{c+dx} + \frac{bex}{c+dx}\right)^2}{c+dx} dx + \int \frac{2ABbx \log\left(\frac{ae}{c+dx} + \frac{bex}{c+dx}\right)}{c+dx} dx \right) / i$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(d*i*x+c*i),x)
```

```
[Out] g*(Integral(A**2*a/(c + d*x), x) + Integral(A**2*b*x/(c + d*x), x) + Integral(B**2*a*log(a*e/(c + d*x) + b*e*x/(c + d*x))**2/(c + d*x), x) + Integral(2*A*B*a*log(a*e/(c + d*x) + b*e*x/(c + d*x))/(c + d*x), x) + Integral(B**2*b*x*log(a*e/(c + d*x) + b*e*x/(c + d*x))**2/(c + d*x), x) + Integral(2*A*B*b*x*log(a*e/(c + d*x) + b*e*x/(c + d*x))/(c + d*x), x))/i
```

$$3.87 \quad \int \frac{\left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{ci+dx} dx$$

Optimal. Leaf size=127

$$-\frac{2B \operatorname{Li}_2\left(\frac{d(a+bx)}{b(c+dx)}\right)\left(B \log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{di} - \frac{\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(B \log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{di} + \frac{2B^2 \operatorname{Li}_3\left(\frac{d(a+bx)}{b(c+dx)}\right)}{di}$$

[Out] $-\ln((-a*d+b*c)/b/(d*x+c))*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/d/i-2*B*(A+B*\ln(e*(b*x+a)/(d*x+c)))*\operatorname{polylog}(2,d*(b*x+a)/b/(d*x+c))/d/i+2*B^2*\operatorname{polylog}(3,d*(b*x+a)/b/(d*x+c))/d/i$

Rubi [B] time = 3.27, antiderivative size = 721, normalized size of antiderivative = 5.68, number of steps used = 46, number of rules used = 23, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}} = 0.719$, Rules used = {2524, 12, 2528, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2499, 2396, 2433, 2374, 6589, 2302, 30, 2500, 2375, 2317, 2440, 2434}

$$-\frac{2AB \operatorname{PolyLog}\left(2, \frac{b(c+dx)}{bc-ad}\right)}{di} + \frac{2B^2 \operatorname{PolyLog}\left(2, \frac{b(c+dx)}{bc-ad}\right)\left(-\log\left(\frac{e(a+bx)}{c+dx}\right) + \log(a+bx) + \log\left(\frac{1}{c+dx}\right)\right)}{di} - \frac{2B^2 \operatorname{PolyLog}\left(3, \frac{d(a+bx)}{b(c+dx)}\right)}{di}$$

Antiderivative was successfully verified.

[In] $\operatorname{Int}[(A + B*\operatorname{Log}[(e*(a + b*x))/(c + d*x]])^2/(c*i + d*i*x), x]$

[Out] $-\left(\frac{B^2*\operatorname{Log}[a + b*x]*\operatorname{Log}[(c + d*x)^{-1}]^2}{(d*i)} + \frac{B^2*\operatorname{Log}\left[-\left(\frac{d*(a + b*x)}{b*c - a*d}\right)\right]*\operatorname{Log}[(c + d*x)^{-1}]^2}{(d*i)} + \frac{B^2*\operatorname{Log}[a + b*x]^2*\operatorname{Log}\left[\frac{b*(c + d*x)}{b*c - a*d}\right]}{(d*i)} - \frac{B^2*\operatorname{Log}[a + b*x]^2*\operatorname{Log}[i*(c + d*x)]}{(d*i)} - \frac{2*B^2*\operatorname{Log}[a + b*x]*\operatorname{Log}[(c + d*x)^{-1}]*\operatorname{Log}[i*(c + d*x)]}{(d*i)} + \frac{A*B*\operatorname{Log}[i*(c + d*x)]^2}{(d*i)} - \frac{B^2*\operatorname{Log}[a + b*x]*\operatorname{Log}[i*(c + d*x)]^2}{(d*i)} + \frac{B^2*\operatorname{Log}\left[-\left(\frac{d*(a + b*x)}{b*c - a*d}\right)\right]*\operatorname{Log}[i*(c + d*x)]^2}{(d*i)} + \frac{B^2*\operatorname{Log}[i*(c + d*x)]^3}{3*d*i} - \frac{2*A*B*\operatorname{Log}\left[-\left(\frac{d*(a + b*x)}{b*c - a*d}\right)\right]*\operatorname{Log}[c*i + d*i*x]}{(d*i)} + \frac{2*B^2*\operatorname{Log}\left[-\left(\frac{d*(a + b*x)}{b*c - a*d}\right)\right]*(\operatorname{Log}[a + b*x] + \operatorname{Log}[(c + d*x)^{-1}] - \operatorname{Log}\left[\frac{e*(a + b*x)}{c + d*x}\right])* \operatorname{Log}[c*i + d*i*x]}{(d*i)} + \frac{(A + B*\operatorname{Log}[(e*(a + b*x))/(c + d*x]])^2*\operatorname{Log}[c*i + d*i*x]}{(d*i)} - \frac{B^2*\operatorname{Log}\left[-\left(\frac{d*(a + b*x)}{b*c - a*d}\right)\right]*\operatorname{Log}[c*i + d*i*x]^2}{(d*i)} + \frac{B^2*\operatorname{Log}\left[\frac{e*(a + b*x)}{c + d*x}\right]*\operatorname{Log}[c*i + d*i*x]^2}{(d*i)} + \frac{2*B^2*\operatorname{Log}[a + b*x]*\operatorname{PolyLog}[2, -\left(\frac{d*(a + b*x)}{b*c - a*d}\right)]}{(d*i)} - \frac{2*A*B*\operatorname{PolyLog}[2, \frac{b*(c + d*x)}{b*c - a*d}]}{(d*i)} - \frac{2*B^2*\operatorname{Log}[(c + d*x)^{-1}]*\operatorname{PolyLog}[2, \frac{b*(c + d*x)}{b*c - a*d}]}{(d*i)} + \frac{2*B^2*(\operatorname{Log}[a + b*x] + \operatorname{Log}[(c + d*x)^{-1}] - \operatorname{Log}\left[\frac{e*(a + b*x)}{c + d*x}\right])* \operatorname{PolyLog}[2, \frac{b*(c + d*x)}{b*c - a*d}]}{(d*i)} - \frac{2*B^2*\operatorname{PolyLog}[3, -\left(\frac{d*(a + b*x)}{b*c - a*d}\right)]}{(d*i)} - \frac{2*B^2*\operatorname{PolyLog}[3, \frac{b*(c + d*x)}{b*c - a*d}]}{(d*i)}$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 30

Int[(x_)^(m_), x_Symbol] := Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && NeQ[m, -1]

Rule 2301

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2302

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] := Dist[1/(b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p}, x]

Rule 2317

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol] := Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e, Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]

Rule 2374

Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.))/(x_), x_Symbol] := -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0] && EqQ[d*e, 1]

Rule 2375

Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.))/(x_), x_Symbol] := Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m - 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d, e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]

Rule 2390


```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_.)
)*(x_)^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))])*(b_.)/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.)]*(b_.))/((f_.) + (g_.)*(x_))), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.)]*(b_.))^(p_))/((f_.) + (g_.)
)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])^p/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.)]*(b_.))^(p_.)*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_)^(m_.)]*(g_.))*((k_.) + (l_.)*(x_)^(r_.)), x_Symbol] := Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(e*i - d*j)/e + (j*x)/e]^m), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
```

f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]

Rule 2434

Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.) * ((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b * Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Log[x] * (a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x] * (f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]

Rule 2440

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.) * ((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :> Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f + g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]

Rule 2499

Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r)/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dist[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x), x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r}, x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]

Rule 2500

Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r] - Log[(a + b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x), x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ[b*c - a*d, 0]

Rule 2524

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e

```
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunci
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6688

```
Int[u_, x_Symbol] := With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] := With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\begin{aligned}
\int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{87c + 87dx} dx &= \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2 \log(87c + 87dx)}{87d} - \frac{(2B) \int \frac{(c+dx)\left(-\frac{de(a+bx)}{(c+dx)^2} + \frac{be}{c+dx}\right)\left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{e(a+bx)} dx}{87d} \\
&= \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2 \log(87c + 87dx)}{87d} - \frac{(2B) \int \frac{(c+dx)\left(-\frac{de(a+bx)}{(c+dx)^2} + \frac{be}{c+dx}\right)\left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{a+bx} dx}{87de} \\
&= \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2 \log(87c + 87dx)}{87d} - \frac{(2B) \int \frac{(bc-ad)e\left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right)\right) \log(87c+87dx)}{(a+bx)(c+dx)} dx}{87de} \\
&= \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2 \log(87c + 87dx)}{87d} - \frac{(2B(bc - ad)) \int \frac{\left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right)\right) \log(87c+87dx)}{(a+bx)(c+dx)} dx}{87d} \\
&= \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2 \log(87c + 87dx)}{87d} - \frac{(2B(bc - ad)) \int \frac{d\left(-A-B \log\left(\frac{e(a+bx)}{c+dx}\right)\right) \log(87c+87dx)}{(bc-ad)(c+dx)} dx}{87d} \\
&= \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2 \log(87c + 87dx)}{87d} - \frac{1}{87}(2B) \int \frac{\left(-A - B \log\left(\frac{e(a+bx)}{c+dx}\right)\right) \log(87c+87dx)}{c + dx} dx \\
&= \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2 \log(87c + 87dx)}{87d} - \frac{1}{87}(2B) \int \left(\frac{A \log(87c + 87dx)}{-c - dx} + \frac{B \log\left(\frac{e(a+bx)}{c+dx}\right) \log(87c+87dx)}{-c - dx}\right) dx \\
&= \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2 \log(87c + 87dx)}{87d} - \frac{1}{87}(2AB) \int \frac{\log(87c + 87dx)}{-c - dx} dx - \frac{1}{87} \int \frac{B \log\left(\frac{e(a+bx)}{c+dx}\right) \log(87c+87dx)}{-c - dx} dx \\
&= -\frac{2AB \log\left(-\frac{d(a+bx)}{bc-ad}\right) \log(87c + 87dx)}{87d} + \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2 \log(87c + 87dx)}{87d} \\
&= -\frac{2AB \log\left(-\frac{d(a+bx)}{bc-ad}\right) \log(87c + 87dx)}{87d} + \frac{2B^2 \log\left(-\frac{d(a+bx)}{bc-ad}\right) \left(\log(a + bx) + \log\left(\frac{1}{c+dx}\right)\right) \log(87(c + dx))}{87d} \\
&= -\frac{B^2 \log^2(a + bx) \log(87(c + dx))}{87d} - \frac{2B^2 \log(a + bx) \log\left(\frac{1}{c+dx}\right) \log(87(c + dx))}{87d} + \\
&= -\frac{B^2 \log^2(a + bx) \log(87(c + dx))}{87d} - \frac{2B^2 \log(a + bx) \log\left(\frac{1}{c+dx}\right) \log(87(c + dx))}{87d} +
\end{aligned}$$

Mathematica [A] time = 0.26, size = 251, normalized size = 1.98

$$2AB \log(c + dx) \log\left(\frac{e(a+bx)}{c+dx}\right) + 2AB \operatorname{Li}_2\left(\frac{d(a+bx)}{ad-bc}\right) - 2AB \log\left(\frac{a}{b} + x\right) \log(c + dx) + 2AB \log\left(\frac{a}{b} + x\right) \log\left(\frac{b(c+dx)}{bc-ad}\right)$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x]))^2/(c*i + d*i*x),x]

[Out] $(- (A*B*\operatorname{Log}[c/d + x]^2) + A^2*\operatorname{Log}[c + d*x] - 2*A*B*\operatorname{Log}[a/b + x]*\operatorname{Log}[c + d*x] + 2*A*B*\operatorname{Log}[c/d + x]*\operatorname{Log}[c + d*x] + 2*A*B*\operatorname{Log}[(e*(a + b*x))/(c + d*x)]*\operatorname{Log}[c + d*x] + 2*A*B*\operatorname{Log}[a/b + x]*\operatorname{Log}[(b*(c + d*x))/(b*c - a*d)] - B^2*\operatorname{Log}[(e*(a + b*x))/(c + d*x)]^2*\operatorname{Log}[(b*c - a*d)/(b*c + b*d*x)] + 2*A*B*\operatorname{PolyLog}[2, (d*(a + b*x))/(- (b*c) + a*d)] - 2*B^2*\operatorname{Log}[(e*(a + b*x))/(c + d*x)]*\operatorname{PolyLog}[2, (d*(a + b*x))/(b*(c + d*x))] + 2*B^2*\operatorname{PolyLog}[3, (d*(a + b*x))/(b*(c + d*x))])/(d*i)$

fricas [F] time = 1.03, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{B^2 \log\left(\frac{bex+ae}{dx+c}\right)^2 + 2AB \log\left(\frac{bex+ae}{dx+c}\right) + A^2}{dix + ci}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i),x, algorithm="fricas")

[Out] integral((B^2*log((b*e*x + a*e)/(d*x + c))^2 + 2*A*B*log((b*e*x + a*e)/(d*x + c)) + A^2)/(d*i*x + c*i), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i),x, algorithm="giac")

[Out] Timed out

maple [B] time = 0.06, size = 888, normalized size = 6.99

$$\frac{B^2 a \ln\left(-\frac{\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)^d}{be} + 1\right) \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)^2}{(ad-bc)i} + \frac{B^2 bc \ln\left(-\frac{\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)^d}{be} + 1\right) \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)^2}{(ad-bc)di} - \frac{2ABa \ln\left(-\frac{-be+\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)^d}{be}\right)}{(ad-bc)i}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((B*ln((b*x+a)/(d*x+c)*e)+A)^2/(d*i*x+c*i),x)`

[Out]
$$\begin{aligned} & -1/i/(a*d-b*c)*A^2*\ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a+1/d/i/(a*d-b*c) \\ & *A^2*\ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*b*c-1/i/(a*d-b*c)*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*\ln(-(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/b*d/e+1)*a+1 \\ & /d/i/(a*d-b*c)*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*\ln(-(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/b*d/e+1)*b*c-2/i/(a*d-b*c)*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)* \\ & \text{polylog}(2,(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/b*d/e)*a+2/d/i/(a*d-b*c)*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)* \\ & \text{polylog}(2,(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/b*d/e)*b*c+2/i/(a*d-b*c)*B^2*\text{polylog}(3,(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/b*d/e)*a-2/d/i/ \\ & (a*d-b*c)*B^2*\text{polylog}(3,(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/b*d/e)*b*c-2/i/(a*d-b*c)*A*B*\text{dilog}(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a+2/d/i/(a*d-b*c) \\ & *A*B*\text{dilog}(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*b*c-2/i/(a*d-b*c)*A*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*\ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a+2/d/i/(a*d-b*c)*A*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*\ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*b*c \end{aligned}$$

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{B^2 \log(dx + c)^3}{3di} + \frac{A^2 \log(dix + ci)}{di} - \int \frac{B^2 \log(bx + a)^2 + B^2 \log(e)^2 + 2AB \log(e) + 2(B^2 \log(e) + AB) \log(bx + a)}{dix + ci} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i),x, algorithm="maxima")`

[Out]
$$\begin{aligned} & 1/3*B^2*\log(d*x + c)^3/(d*i) + A^2*\log(d*i*x + c*i)/(d*i) - \text{integrate}(- (B^2 \\ & * \log(b*x + a)^2 + B^2*\log(e)^2 + 2*A*B*\log(e) + 2*(B^2*\log(e) + A*B)*\log(b*x \\ & + a) - 2*(B^2*\log(b*x + a) + B^2*\log(e) + A*B)*\log(d*x + c))/(d*i*x + c*i) \\ &), x) \end{aligned}$$

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(A + B \ln \left(\frac{e^{(a+bx)}}{c+dx} \right) \right)^2}{ci + dix} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((A + B*log((e*(a + b*x))/(c + d*x)))^2/(c*i + d*i*x),x)`

[Out] `int((A + B*log((e*(a + b*x))/(c + d*x)))^2/(c*i + d*i*x), x)`

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{A^2}{c+dx} dx + \int \frac{B^2 \log\left(\frac{ae}{c+dx} + \frac{bex}{c+dx}\right)^2}{c+dx} dx + \int \frac{2AB \log\left(\frac{ae}{c+dx} + \frac{bex}{c+dx}\right)}{c+dx} dx}{i}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))**2/(d*i*x+c*i),x)

[Out] (Integral(A**2/(c + d*x), x) + Integral(B**2*log(a*e/(c + d*x) + b*e*x/(c + d*x))**2/(c + d*x), x) + Integral(2*A*B*log(a*e/(c + d*x) + b*e*x/(c + d*x)))/(c + d*x), x))/i

$$3.88 \quad \int \frac{\left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)(ci+dx)} dx$$

Optimal. Leaf size=44

$$\frac{\left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)^3}{3Bgi(bc-ad)}$$

[Out] 1/3*(A+B*ln(e*(b*x+a)/(d*x+c)))^3/B/(-a*d+b*c)/g/i

Rubi [C] time = 5.53, antiderivative size = 1163, normalized size of antiderivative = 26.43, number of steps used = 61, number of rules used = 29, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}} = 0.690$, Rules used = {2528, 2524, 12, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

$$-\frac{B^2 \log^3(c+dx)}{3(bc-ad)gi} + \frac{B^2 \log(a+bx) \log^2(c+dx)}{(bc-ad)gi} - \frac{B^2 \log\left(\frac{e(a+bx)}{c+dx}\right) \log^2(c+dx)}{(bc-ad)gi} - \frac{AB \log^2(c+dx)}{(bc-ad)gi} + \frac{B^2 \log^2(a+bx)}{(bc-ad)gi}$$

Antiderivative was successfully verified.

[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x)])^2/((a*g + b*g*x)*(c*i + d*i*x)),x]

[Out] -((A*B*Log[a + b*x]^2)/((b*c - a*d)*g*i)) + (B^2*Log[a + b*x]*Log[(c + d*x)^(-1)]^2)/((b*c - a*d)*g*i) - (B^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[(c + d*x)^(-1)]^2)/((b*c - a*d)*g*i) - (B^2*Log[-((b*c - a*d)/(d*(a + b*x))]*Log[(e*(a + b*x))/(c + d*x)]^2)/((b*c - a*d)*g*i) - (B^2*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)]^2)/((b*c - a*d)*g*i) + (Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/((b*c - a*d)*g*i) + (B^2*Log[a + b*x]^2*Log[c + d*x])/((b*c - a*d)*g*i) + (2*A*B*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/((b*c - a*d)*g*i) + (2*B^2*Log[a + b*x]*Log[(c + d*x)^(-1)]*Log[c + d*x])/((b*c - a*d)*g*i) - (2*B^2*Log[-((d*(a + b*x))/(b*c - a*d))]*(Log[a + b*x] + Log[(c + d*x)^(-1)] - Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/((b*c - a*d)*g*i) - ((A + B*Log[(e*(a + b*x))/(c + d*x)])^2*Log[c + d*x])/((b*c - a*d)*g*i) - (A*B*Log[c + d*x]^2)/((b*c - a*d)*g*i) + (B^2*Log[a + b*x]*Log[c + d*x]^2)/((b*c - a*d)*g*i) - (B^2*Log[c + d*x]^3)/(3*(b*c - a*d)*g*i) + (2*A*B*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)]/((b*c - a*d)*g*i) - (B^2*Log[a + b*x]^2*Log[(b*(c + d*x))/(b*c - a*d)]/((b*c - a*d)*g*i) + (2*A*B*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))]/((b*c - a*d)*g*i) - (2*B^2*Log[a + b*x]*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))]/((b*c - a*d)*g*i) + (2*A*B*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]/((b*c - a*d)*g*i) + (2*B^2*Log[(c + d*x)^(-1)]*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]/((b*c - a*d)*g*i) - (2*

$$B^2(\text{Log}[a + b*x] + \text{Log}[(c + d*x)^{-1}] - \text{Log}[(e*(a + b*x))/(c + d*x)]) * \text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)] / ((b*c - a*d)*g^i) + (2*B^2*\text{Log}[(e*(a + b*x))/(c + d*x)] * \text{PolyLog}[2, 1 + (b*c - a*d)/(d*(a + b*x))]) / ((b*c - a*d)*g^i) + (2*B^2*\text{PolyLog}[3, -((d*(a + b*x))/(b*c - a*d))] / ((b*c - a*d)*g^i) + (2*B^2*\text{PolyLog}[3, (b*(c + d*x))/(b*c - a*d)] / ((b*c - a*d)*g^i) + (2*B^2*\text{PolyLog}[3, 1 + (b*c - a*d)/(d*(a + b*x))] / ((b*c - a*d)*g^i)$$

Rule 12

$$\text{Int}[(a_*)*(u_), x_Symbol] \text{ :> } \text{Dist}[a, \text{Int}[u, x], x] \text{ /; } \text{FreeQ}[a, x] \ \&\& \ !\text{Match}[\text{Q}[u, (b_*)*(v_)] \text{ /; } \text{FreeQ}[b, x]]$$

Rule 30

$$\text{Int}[(x_)^{(m_.)}, x_Symbol] \text{ :> } \text{Simp}[x^{(m + 1)}/(m + 1), x] \text{ /; } \text{FreeQ}[m, x] \ \&\& \ \text{NeQ}[m, -1]$$

Rule 2301

$$\text{Int}[(a_.) + \text{Log}[(c_.)*(x_)^{(n_.)}]*(b_.)]/(x_), x_Symbol] \text{ :> } \text{Simp}[(a + b*\text{Log}[c*x^n])^2/(2*b*n), x] \text{ /; } \text{FreeQ}[\{a, b, c, n\}, x]$$

Rule 2302

$$\text{Int}[(a_.) + \text{Log}[(c_.)*(x_)^{(n_.)}]*(b_.)]^{(p_.)}/(x_), x_Symbol] \text{ :> } \text{Dist}[1/(b*n), \text{Subst}[\text{Int}[x^p, x], x, a + b*\text{Log}[c*x^n]], x] \text{ /; } \text{FreeQ}[\{a, b, c, n, p\}, x]$$

Rule 2317

$$\text{Int}[(a_.) + \text{Log}[(c_.)*(x_)^{(n_.)}]*(b_.)]^{(p_.)}/((d_.) + (e_.)*(x_)), x_Symbol] \text{ :> } \text{Simp}[(\text{Log}[1 + (e*x)/d]*(a + b*\text{Log}[c*x^n])^p)/e, x] - \text{Dist}[(b*n*p)/e, \text{Int}[(\text{Log}[1 + (e*x)/d]*(a + b*\text{Log}[c*x^n])^{(p - 1)})/x, x], x] \text{ /; } \text{FreeQ}[\{a, b, c, d, e, n\}, x] \ \&\& \ \text{IGtQ}[p, 0]$$

Rule 2344

$$\text{Int}[(a_.) + \text{Log}[(c_.)*(x_)^{(n_.)}]*(b_.)]^{(p_.)}/((x_)*((d_.) + (e_.)*(x_))), x_Symbol] \text{ :> } \text{Dist}[1/d, \text{Int}[(a + b*\text{Log}[c*x^n])^p/x, x], x] - \text{Dist}[e/d, \text{Int}[(a + b*\text{Log}[c*x^n])^p/(d + e*x), x], x] \text{ /; } \text{FreeQ}[\{a, b, c, d, e, n\}, x] \ \&\& \ \text{IGtQ}[p, 0]$$

Rule 2374

$$\text{Int}[(\text{Log}[(d_.)*((e_.) + (f_.)*(x_)^{(m_.)})])*((a_.) + \text{Log}[(c_.)*(x_)^{(n_.)}]*(b_.))^{(p_.)}/(x_), x_Symbol] \text{ :> } -\text{Simp}[(\text{PolyLog}[2, -(d*f*x^m)]*(a + b*\text{Log}[c*x$$

```

^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]

```

Rule 2375

```

Int[(Log[(d_)*((e_) + (f_)*(x_)^(m_))^(r_)]*(a_) + Log[(c_)*(x_)^(n_
)]*(b_))^(p_)]/(x_), x_Symbol] := Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]

```

Rule 2390

```

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_)^(n_))]*(b_))^(p_)*((f_) + (g_
)*(x_)^(q_)), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]

```

Rule 2391

```

Int[Log[(c_)*((d_) + (e_)*(x_)^(n_))]/(x_), x_Symbol] := -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

```

Rule 2393

```

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))]*(b_))/((f_) + (g_)*(x_)), x_
Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]

```

Rule 2394

```

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_)^(n_))]*(b_))/((f_) + (g_)*(x_
)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

```

Rule 2396

```

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_)^(n_))]*(b_))^(p_)/((f_) + (g_
)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d

```

, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]

Rule 2411

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] := Dist[1/e, Subst[Int[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]

Rule 2418

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]

Rule 2433

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] := Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(e*i - d*j)/e + (j*x)/e]^m), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]

Rule 2434

Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] := Simp[Log[x]*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Log[x]*(a + b*Log[c*(d + e*x)^n])]/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x]*(f + g*Log[h*(i + j*x)^m])]/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]

Rule 2440

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] := Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f + g*Log[h*(-((j*k - i*l)/l) + (j*x)/l]^m), x], x, k + l*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]

Rule 2488

```

Int[Log[(e._)*((f._)*((a._) + (b._)*(x._))^(p._))*((c._) + (d._)*(x._))^(q._)]
^(r._)]^(s._)/((g._) + (h._)*(x._)), x_Symbol] := -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q]^r]^s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]

```

Rule 2499

```

Int[(Log[(e._)*((f._)*((a._) + (b._)*(x._))^(p._))*((c._) + (d._)*(x._))^(q._)]
^(r._)]*(s._) + Log[(i._)*((g._) + (h._)*(x._))^(n._)]*(t._))^(m._))/((j._)
+ (k._)*(x._)), x_Symbol] := Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q]^r])/((k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]

```

Rule 2500

```

Int[(Log[(e._)*((f._)*((a._) + (b._)*(x._))^(p._))*((c._) + (d._)*(x._))^(q._)]
^(r._)]*(s._) + Log[(i._)*((g._) + (h._)*(x._))^(n._)]*(t._))/((j._) + (k
._)*(x._)), x_Symbol] := Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]

```

Rule 2506

```

Int[Log[v_*Log[(e._)*((f._)*((a._) + (b._)*(x._))^(p._))*((c._) + (d._)*(x._))
^(q._)]^(r._)]^(s._)*(u._), x_Symbol] := With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]

```

Rule 2507

```

Int[Log[(e._)*((f._)*((a._) + (b._)*(x._))^(p._))*((c._) + (d._)*(x._))^(q._)]
^(r._)]^(s._)*Log[(i._)*((j._)*((g._) + (h._)*(x._))^(t._))^(u._)]*(v._), x_S
ymbol] := With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +

```

```

h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1))/(p*r*(s + 1)*(b*c
- a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q)^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
EqQ[p + q, 0] && NeQ[s, -1]

```

Rule 2524

```

Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFX^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFX^p])^(n - 1)*D[RFX, x])/RFX, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFX, x] && IGtQ[n, 0]

```

Rule 2528

```

Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*RFX^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFX, x] && RationalFunci
onQ[RGx, x] && IGtQ[n, 0]

```

Rule 6589

```

Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]

```

Rule 6610

```

Int[(u_)*PolyLog[n_, v_], x_Symbol] := With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /; !FalseQ[w]] /; FreeQ[n, x]

```

Rule 6688

```

Int[u_, x_Symbol] := With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]

```

Rule 6742

```

Int[u_, x_Symbol] := With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]

```

Rubi steps

$$\begin{aligned}
\int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(88c + 88dx)(ag + bgx)} dx &= \int \left(\frac{b \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{88(bc - ad)g(a + bx)} - \frac{d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{88(bc - ad)g(c + dx)} \right) dx \\
&= \frac{b \int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{a+bx} dx}{88(bc - ad)g} - \frac{d \int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{c+dx} dx}{88(bc - ad)g} \\
&= \frac{\log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{88(bc - ad)g} - \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2 \log(c + dx)}{88(bc - ad)g} - \frac{B \int \frac{(c}{c+dx}}{c+dx} dx}{88(bc - ad)g} \\
&= \frac{\log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{88(bc - ad)g} - \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2 \log(c + dx)}{88(bc - ad)g} - \frac{B \int \frac{(c}{c+dx}}{c+dx} dx}{88(bc - ad)g} \\
&= \frac{\log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{88(bc - ad)g} - \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2 \log(c + dx)}{88(bc - ad)g} - \frac{B \int \frac{(b}{c+dx}}{c+dx} dx}{88(bc - ad)g} \\
&= \frac{\log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{88(bc - ad)g} - \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2 \log(c + dx)}{88(bc - ad)g} - \frac{B \int \frac{(lo}{c+dx}}{c+dx} dx}{88(bc - ad)g} \\
&= \frac{\log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{88(bc - ad)g} - \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2 \log(c + dx)}{88(bc - ad)g} - \frac{B \int \left(\frac{c}{c+dx}\right)}{88(bc - ad)g} \\
&= \frac{\log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{88(bc - ad)g} - \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2 \log(c + dx)}{88(bc - ad)g} - \frac{(AB)}{88(bc - ad)g} \\
&= -\frac{B^2 \log(a + bx) \log^2\left(\frac{e(a+bx)}{c+dx}\right)}{88(bc - ad)g} + \frac{\log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{88(bc - ad)g} - \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2 \log(c + dx)}{88(bc - ad)g} \\
&= -\frac{B^2 \log\left(-\frac{bc-ad}{d(a+bx)}\right) \log^2\left(\frac{e(a+bx)}{c+dx}\right)}{88(bc - ad)g} - \frac{B^2 \log(a + bx) \log^2\left(\frac{e(a+bx)}{c+dx}\right)}{88(bc - ad)g} + \frac{\log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{88(bc - ad)g} \\
&= -\frac{AB \log^2(a + bx)}{88(bc - ad)g} - \frac{B^2 \log\left(-\frac{bc-ad}{d(a+bx)}\right) \log^2\left(\frac{e(a+bx)}{c+dx}\right)}{88(bc - ad)g} - \frac{B^2 \log(a + bx) \log^2\left(\frac{e(a+bx)}{c+dx}\right)}{88(bc - ad)g} \\
&= -\frac{AB \log^2(a + bx)}{88(bc - ad)g} - \frac{B^2 \log\left(-\frac{bc-ad}{d(a+bx)}\right) \log^2\left(\frac{e(a+bx)}{c+dx}\right)}{88(bc - ad)g} - \frac{B^2 \log(a + bx) \log^2\left(\frac{e(a+bx)}{c+dx}\right)}{88(bc - ad)g}
\end{aligned}$$

Mathematica [A] time = 0.37, size = 79, normalized size = 1.80

$$\frac{3A^2 \log\left(\frac{e(a+bx)}{c+dx}\right) + 3AB \log^2\left(\frac{e(a+bx)}{c+dx}\right) + B^2 \log^3\left(\frac{e(a+bx)}{c+dx}\right)}{3bcgi - 3adgi}$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x)])^2/((a*g + b*g*x)*(c*i + d*i*x)),x]

[Out] (3*A^2*Log[(e*(a + b*x))/(c + d*x)] + 3*A*B*Log[(e*(a + b*x))/(c + d*x)]^2 + B^2*Log[(e*(a + b*x))/(c + d*x)]^3)/(3*b*c*g*i - 3*a*d*g*i)

fricas [B] time = 0.88, size = 87, normalized size = 1.98

$$\frac{B^2 \log\left(\frac{bex+ae}{dx+c}\right)^3 + 3AB \log\left(\frac{bex+ae}{dx+c}\right)^2 + 3A^2 \log\left(\frac{bex+ae}{dx+c}\right)}{3(bc - ad)gi}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)/(d*i*x+c*i),x, algorithm="fricas")

[Out] 1/3*(B^2*log((b*e*x + a*e)/(d*x + c))^3 + 3*A*B*log((b*e*x + a*e)/(d*x + c))^2 + 3*A^2*log((b*e*x + a*e)/(d*x + c)))/((b*c - a*d)*g*i)

giac [B] time = 0.68, size = 145, normalized size = 3.30

$$\frac{\left(B^2 i e \log\left(\frac{bxe+ae}{dx+c}\right)^3 + 3AB i e \log\left(\frac{bxe+ae}{dx+c}\right)^2 + 3A^2 i e \log\left(\frac{bxe+ae}{dx+c}\right)\right) \left(\frac{bc}{(bce-ade)(bc-ad)} - \frac{ad}{(bce-ade)(bc-ad)}\right)}{3g}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)/(d*i*x+c*i),x, algorithm="giac")

[Out] -1/3*(B^2*i*e*log((b*x*e + a*e)/(d*x + c))^3 + 3*A*B*i*e*log((b*x*e + a*e)/(d*x + c))^2 + 3*A^2*i*e*log((b*x*e + a*e)/(d*x + c)))*(b*c/((b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))/g

maple [B] time = 0.05, size = 312, normalized size = 7.09

$$\frac{B^2 ad \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)^3}{3(ad-bc)^2 gi} + \frac{B^2 bc \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)^3}{3(ad-bc)^2 gi} - \frac{ABad \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)^2}{(ad-bc)^2 gi} + \frac{ABbc \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)^2}{(ad-bc)^2 gi} - \frac{A^2 ad \ln\left(\frac{be}{d} + \frac{(ad-bc)e}{(dx+c)d}\right)}{(ad-bc)^2 gi}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)/(d*i*x+c*i),x)`

[Out]
$$-d/i/(a*d-b*c)^2/g*A^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+1/i/(a*d-b*c)^2/g*A^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*c-d/i/(a*d-b*c)^2/g*A*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a+1/i/(a*d-b*c)^2/g*A*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b*c-1/3*d/i/(a*d-b*c)^2/g*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^3*a+1/3/i/(a*d-b*c)^2/g*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^3*b*c$$

maxima [B] time = 1.35, size = 397, normalized size = 9.02

$$B^2 \left(\frac{\log(bx+a)}{(bc-ad)gi} - \frac{\log(dx+c)}{(bc-ad)gi} \right) \log \left(\frac{bex}{dx+c} + \frac{ae}{dx+c} \right)^2 + 2AB \left(\frac{\log(bx+a)}{(bc-ad)gi} - \frac{\log(dx+c)}{(bc-ad)gi} \right) \log \left(\frac{bex}{dx+c} + \frac{ae}{dx+c} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)/(d*i*x+c*i),x, algorithm="maxima")`

[Out]
$$B^2*(\log(b*x+a)/((b*c-a*d)*g*i) - \log(d*x+c)/((b*c-a*d)*g*i))*\log(b*e*x/(d*x+c) + a*e/(d*x+c))^2 + 2*A*B*(\log(b*x+a)/((b*c-a*d)*g*i) - \log(d*x+c)/((b*c-a*d)*g*i))*\log(b*e*x/(d*x+c) + a*e/(d*x+c)) - 1/3*B^2*(3*(\log(b*x+a)^2 - 2*\log(b*x+a)*\log(d*x+c) + \log(d*x+c)^2)*\log(b*e*x/(d*x+c) + a*e/(d*x+c))/(b*c*g*i - a*d*g*i) - (\log(b*x+a)^3 - 3*\log(b*x+a)^2*\log(d*x+c) + 3*\log(b*x+a)*\log(d*x+c)^2 - \log(d*x+c)^3)/(b*c*g*i - a*d*g*i) + A^2*(\log(b*x+a)/((b*c-a*d)*g*i) - \log(d*x+c)/((b*c-a*d)*g*i) - (\log(b*x+a)^2 - 2*\log(b*x+a)*\log(d*x+c) + \log(d*x+c)^2)*A*B/(b*c*g*i - a*d*g*i)$$

mupad [B] time = 5.76, size = 96, normalized size = 2.18

$$-\frac{-6i \operatorname{atan}\left(\frac{ad1i+bc1i+bdx2i}{ad-bc}\right) A^2 + 3AB \ln\left(\frac{e(a+bx)}{c+dx}\right)^2 + B^2 \ln\left(\frac{e(a+bx)}{c+dx}\right)^3}{3gi(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((A + B*log((e*(a + b*x))/(c + d*x)))^2/((a*g + b*g*x)*(c*i + d*i*x)),x)`

[Out]
$$-(B^2*\log((e*(a + b*x))/(c + d*x))^3 - A^2*\operatorname{atan}((a*d*1i + b*c*1i + b*d*x*2i)/(a*d - b*c))*6i + 3*A*B*\log((e*(a + b*x))/(c + d*x))^2)/(3*g*i*(a*d - b*c))$$

sympy [B] time = 1.63, size = 206, normalized size = 4.68

$$A^2 \left(\frac{\log\left(x + \frac{-\frac{a^2d^2}{ad-bc} + \frac{2abcd}{ad-bc} + ad - \frac{b^2c^2}{ad-bc} + bc}{2bd}\right)}{gi(ad-bc)} - \frac{\log\left(x + \frac{\frac{a^2d^2}{ad-bc} - \frac{2abcd}{ad-bc} + ad + \frac{b^2c^2}{ad-bc} + bc}{2bd}\right)}{gi(ad-bc)} \right) - \frac{AB \log\left(\frac{e(a+bx)}{c+dx}\right)^2}{adgi - bcgi} - \frac{B^2 \log\left(\frac{e(a+bx)}{c+dx}\right)^3}{3adgi - 3bcgi}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)/(d*i*x+c*i),x)

[Out] A**2*(log(x + (-a**2*d**2/(a*d - b*c) + 2*a*b*c*d/(a*d - b*c) + a*d - b**2*c**2/(a*d - b*c) + b*c)/(2*b*d)))/(g*i*(a*d - b*c)) - log(x + (a**2*d**2/(a*d - b*c) - 2*a*b*c*d/(a*d - b*c) + a*d + b**2*c**2/(a*d - b*c) + b*c)/(2*b*d)))/(g*i*(a*d - b*c)) - A*B*log(e*(a + b*x)/(c + d*x))**2/(a*d*g*i - b*c*g*i) - B**2*log(e*(a + b*x)/(c + d*x))**3/(3*a*d*g*i - 3*b*c*g*i)

$$\begin{aligned}
& + d*x)) * \text{Log}[c + d*x] / ((b*c - a*d)^{2*g^{2*i}} + (d*(A + B*\text{Log}[(e*(a + b*x)) \\
& / (c + d*x)]^{2*\text{Log}[c + d*x]}) / ((b*c - a*d)^{2*g^{2*i}} + (A*B*d*\text{Log}[c + d*x]^2) \\
& / ((b*c - a*d)^{2*g^{2*i}} + (B^{2*d}*\text{Log}[c + d*x]^2) / ((b*c - a*d)^{2*g^{2*i}} - (B^{2*d}*\text{Log}[a + b*x] * \text{Log}[c + d*x]^2) / ((b*c - a*d)^{2*g^{2*i}} + (B^{2*d}*\text{Log}[(e*(a + \\
& b*x)) / (c + d*x)] * \text{Log}[c + d*x]^2) / ((b*c - a*d)^{2*g^{2*i}} + (B^{2*d}*\text{Log}[c + d*x] \\
& ^3) / (3*(b*c - a*d)^{2*g^{2*i}} - (2*A*B*d*\text{Log}[a + b*x] * \text{Log}[(b*(c + d*x)) / (b*c - a*d)]) / ((b*c - a*d)^{2*g^{2*i}} - (2*B^{2*d}*\text{Log}[a + b*x] * \text{Log}[(b*(c + d*x)) / \\
& (b*c - a*d)]) / ((b*c - a*d)^{2*g^{2*i}} + (B^{2*d}*\text{Log}[a + b*x]^2 * \text{Log}[(b*(c + d*x)) / (b*c - a*d)]) / ((b*c - a*d)^{2*g^{2*i}} - (2*A*B*d*\text{PolyLog}[2, -((d*(a + b*x)) \\
&) / (b*c - a*d)]) / ((b*c - a*d)^{2*g^{2*i}} - (2*B^{2*d}*\text{PolyLog}[2, -((d*(a + b*x)) \\
&) / (b*c - a*d)]) / ((b*c - a*d)^{2*g^{2*i}} + (2*B^{2*d}*\text{Log}[a + b*x] * \text{PolyLog}[2, - \\
& ((d*(a + b*x)) / (b*c - a*d)]) / ((b*c - a*d)^{2*g^{2*i}} - (2*A*B*d*\text{PolyLog}[2, (\\
& b*(c + d*x)) / (b*c - a*d)]) / ((b*c - a*d)^{2*g^{2*i}} - (2*B^{2*d}*\text{PolyLog}[2, (b*(\\
& c + d*x)) / (b*c - a*d)]) / ((b*c - a*d)^{2*g^{2*i}} - (2*B^{2*d}*\text{Log}[(c + d*x)^{-1}] \\
&] * \text{PolyLog}[2, (b*(c + d*x)) / (b*c - a*d)]) / ((b*c - a*d)^{2*g^{2*i}} + (2*B^{2*d}*(\\
& \text{Log}[a + b*x] + \text{Log}[(c + d*x)^{-1}] - \text{Log}[(e*(a + b*x)) / (c + d*x)]) * \text{PolyLog}[\\
& 2, (b*(c + d*x)) / (b*c - a*d)]) / ((b*c - a*d)^{2*g^{2*i}} - (2*B^{2*d}*\text{Log}[(e*(a + \\
& b*x)) / (c + d*x)] * \text{PolyLog}[2, 1 + (b*c - a*d) / (d*(a + b*x))]) / ((b*c - a*d)^{2 \\
& *g^{2*i}} - (2*B^{2*d}*\text{PolyLog}[3, -((d*(a + b*x)) / (b*c - a*d)]) / ((b*c - a*d)^{2 \\
& *g^{2*i}} - (2*B^{2*d}*\text{PolyLog}[3, (b*(c + d*x)) / (b*c - a*d)]) / ((b*c - a*d)^{2*g^{2 \\
& *i}} - (2*B^{2*d}*\text{PolyLog}[3, 1 + (b*c - a*d) / (d*(a + b*x))]) / ((b*c - a*d)^{2*g^{2 \\
& *i}})
\end{aligned}$$

Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 30

```
Int[(x_)^(m_), x_Symbol] := Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && NeQ[m, -1]
```

Rule 44

```
Int[((a_) + (b_)*(x_)^(m_))*((c_) + (d_)*(x_)^(n_)), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] := Dist[1/(b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p}, x]

Rule 2317

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol] := Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e, Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]

Rule 2344

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))), x_Symbol] := Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]

Rule 2374

Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*(a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] := -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0] && EqQ[d*e, 1]

Rule 2375

Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*(a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] := Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m - 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d, e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2396

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])^p/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]

Rule 2411

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*((f_.) + (g_.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] := Dist[1/e, Subst[Int[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]

Rule 2418

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]

Rule 2433

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_)^(m_.))]*(g_.))*((k_.) + (l_.)*(x_)^(r_.)), x_Symbol] := Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(

$(e^i - d^j)/e + (j*x)/e^m$), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]

Rule 2434

Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Log[x]*(a + b*Log[c*(d + e*x)^n])]/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x]*(f + g*Log[h*(i + j*x)^m])]/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]

Rule 2440

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :> Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f + g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]

Rule 2488

Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)]^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] :> -Simp[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/h, x] + Dist[(p*r*s*(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1)/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c, d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ[b*g - a*h, 0] && IGtQ[s, 0]

Rule 2499

Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)]^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dist[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x), x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r}, x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]

Rule 2500

Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)]^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k

```

_.)*(x_)), x_Symbol] := Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a + b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x), x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ[b*c - a*d, 0]

```

Rule 2506

```

Int[Log[v]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))^((r_.))^((s_.)*(u_)), x_Symbol] := With[{g = Simplify[(v - 1)*(c + d*x)/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]

```

Rule 2507

```

Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))^((r_.))^((s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^((u_.))*(v_)), x_Symbol] := With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g + h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1))/(p*r*(s + 1)*(b*c - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && NeQ[s, -1]

```

Rule 2524

```

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^((n_.))/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]

```

Rule 2525

```

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^((n_.))*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]

```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] := With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /; !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] := With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] := With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\begin{aligned}
\int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(89c + 89dx)(ag + bgx)^2} dx &= \int \left(\frac{b\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{89(bc - ad)g^2(a + bx)^2} - \frac{bd\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{89(bc - ad)^2g^2(a + bx)} + \frac{d^2\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{89(bc - ad)^2g^2(c + dx)} \right) dx \\
&= -\frac{(bd) \int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{a+bx} dx}{89(bc - ad)^2g^2} + \frac{d^2 \int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{c+dx} dx}{89(bc - ad)^2g^2} + \frac{b \int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(a+bx)^2} dx}{89(bc - ad)^2g^2} \\
&= -\frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{89(bc - ad)g^2(a + bx)} - \frac{d \log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{89(bc - ad)^2g^2} + \frac{d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{89(bc - ad)^2g^2} \\
&= -\frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{89(bc - ad)g^2(a + bx)} - \frac{d \log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{89(bc - ad)^2g^2} + \frac{d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{89(bc - ad)^2g^2} \\
&= -\frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{89(bc - ad)g^2(a + bx)} - \frac{d \log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{89(bc - ad)^2g^2} + \frac{d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{89(bc - ad)^2g^2} \\
&= -\frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{89(bc - ad)g^2(a + bx)} - \frac{d \log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{89(bc - ad)^2g^2} + \frac{d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{89(bc - ad)^2g^2} \\
&= -\frac{2B\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{89(bc - ad)g^2(a + bx)} - \frac{2Bd \log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{89(bc - ad)^2g^2} - \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{89(bc - ad)^2g^2} \\
&= -\frac{2B\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{89(bc - ad)g^2(a + bx)} - \frac{2Bd \log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{89(bc - ad)^2g^2} - \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{89(bc - ad)^2g^2} \\
&= \frac{B^2d \log(a + bx) \log^2\left(\frac{e(a+bx)}{c+dx}\right)}{89(bc - ad)^2g^2} - \frac{2B\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{89(bc - ad)g^2(a + bx)} - \frac{2Bd \log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{89(bc - ad)^2g^2} \\
&= -\frac{2B^2}{89(bc - ad)g^2(a + bx)} - \frac{2B^2d \log(a + bx)}{89(bc - ad)^2g^2} + \frac{B^2d \log\left(-\frac{bc-ad}{d(a+bx)}\right) \log^2\left(\frac{e(a+bx)}{c+dx}\right)}{89(bc - ad)^2g^2} \\
&= -\frac{2B^2}{89(bc - ad)g^2(a + bx)} - \frac{2B^2d \log(a + bx)}{89(bc - ad)^2g^2} + \frac{ABd \log^2(a + bx)}{89(bc - ad)^2g^2} + \frac{B^2d \log\left(-\frac{bc-ad}{d(a+bx)}\right) \log^2\left(\frac{e(a+bx)}{c+dx}\right)}{89(bc - ad)^2g^2} \\
&= -\frac{2B^2}{89(bc - ad)g^2(a + bx)} - \frac{2B^2d \log(a + bx)}{89(bc - ad)^2g^2} + \frac{ABd \log^2(a + bx)}{89(bc - ad)^2g^2} + \frac{B^2d \log^2\left(-\frac{bc-ad}{d(a+bx)}\right) \log^2\left(\frac{e(a+bx)}{c+dx}\right)}{89(bc - ad)^2g^2}
\end{aligned}$$

Mathematica [A] time = 0.67, size = 186, normalized size = 1.02

$$\frac{3(A^2 + 2AB + 2B^2)(-d(a + bx)\log(c + dx) - ad + bc) + 3d(A^2 + 2AB + 2B^2)(a + bx)\log(a + bx) + 3B(aAd - 3g^2i(a + bx)(bc$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x]))^2/((a*g + b*g*x)^2*(c*i + d*i*x)),x]

[Out] -1/3*(3*(A^2 + 2*A*B + 2*B^2)*d*(a + b*x)*Log[a + b*x] + 6*B*(A + B)*(b*c - a*d)*Log[(e*(a + b*x))/(c + d*x)] + 3*B*(a*A*d + A*b*d*x + b*B*(c + d*x))*Log[(e*(a + b*x))/(c + d*x)]^2 + B^2*d*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)]^3 + 3*(A^2 + 2*A*B + 2*B^2)*(b*c - a*d - d*(a + b*x)*Log[c + d*x]))/((b*c - a*d)^2*g^2*i*(a + b*x))

fricas [A] time = 0.95, size = 231, normalized size = 1.26

$$\frac{(B^2bdx + B^2ad)\log\left(\frac{bex+ae}{dx+c}\right)^3 + 3(A^2 + 2AB + 2B^2)bc - 3(A^2 + 2AB + 2B^2)ad + 3(B^2bc + ABad + (AB + B^2)d)}{3((b^3c^2 - 2ab^2cd + a^2bd^2)g^2ix + (ab^2c^2 - 2a^2b^2cd + a^3d^2)g^2i)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^2/(d*i*x+c*i),x, algorithm="fricas")

[Out] -1/3*((B^2*b*d*x + B^2*a*d)*log((b*e*x + a*e)/(d*x + c))^3 + 3*(A^2 + 2*A*B + 2*B^2)*b*c - 3*(A^2 + 2*A*B + 2*B^2)*a*d + 3*(B^2*b*c + A*B*a*d + (A*B + B^2)*b*d*x)*log((b*e*x + a*e)/(d*x + c))^2 + 3*(A^2*a*d + (A^2 + 2*A*B + 2*B^2)*b*d*x + 2*(A*B + B^2)*b*c)*log((b*e*x + a*e)/(d*x + c)))/((b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*g^2*i*x + (a*b^2*c^2 - 2*a^2*b*c*d + a^3*d^2)*g^2*i)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^2/(d*i*x+c*i),x, algorithm="giac")

[Out] Timed out

maple [B] time = 0.05, size = 1201, normalized size = 6.56

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^2/(d*i*x+c*i),x)`

[Out]
$$-d^2/i/(a*d-b*c)^3/g^2*A^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+d/i/(a*d-b*c)^3/g^2*A^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*c-d*e/i/(a*d-b*c)^3/g^2*A^2*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a+e/i/(a*d-b*c)^3/g^2*A^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c-d^2/i/(a*d-b*c)^3/g^2*A*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a+d/i/(a*d-b*c)^3/g^2*A*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b*c-2*d*e/i/(a*d-b*c)^3/g^2*A*B*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+2*e/i/(a*d-b*c)^3/g^2*A*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-2*d*e/i/(a*d-b*c)^3/g^2*A*B*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a+2*e/i/(a*d-b*c)^3/g^2*A*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c-1/3*d^2/i/(a*d-b*c)^3/g^2*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^3*a+1/3*d/i/(a*d-b*c)^3/g^2*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^3*b*c-d*e/i/(a*d-b*c)^3/g^2*B^2*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a+e/i/(a*d-b*c)^3/g^2*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c-2*d*e/i/(a*d-b*c)^3/g^2*B^2*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+2*e/i/(a*d-b*c)^3/g^2*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-2*d*e/i/(a*d-b*c)^3/g^2*B^2*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a+2*e/i/(a*d-b*c)^3/g^2*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c$$

maxima [B] time = 1.99, size = 1008, normalized size = 5.51

$$-B^2 \left(\frac{1}{(b^2c - abd)g^2ix + (abc - a^2d)g^2i} + \frac{d \log(bx + a)}{(b^2c^2 - 2abcd + a^2d^2)g^2i} - \frac{d \log(dx + c)}{(b^2c^2 - 2abcd + a^2d^2)g^2i} \right) \log \left(\frac{bex}{dx + c} + \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^2/(d*i*x+c*i),x, algorithm="maxima")`

[Out]
$$-B^2*(1/((b^2*c - a*b*d)*g^2*i*x + (a*b*c - a^2*d)*g^2*i) + d*\log(b*x + a)/((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*g^2*i) - d*\log(d*x + c)/((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*g^2*i))*\log(b*e*x/(d*x + c) + a*e/(d*x + c))^2 - 2*A*B*(1/((b^2*c - a*b*d)*g^2*i*x + (a*b*c - a^2*d)*g^2*i) + d*\log(b*x + a)/((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*g^2*i) - d*\log(d*x + c)/((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*g^2*i))*\log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 1/3*B^2*(3*((b*d*x + a*d)*\log(b*x + a)^2 + (b*d*x + a*d)*\log(d*x + c)^2 - 2*b*c + 2*a*d - 2*(b*d*x + a*d)*\log(b*x + a) + 2*(b*d*x + a*d - (b*d*x + a*d)*\log(b*x + a))*\log(d*x + c))*\log(b*e*x/(d*x + c) + a*e/(d*x + c))/(a*b^2*c^2*g^2*i - 2*a^2*b*c*d*g^2*i + a^3*d^2*g^2*i + (b^3*c^2*g^2*i - 2*a*b^2*c*d*g^2*i + a^2*b*d^2*g^2*i$$

$i)x) - ((b*d*x + a*d)*\log(b*x + a)^3 - (b*d*x + a*d)*\log(d*x + c)^3 - 3*(b*d*x + a*d)*\log(b*x + a)^2 - 3*(b*d*x + a*d - (b*d*x + a*d)*\log(b*x + a))*\log(d*x + c)^2 + 6*b*c - 6*a*d + 6*(b*d*x + a*d)*\log(b*x + a) - 3*(2*b*d*x + (b*d*x + a*d)*\log(b*x + a)^2 + 2*a*d - 2*(b*d*x + a*d)*\log(b*x + a))*\log(d*x + c)) / (a*b^2*c^2*g^2*i - 2*a^2*b*c*d*g^2*i + a^3*d^2*g^2*i + (b^3*c^2*g^2*i - 2*a*b^2*c*d*g^2*i + a^2*b*d^2*g^2*i)*x)) - A^2*(1/((b^2*c - a*b*d)*g^2*i*x + (a*b*c - a^2*d)*g^2*i) + d*\log(b*x + a)/((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*g^2*i) - d*\log(d*x + c)/((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*g^2*i)) + ((b*d*x + a*d)*\log(b*x + a)^2 + (b*d*x + a*d)*\log(d*x + c)^2 - 2*b*c + 2*a*d - 2*(b*d*x + a*d)*\log(b*x + a) + 2*(b*d*x + a*d - (b*d*x + a*d)*\log(b*x + a))*\log(d*x + c))*A*B/(a*b^2*c^2*g^2*i - 2*a^2*b*c*d*g^2*i + a^3*d^2*g^2*i + (b^3*c^2*g^2*i - 2*a*b^2*c*d*g^2*i + a^2*b*d^2*g^2*i)*x)$

mupad [B] time = 6.37, size = 419, normalized size = 2.29

$$\frac{A^2 + 2AB + 2B^2}{(ad - bc)(ag^2i + bg^2ix)} \ln\left(\frac{e(a+bx)}{c+dx}\right)^2 \left(\frac{Bd(A+B)}{g^2i(a^2d^2 - 2abcd + b^2c^2)} - \frac{B^2(ad - bc)}{bdg^2i\left(\frac{x}{d} + \frac{a}{bd}\right)(a^2d^2 - 2abcd + b^2c^2)} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((A + B*log((e*(a + b*x))/(c + d*x)))^2/((a*g + b*g*x)^2*(c*i + d*i*x)), x)

[Out] (A^2 + 2*B^2 + 2*A*B)/((a*d - b*c)*(a*g^2*i + b*g^2*i*x)) - log((e*(a + b*x))/(c + d*x))^2*((B*d*(A + B))/(g^2*i*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) - (B^2*(a*d - b*c))/(b*d*g^2*i*(x/d + a/(b*d))*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) - (B^2*d*log((e*(a + b*x))/(c + d*x))^3)/(3*g^2*i*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (d*atan((d*(2*b*d*x + (a^2*d^2*g^2*i - b^2*c^2*g^2*i))/(g^2*i*(a*d - b*c))))*(A^2 + 2*B^2 + 2*A*B)*1i)/((a*d - b*c)*(A^2*d + 2*B^2*d + 2*A*B*d))*((A^2 + 2*B^2 + 2*A*B)*2i)/(g^2*i*(a*d - b*c)^2) + (2*B*log((e*(a + b*x))/(c + d*x))*(a*d - b*c)*(A + B))/(b*d*g^2*i*(x/d + a/(b*d))*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))

sympy [B] time = 5.14, size = 541, normalized size = 2.96

$$\frac{B^2 d \log\left(\frac{e(a+bx)}{c+dx}\right)^3}{3a^2 d^2 g^2 i - 6abcdg^2 i + 3b^2 c^2 g^2 i} + \frac{(2AB + 2B^2) \log\left(\frac{e(a+bx)}{c+dx}\right)}{a^2 dg^2 i - abcg^2 i + abdg^2 ix - b^2 cg^2 ix} + (A^2 + 2AB + 2B^2) \left(\frac{d \log\left(x + \frac{-\frac{a^3 d^4}{(ad-bc)^2} + \dots}{g^2 i}\right)}{g^2 i} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))*2/(b*g*x+a*g)**2/(d*i*x+c*i),x)

[Out]
$$-B^2 d \log(e(a + bx)/(c + dx))^3 / (3a^2 d^2 g^2 i - 6ab^2 c d g^2 i + 3b^2 c^2 g^2 i) + (2AB + 2B^2) \log(e(a + bx)/(c + dx)) / (a^2 d g^2 i - ab^2 c g^2 i + ab^2 d g^2 i x - b^2 c g^2 i x) + (A^2 + 2AB + 2B^2) (d \log(x + (-a^3 d^4 / (ad - bc))^2 + 3a^2 b^2 c d^3 / (ad - bc))^2 - 3ab^2 c^2 d^2 / (ad - bc))^2 + ad^2 + b^3 c^3 d / (ad - bc))^2 + bc^2 d / (2bd^2)) / (g^2 i (ad - bc)^2) - d \log(x + (a^3 d^4 / (ad - bc))^2 - 3a^2 b^2 c d^3 / (ad - bc))^2 + 3ab^2 c^2 d^2 / (ad - bc))^2 + ad^2 - b^3 c^3 d / (ad - bc))^2 + bc^2 d / (2bd^2)) / (g^2 i (ad - bc)^2) + 1 / (a^2 d g^2 i - ab^2 c g^2 i + x(ab^2 d g^2 i - b^2 c g^2 i)) + (-ABad - ABb^2 dx - B^2 bc - B^2 b^2 dx) \log(e(a + bx)/(c + dx))^2 / (a^3 d^2 g^2 i - 2a^2 b^2 c d g^2 i + a^2 b^2 d^2 g^2 i x + ab^2 c^2 g^2 i - 2ab^2 c d g^2 i x + b^3 c^2 g^2 i x)$$

$$3.90 \quad \int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^3(ci+dx)} dx$$

Optimal. Leaf size=343

$$\frac{b^2(c+dx)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)^2}{2g^3i(a+bx)^2(bc-ad)^3} - \frac{b^2B(c+dx)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{2g^3i(a+bx)^2(bc-ad)^3} + \frac{d^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)^3}{3Bg^3i(bc-ad)^3} + \frac{2bd(c+dx)}{g^3i(a$$

[Out] $4*b*B^2*d*(d*x+c)/(-a*d+b*c)^3/g^3/i/(b*x+a)-1/4*b^2*B^2*(d*x+c)^2/(-a*d+b*c)^3/g^3/i/(b*x+a)^2+4*b*B*d*(d*x+c)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^3/g^3/i/(b*x+a)-1/2*b^2*B*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^3/g^3/i/(b*x+a)^2+2*b*d*(d*x+c)*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/(-a*d+b*c)^3/g^3/i/(b*x+a)-1/2*b^2*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/(-a*d+b*c)^3/g^3/i/(b*x+a)^2+1/3*d^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))^3/B/(-a*d+b*c)^3/g^3/i$

Rubi [C] time = 7.37, antiderivative size = 1899, normalized size of antiderivative = 5.54, number of steps used = 117, number of rules used = 31, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}} = 0.738$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x)])^2/((a*g + b*g*x)^3*(c*i + d*i*x)), x]

[Out] $-B^2/(4*(b*c - a*d)*g^3*i*(a + b*x)^2) + (7*B^2*d)/(2*(b*c - a*d)^2*g^3*i*(a + b*x)) + (7*B^2*d^2*Log[a + b*x])/(2*(b*c - a*d)^3*g^3*i) - (A*B*d^2*Log[a + b*x]^2)/((b*c - a*d)^3*g^3*i) - (3*B^2*d^2*Log[a + b*x]^2)/(2*(b*c - a*d)^3*g^3*i) + (B^2*d^2*Log[a + b*x]*Log[(c + d*x)^{-1}]^2)/((b*c - a*d)^3*g^3*i) - (B^2*d^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[(c + d*x)^{-1}]^2)/((b*c - a*d)^3*g^3*i) - (B^2*d^2*Log[-((b*c - a*d)/(d*(a + b*x))])*Log[(e*(a + b*x))/(c + d*x])^2)/((b*c - a*d)^3*g^3*i) - (B^2*d^2*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x])^2)/((b*c - a*d)^3*g^3*i) - (B*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/((b*c - a*d)^2*g^3*i*(a + b*x)^2) + (3*B*d*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/((b*c - a*d)^2*g^3*i*(a + b*x)) + (3*B*d^2*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/((b*c - a*d)^3*g^3*i) - (A + B*Log[(e*(a + b*x))/(c + d*x])^2)/(2*(b*c - a*d)*g^3*i*(a + b*x)^2) + (d*(A + B*Log[(e*(a + b*x))/(c + d*x])^2)/((b*c - a*d)^2*g^3*i*(a + b*x)) + (d^2*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x])^2)/((b*c - a*d)^3*g^3*i) - (7*B^2*d^2*Log[c + d*x])/(2*(b*c - a*d)^3*g^3*i) + (B^2*d^2*Log[a + b*x]^2*Log[c + d*x])/((b*c - a*d)^3*g^3*i) + (2*A*B*d^2*Log[-((d*(a + b*x))/(b*c -$

$$\begin{aligned} & a*d)) * \text{Log}[c + d*x] / ((b*c - a*d)^3 * g^3 * i) + (3*B^2*d^2 * \text{Log}[-(d*(a + b*x)) / (b*c - a*d)]) * \text{Log}[c + d*x] / ((b*c - a*d)^3 * g^3 * i) + (2*B^2*d^2 * \text{Log}[a + b*x] * \text{Log}[(c + d*x)^{-1}] * \text{Log}[c + d*x]) / ((b*c - a*d)^3 * g^3 * i) - (2*B^2*d^2 * \text{Log}[-(d*(a + b*x)) / (b*c - a*d)]) * (\text{Log}[a + b*x] + \text{Log}[(c + d*x)^{-1}] - \text{Log}[(e*(a + b*x)) / (c + d*x)]) * \text{Log}[c + d*x] / ((b*c - a*d)^3 * g^3 * i) - (3*B*d^2 * (A + B * \text{Log}[(e*(a + b*x)) / (c + d*x)]) * \text{Log}[c + d*x]) / ((b*c - a*d)^3 * g^3 * i) - (d^2 * (A + B * \text{Log}[(e*(a + b*x)) / (c + d*x)])^2 * \text{Log}[c + d*x]) / ((b*c - a*d)^3 * g^3 * i) - (A * B * d^2 * \text{Log}[c + d*x]^2) / ((b*c - a*d)^3 * g^3 * i) - (3*B^2*d^2 * \text{Log}[c + d*x]^2) / (2 * (b*c - a*d)^3 * g^3 * i) + (B^2*d^2 * \text{Log}[a + b*x] * \text{Log}[c + d*x]^2) / ((b*c - a*d)^3 * g^3 * i) - (B^2*d^2 * \text{Log}[(e*(a + b*x)) / (c + d*x)] * \text{Log}[c + d*x]^2) / ((b*c - a*d)^3 * g^3 * i) - (B^2*d^2 * \text{Log}[c + d*x]^3) / (3 * (b*c - a*d)^3 * g^3 * i) + (2 * A * B * d^2 * \text{Log}[a + b*x] * \text{Log}[(b*(c + d*x)) / (b*c - a*d)]) / ((b*c - a*d)^3 * g^3 * i) + (3 * B^2*d^2 * \text{Log}[a + b*x] * \text{Log}[(b*(c + d*x)) / (b*c - a*d)]) / ((b*c - a*d)^3 * g^3 * i) - (B^2*d^2 * \text{Log}[a + b*x]^2 * \text{Log}[(b*(c + d*x)) / (b*c - a*d)]) / ((b*c - a*d)^3 * g^3 * i) + (2 * A * B * d^2 * \text{PolyLog}[2, -(d*(a + b*x)) / (b*c - a*d)]) / ((b*c - a*d)^3 * g^3 * i) + (3 * B^2*d^2 * \text{PolyLog}[2, -(d*(a + b*x)) / (b*c - a*d)]) / ((b*c - a*d)^3 * g^3 * i) - (2 * B^2*d^2 * \text{Log}[a + b*x] * \text{PolyLog}[2, -(d*(a + b*x)) / (b*c - a*d)]) / ((b*c - a*d)^3 * g^3 * i) + (2 * A * B * d^2 * \text{PolyLog}[2, (b*(c + d*x)) / (b*c - a*d)]) / ((b*c - a*d)^3 * g^3 * i) + (3 * B^2*d^2 * \text{PolyLog}[2, (b*(c + d*x)) / (b*c - a*d)]) / ((b*c - a*d)^3 * g^3 * i) + (2 * B^2*d^2 * \text{Log}[(c + d*x)^{-1}] * \text{PolyLog}[2, (b*(c + d*x)) / (b*c - a*d)]) / ((b*c - a*d)^3 * g^3 * i) - (2 * B^2*d^2 * (\text{Log}[a + b*x] + \text{Log}[(c + d*x)^{-1}] - \text{Log}[(e*(a + b*x)) / (c + d*x)]) * \text{PolyLog}[2, (b*(c + d*x)) / (b*c - a*d)]) / ((b*c - a*d)^3 * g^3 * i) + (2 * B^2*d^2 * \text{Log}[(e*(a + b*x)) / (c + d*x)] * \text{PolyLog}[2, 1 + (b*c - a*d) / (d*(a + b*x))]) / ((b*c - a*d)^3 * g^3 * i) + (2 * B^2*d^2 * \text{PolyLog}[3, -(d*(a + b*x)) / (b*c - a*d)]) / ((b*c - a*d)^3 * g^3 * i) + (2 * B^2*d^2 * \text{PolyLog}[3, (b*(c + d*x)) / (b*c - a*d)]) / ((b*c - a*d)^3 * g^3 * i) + (2 * B^2*d^2 * \text{PolyLog}[3, 1 + (b*c - a*d) / (d*(a + b*x))]) / ((b*c - a*d)^3 * g^3 * i) \end{aligned}$$

Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_), x_Symbol] := Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && NeQ[m, -1]
```

Rule 44

```
Int[((a_) + (b_)*(x_))^(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])
```

Rule 2301

$\text{Int}[(a + \text{Log}[c \cdot x^n] \cdot b) / x, x_{\text{Symbol}}] \rightarrow \text{Simp}[(a + b \cdot \text{Log}[c \cdot x^n])^2 / (2 \cdot b \cdot n), x] /; \text{FreeQ}\{a, b, c, n\}, x]$

Rule 2302

$\text{Int}[(a + \text{Log}[c \cdot x^n] \cdot b)^p / x, x_{\text{Symbol}}] \rightarrow \text{Dist}[1 / (b \cdot n), \text{Subst}[\text{Int}[x^p, x], x, a + b \cdot \text{Log}[c \cdot x^n]], x] /; \text{FreeQ}\{a, b, c, n, p\}, x]$

Rule 2317

$\text{Int}[(a + \text{Log}[c \cdot x^n] \cdot b)^p / ((d) + (e) \cdot x), x_{\text{Symbol}}] \rightarrow \text{Simp}[(\text{Log}[1 + (e \cdot x) / d] \cdot (a + b \cdot \text{Log}[c \cdot x^n])^p) / e, x] - \text{Dist}[(b \cdot n \cdot p) / e, \text{Int}[(\text{Log}[1 + (e \cdot x) / d] \cdot (a + b \cdot \text{Log}[c \cdot x^n])^{p-1}) / x, x], x] /; \text{FreeQ}\{a, b, c, d, e, n\}, x] \&\& \text{IGtQ}[p, 0]$

Rule 2344

$\text{Int}[(a + \text{Log}[c \cdot x^n] \cdot b)^p / ((x) \cdot ((d) + (e) \cdot x)), x_{\text{Symbol}}] \rightarrow \text{Dist}[1 / d, \text{Int}[(a + b \cdot \text{Log}[c \cdot x^n])^p / x, x], x] - \text{Dist}[e / d, \text{Int}[(a + b \cdot \text{Log}[c \cdot x^n])^p / (d + e \cdot x), x], x] /; \text{FreeQ}\{a, b, c, d, e, n\}, x] \&\& \text{IGtQ}[p, 0]$

Rule 2374

$\text{Int}[(\text{Log}[(d) \cdot ((e) + (f) \cdot x^m)]) \cdot (a + \text{Log}[c \cdot x^n] \cdot b)^p / x, x_{\text{Symbol}}] \rightarrow -\text{Simp}[(\text{PolyLog}[2, -(d \cdot f \cdot x^m)] \cdot (a + b \cdot \text{Log}[c \cdot x^n])^p) / m, x] + \text{Dist}[(b \cdot n \cdot p) / m, \text{Int}[(\text{PolyLog}[2, -(d \cdot f \cdot x^m)] \cdot (a + b \cdot \text{Log}[c \cdot x^n])^{p-1}) / x, x], x] /; \text{FreeQ}\{a, b, c, d, e, f, m, n\}, x] \&\& \text{IGtQ}[p, 0] \&\& \text{EqQ}[d \cdot e, 1]$

Rule 2375

$\text{Int}[(\text{Log}[(d) \cdot ((e) + (f) \cdot x^m)]^r) \cdot (a + \text{Log}[c \cdot x^n] \cdot b)^p / x, x_{\text{Symbol}}] \rightarrow \text{Simp}[(\text{Log}[d \cdot (e + f \cdot x^m)]^r \cdot (a + b \cdot \text{Log}[c \cdot x^n])^{p+1}) / (b \cdot n \cdot (p + 1)), x] - \text{Dist}[(f \cdot m \cdot r) / (b \cdot n \cdot (p + 1)), \text{Int}[(x^{m-1} \cdot (a + b \cdot \text{Log}[c \cdot x^n])^{p+1}) / (e + f \cdot x^m), x], x] /; \text{FreeQ}\{a, b, c, d, e, f, r, m, n\}, x] \&\& \text{IGtQ}[p, 0] \&\& \text{NeQ}[d \cdot e, 1]$

Rule 2390

$\text{Int}[(a + \text{Log}[c \cdot ((d) + (e) \cdot x)^n] \cdot b)^p \cdot ((f) + (g) \cdot x)^q, x_{\text{Symbol}}] \rightarrow \text{Dist}[1 / e, \text{Subst}[\text{Int}[(f \cdot x) / d]^q \cdot (a + b \cdot \text{Log}[c \cdot x^n])^p, x], x]$

$n])^p, x], x, d + e*x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g, n, p, q\}, x] \&\& \text{EqQ}[e*f - d*g, 0]$

Rule 2391

$\text{Int}[\text{Log}[(c_.)*((d_) + (e_.)*(x_)^{(n_.)})]/(x_), x_Symbol] \text{:>} -\text{Simp}[\text{PolyLog}[2, -(c*e*x^n)]/n, x] /; \text{FreeQ}[\{c, d, e, n\}, x] \&\& \text{EqQ}[c*d, 1]$

Rule 2393

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_) + (e_.)*(x_))]*(b_.)]/((f_.) + (g_.)*(x_)), x_Symbol] \text{:>} \text{Dist}[1/g, \text{Subst}[\text{Int}[(a + b*\text{Log}[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g\}, x] \&\& \text{NeQ}[e*f - d*g, 0] \&\& \text{EqQ}[g + c*(e*f - d*g), 0]$

Rule 2394

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_) + (e_.)*(x_)^{(n_.)})]*(b_.)]/((f_.) + (g_.)*(x_)), x_Symbol] \text{:>} \text{Simp}[(\text{Log}[(e*(f + g*x))/(e*f - d*g)]*(a + b*\text{Log}[c*(d + e*x)^n]))/g, x] - \text{Dist}[(b*e*n)/g, \text{Int}[\text{Log}[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g, n\}, x] \&\& \text{NeQ}[e*f - d*g, 0]$

Rule 2396

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_) + (e_.)*(x_)^{(n_.)})]*(b_.)]^{(p_.)}/((f_.) + (g_.)*(x_)), x_Symbol] \text{:>} \text{Simp}[(\text{Log}[(e*(f + g*x))/(e*f - d*g)]*(a + b*\text{Log}[c*(d + e*x)^n])^p)/g, x] - \text{Dist}[(b*e*n*p)/g, \text{Int}[(\text{Log}[(e*(f + g*x))/(e*f - d*g)]*(a + b*\text{Log}[c*(d + e*x)^n])^{(p - 1)})/(d + e*x), x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g, n, p\}, x] \&\& \text{NeQ}[e*f - d*g, 0] \&\& \text{IGtQ}[p, 1]$

Rule 2411

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_) + (e_.)*(x_)^{(n_.)})]*(b_.)]^{(p_.)*((f_.) + (g_.)*(x_))^{(q_.)*((h_.) + (i_.)*(x_)^{(r_.)})}, x_Symbol] \text{:>} \text{Dist}[1/e, \text{Subst}[\text{Int}[(g*x)/e]^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*\text{Log}[c*x^n])^p, x], x, d + e*x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g, h, i, n, p, q, r\}, x] \&\& \text{EqQ}[e*f - d*g, 0] \&\& (\text{IGtQ}[p, 0] \parallel \text{IGtQ}[r, 0]) \&\& \text{IntegerQ}[2*r]$

Rule 2418

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_) + (e_.)*(x_)^{(n_.)})]*(b_.)]^{(p_.)}*(\text{RFx}_.), x_Symbol] \text{:>} \text{With}[\{u = \text{ExpandIntegrand}[(a + b*\text{Log}[c*(d + e*x)^n])^p, \text{RFx}, x]\}, \text{Int}[u, x] /; \text{SumQ}[u] /; \text{FreeQ}[\{a, b, c, d, e, n\}, x] \&\& \text{RationalFunctionQ}[\text{RFx}, x] \&\& \text{IntegerQ}[p]$

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e]^m)], x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n])]/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m])]/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] :>
Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m)], x], x, k + l*x], x] /; FreeQ[{a,
b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] :> -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q]^r]^s - 1)/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q]^r]/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] := Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2506

```
Int[Log[v]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] := With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
)^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] := With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
h*x)^t]^u)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^(s + 1))/(p*r*(s + 1)*(b*c
- a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q]^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.))/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
```

```
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] := With[{w = DerivativeDivides[v, u*v, x]}, Simp[w*PolyLog[n + 1, v], x] /; !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] := With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; SimplifyIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] := With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]]
```

Rubi steps

$$\begin{aligned}
\int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(90c + 90dx)(ag + bgx)^3} dx &= \int \left[\frac{b\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{90(bc - ad)g^3(a + bx)^3} - \frac{bd\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{90(bc - ad)^2g^3(a + bx)^2} + \frac{bd^2\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{90(bc - ad)^3g^3(a + bx)} \right] dx \\
&= \frac{(bd^2) \int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{a+bx} dx}{90(bc - ad)^3g^3} - \frac{d^3 \int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{c+dx} dx}{90(bc - ad)^3g^3} - \frac{(bd) \int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(a+bx)^2} dx}{90(bc - ad)^2g^3} \\
&= -\frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{180(bc - ad)g^3(a + bx)^2} + \frac{d\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{90(bc - ad)^2g^3(a + bx)} + \frac{d^2 \log(a + bx)\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{90(bc - ad)^3g^3} \\
&= -\frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{180(bc - ad)g^3(a + bx)^2} + \frac{d\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{90(bc - ad)^2g^3(a + bx)} + \frac{d^2 \log(a + bx)\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{90(bc - ad)^3g^3} \\
&= -\frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{180(bc - ad)g^3(a + bx)^2} + \frac{d\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{90(bc - ad)^2g^3(a + bx)} + \frac{d^2 \log(a + bx)\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{90(bc - ad)^3g^3} \\
&= -\frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{180(bc - ad)g^3(a + bx)^2} + \frac{d\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{90(bc - ad)^2g^3(a + bx)} + \frac{d^2 \log(a + bx)\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{90(bc - ad)^3g^3} \\
&= -\frac{B\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{180(bc - ad)g^3(a + bx)^2} + \frac{Bd\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{30(bc - ad)^2g^3(a + bx)} + \frac{Bd^2 \log(a + bx)\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{30(bc - ad)^3g^3} \\
&= -\frac{B\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{180(bc - ad)g^3(a + bx)^2} + \frac{Bd\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{30(bc - ad)^2g^3(a + bx)} + \frac{Bd^2 \log(a + bx)\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{30(bc - ad)^3g^3} \\
&= -\frac{B^2d^2 \log(a + bx) \log^2\left(\frac{e(a+bx)}{c+dx}\right)}{90(bc - ad)^3g^3} - \frac{B\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{180(bc - ad)g^3(a + bx)^2} + \frac{Bd\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{30(bc - ad)^2g^3} \\
&= -\frac{B^2}{360(bc - ad)g^3(a + bx)^2} + \frac{7B^2d}{180(bc - ad)^2g^3(a + bx)} + \frac{7B^2d^2 \log(a + bx)}{180(bc - ad)^3g^3} - \frac{B\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{180(bc - ad)g^3(a + bx)^2} + \frac{Bd\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{30(bc - ad)^2g^3} \\
&= -\frac{B^2}{360(bc - ad)g^3(a + bx)^2} + \frac{7B^2d}{180(bc - ad)^2g^3(a + bx)} + \frac{7B^2d^2 \log(a + bx)}{180(bc - ad)^3g^3} - \frac{B\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{180(bc - ad)g^3(a + bx)^2} + \frac{Bd\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{30(bc - ad)^2g^3} \\
&= -\frac{B^2}{360(bc - ad)g^3(a + bx)^2} + \frac{7B^2d}{180(bc - ad)^2g^3(a + bx)} + \frac{7B^2d^2 \log(a + bx)}{180(bc - ad)^3g^3} - \frac{B\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{180(bc - ad)g^3(a + bx)^2} + \frac{Bd\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{30(bc - ad)^2g^3}
\end{aligned}$$

Mathematica [A] time = 1.11, size = 318, normalized size = 0.93

$$-6B(-2a^2Ad^2 - 4abd(Adx + B(c + dx)) + b^2(B(c^2 - 2cdx - 3d^2x^2) - 2Ad^2x^2)) \log^2\left(\frac{e(a+bx)}{c+dx}\right) - 6d^2(2A^2 + 6AB + 3B^2)$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x)])^2/((a*g + b*g*x)^3*(c*i + d*i*x)),x]

[Out] (-3*(2*A^2 + 2*A*B + B^2)*(b*c - a*d)^2 + 6*(2*A^2 + 6*A*B + 7*B^2)*d*(b*c - a*d)*(a + b*x) + 6*(2*A^2 + 6*A*B + 7*B^2)*d^2*(a + b*x)^2*Log[a + b*x] - 6*B*(b*c - a*d)*(-6*a*A*d - 7*a*B*d + b*B*(c - 6*d*x) + 2*A*b*(c - 2*d*x))*Log[(e*(a + b*x))/(c + d*x)] - 6*B*(-2*a^2*A*d^2 - 4*a*b*d*(A*d*x + B*(c + d*x)) + b^2*(-2*A*d^2*x^2 + B*(c^2 - 2*c*d*x - 3*d^2*x^2)))*Log[(e*(a + b*x))/(c + d*x)]^2 + 4*B^2*d^2*(a + b*x)^2*Log[(e*(a + b*x))/(c + d*x)]^3 - 6*(2*A^2 + 6*A*B + 7*B^2)*d^2*(a + b*x)^2*Log[c + d*x]/(12*(b*c - a*d)^3*g^3*i*(a + b*x)^2)

fricas [A] time = 0.66, size = 540, normalized size = 1.57

$$3(2A^2 + 2AB + B^2)b^2c^2 - 24(A^2 + 2AB + 2B^2)abcd + 3(6A^2 + 14AB + 15B^2)a^2d^2 - 4(B^2b^2d^2x^2 + 2B^2abd^2x + B^2a^2d^2)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^3/(d*i*x+c*i),x, algorithm="fricas")

[Out] -1/12*(3*(2*A^2 + 2*A*B + B^2)*b^2*c^2 - 24*(A^2 + 2*A*B + 2*B^2)*a*b*c*d + 3*(6*A^2 + 14*A*B + 15*B^2)*a^2*d^2 - 4*(B^2*b^2*d^2*x^2 + 2*B^2*a*b*d^2*x + B^2*a^2*d^2)*log((b*e*x + a*e)/(d*x + c))^3 - 6*((2*A*B + 3*B^2)*b^2*d^2*x^2 - B^2*b^2*c^2 + 4*B^2*a*b*c*d + 2*A*B*a^2*d^2 + 2*(B^2*b^2*c*d + 2*(A*B + B^2)*a*b*d^2)*x)*log((b*e*x + a*e)/(d*x + c))^2 - 6*((2*A^2 + 6*A*B + 7*B^2)*b^2*c*d - (2*A^2 + 6*A*B + 7*B^2)*a*b*d^2)*x - 6*((2*A^2 + 6*A*B + 7*B^2)*b^2*d^2*x^2 + 2*A^2*a^2*d^2 - (2*A*B + B^2)*b^2*c^2 + 8*(A*B + B^2)*a*b*c*d + 2*((2*A*B + 3*B^2)*b^2*c*d + 2*(A^2 + 2*A*B + 2*B^2)*a*b*d^2)*x)*log((b*e*x + a*e)/(d*x + c))/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*g^3*i*x^2 + 2*(a*b^4*c^3 - 3*a^2*b^3*c^2*d + 3*a^3*b^2*c*d^2 - a^4*b*d^3)*g^3*i*x + (a^2*b^3*c^3 - 3*a^3*b^2*c^2*d + 3*a^4*b*c*d^2 - a^5*d^3)*g^3*i)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^3/(d*i*x+c*i),x, algorith
m="giac")
```

```
[Out] Timed out
```

```
maple [B] time = 0.06, size = 2144, normalized size = 6.25
```

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^3/(d*i*x+c*i),x)
```

```
[Out] 4*d*e/i/(a*d-b*c)^4/g^3*A*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(
b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+d*e^2/i/(a*d-b*c)^4/g^3*A*B*b^2/(1/(d*x+c)*a
*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-4*d^2*e/i/(
a*d-b*c)^4/g^3*A*B*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-
b*c)/(d*x+c)/d*e)*a+2*d*e/i/(a*d-b*c)^4/g^3*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c
)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c+4*d*e/i/(a*d-b*c)^4/g^
3*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c
)/d*e)*c-4*d^2*e/i/(a*d-b*c)^4/g^3*A*B*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b
/d*e)*a+4*d*e/i/(a*d-b*c)^4/g^3*A*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/
d*e)*c-4*d^2*e/i/(a*d-b*c)^4/g^3*B^2*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d
*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+d^2/i/(a*d-b*c)^4/g^3*A^2*ln(b/d*e+(a
*d-b*c)/(d*x+c)/d*e)*b*c-d^3/i/(a*d-b*c)^4/g^3*A*B*ln(b/d*e+(a*d-b*c)/(d*x+
c)/d*e)^2*a+1/3*d^2/i/(a*d-b*c)^4/g^3*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^3
*b*c-1/2*e^2/i/(a*d-b*c)^4/g^3*A^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d
*e)^2*c-1/4*e^2/i/(a*d-b*c)^4/g^3*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+
b/d*e)^2*c-1/3*d^3/i/(a*d-b*c)^4/g^3*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^3*
a-d^3/i/(a*d-b*c)^4/g^3*A^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+d^2/i/(a*d-b*
c)^4/g^3*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b*c+1/2*d*e^2/i/(a*d-b*c)^4/
g^3*A^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a-1/2*e^2/i/(a*d-b*c)
^4/g^3*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)
/(d*x+c)/d*e)*c-e^2/i/(a*d-b*c)^4/g^3*A*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/
d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+1/2*d*e^2/i/(a*d-b*c)^4/g^3*
A*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a+1/2*d*e^2/i/(a*d-b*c)^4
/g^3*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(
d*x+c)/d*e)^2*a+1/2*d*e^2/i/(a*d-b*c)^4/g^3*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c
)*b*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-2*d^2*e/i/(a*d-b*c)^4/
g^3*B^2*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c
)/d*e)^2*a-4*d^2*e/i/(a*d-b*c)^4/g^3*B^2*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e
+b/d*e)*a-1/2*e^2/i/(a*d-b*c)^4/g^3*A*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*
e+b/d*e)^2*c+2*d*e/i/(a*d-b*c)^4/g^3*A^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d
*e+b/d*e)*c+1/4*d*e^2/i/(a*d-b*c)^4/g^3*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*
```


$$\begin{aligned} & \left(b^2 c^2 - 2 a^3 b c d + a^4 d^2 \right) g^3 i + 2 d^2 \log(b x + a) / \left((b^3 c^3 - 3 a b^2 c^2 d + 3 a^2 b c d^2 - a^3 d^3) g^3 i \right) - 2 d^2 \log(d x + c) / \left((b^3 c^3 - 3 a b^2 c^2 d + 3 a^2 b c d^2 - a^3 d^3) g^3 i \right) - 1/2 (b^2 c^2 - 8 a b c d + 7 a^2 d^2 + 2 (b^2 d^2 x^2 + 2 a b d^2 x + a^2 d^2) \log(b x + a)^2 + 2 (b^2 d^2 x^2 + 2 a b d^2 x + a^2 d^2) \log(d x + c)^2 - 6 (b^2 c d - a b d^2) x - 6 (b^2 d^2 x^2 + 2 a b d^2 x + a^2 d^2) \log(b x + a) + 2 (3 b^2 d^2 x^2 + 6 a b d^2 x + 3 a^2 d^2 - 2 (b^2 d^2 x^2 + 2 a b d^2 x + a^2 d^2) \log(b x + a)) \log(d x + c)) A B / (a^2 b^3 c^3 g^3 i - 3 a^3 b^2 c^2 d g^3 i + 3 a^4 b c d^2 g^3 i - a^5 d^3 g^3 i + (b^5 c^3 g^3 i - 3 a b^4 c^2 d g^3 i + 3 a^2 b^3 c d^2 g^3 i - a^3 b^2 d^3 g^3 i) x^2 + 2 (a b^4 c^3 g^3 i - 3 a^2 b^3 c^2 d g^3 i + 3 a^3 b^2 c d^2 g^3 i - a^4 b d^3 g^3 i) x) \end{aligned}$$

mupad [B] time = 8.30, size = 981, normalized size = 2.86

$$\ln \left(\frac{e(a+bx)}{c+dx} \right)^2 \left(\frac{B^2 d^2 \left(\frac{2a^2 d^2 - 3abcd + b^2 c^2}{2bd^3} + \frac{a(ad-bc)}{2bd^2} \right)}{g^3 i (a^3 d^3 - 3a^2 b c d^2 + 3a b^2 c^2 d - b^3 c^3)} + \frac{B^2 x(ad-bc)}{g^3 i (a^3 d^3 - 3a^2 b c d^2 + 3a b^2 c^2 d - b^3 c^3)} \right) - \frac{B d^2 (2A + 3B)}{2 g^3 i (a^3 d^3 - 3a^2 b c d^2 + 3a b^2 c^2 d - b^3 c^3)} \left(\frac{bx^2}{d} + \frac{a^2}{bd} + \frac{2ax}{d} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((A + B*log((e*(a + b*x))/(c + d*x)))^2/((a*g + b*g*x)^3*(c*i + d*i*x)), x)

[Out] log((e*(a + b*x))/(c + d*x))^2 * (((B^2*d^2*((2*a^2*d^2 + b^2*c^2 - 3*a*b*c*d)/(2*b*d^3) + (a*(a*d - b*c))/(2*b*d^2)))/(g^3*i*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2)) + (B^2*x*(a*d - b*c))/(g^3*i*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2)))/((b*x^2)/d + a^2/(b*d) + (2*a*x)/d) - (B*d^2*(2*A + 3*B))/(2*g^3*i*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2))) - (((6*A^2*a*d - 2*A^2*b*c + 15*B^2*a*d - B^2*b*c + 14*A*B*a*d - 2*A*B*b*c)/(2*(a*d - b*c)) + (x*(2*A^2*b*d + 7*B^2*b*d + 6*A*B*b*d))/(a*d - b*c))/(x^2*(2*b^3*c*g^3*i - 2*a*b^2*d*g^3*i) + x*(4*a*b^2*c*g^3*i - 4*a^2*b*d*g^3*i) - 2*a^3*d*g^3*i + 2*a^2*b*c*g^3*i) + (log((e*(a + b*x))/(c + d*x)))*((B*d^2*((2*a^2*d^2 + b^2*c^2 - 3*a*b*c*d)/(2*b*d^3) + (a*(a*d - b*c))/(2*b*d^2)))*(2*A + 3*B))/(g^3*i*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2)) - B^2/(b*d*g^3*i*(a*d - b*c)) + (B*x*(2*A + 3*B)*(a*d - b*c))/(g^3*i*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2)))/((b*x^2)/d + a^2/(b*d) + (2*a*x)/d) - (B^2*d^2*log((e*(a + b*x))/(c + d*x))^3)/(3*g^3*i*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2)) + (d^2*atan((d^2*(A^2 + (7*B^2)/2 + 3*A*B)*(2*a^3*d^3*g^3*i + 2*b^3*c^3*g^3*i - 2*a*b^2*c^2*d*g^3*i - 2*a^2*b*c*d^2*g^3*i)*i)/(g^3*i*(a*d - b*c)^3*(2*A^2*d^2 + 7*B^2*d^2 + 6*A*B*d^2)) + (b*d^3*x*(a^2*d^2*g^3*i + b^2*c^2*g^3*i - 2*a*b*c*d*g^3*i)*(A^2 + (7*B^2)/2 + 3*A*B)*4i)/(g^3*i*(a*d - b*c)^3*(2*A^2*d^2 + 7*B^2*d^2 + 6*A*B*d^2)))*(A^2 + (7*B^2)/2 + 3*A*B)*2i)/(g^3*i*(a*d - b*c)^3)

sympy [B] time = 14.18, size = 1488, normalized size = 4.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)**3/(d*i*x+c*i),x)

[Out]
$$-B^{**2}d^{**2}\log(e*(a + b*x)/(c + d*x))^{**3}/(3*a^{**3}d^{**3}g^{**3}i - 9*a^{**2}b*c*d^{**2}g^{**3}i + 9*a*b^{**2}c^{**2}d*g^{**3}i - 3*b^{**3}c^{**3}g^{**3}i) + d^{**2}(2*A^{**2} + 6*A*B + 7*B^{**2})\log(x + (2*A^{**2}a*d^{**3} + 2*A^{**2}b*c*d^{**2} + 6*A*B*a*d^{**3} + 6*A*B*b*c*d^{**2} + 7*B^{**2}a*d^{**3} + 7*B^{**2}b*c*d^{**2} - a^{**4}d^{**6}(2*A^{**2} + 6*A*B + 7*B^{**2}))/a*d - b*c)^{**3} + 4*a^{**3}b*c*d^{**5}(2*A^{**2} + 6*A*B + 7*B^{**2}))/a*d - b*c)^{**3} - 6*a^{**2}b^{**2}c^{**2}d^{**4}(2*A^{**2} + 6*A*B + 7*B^{**2}))/a*d - b*c)^{**3} + 4*a*b^{**3}c^{**3}d^{**3}(2*A^{**2} + 6*A*B + 7*B^{**2}))/a*d - b*c)^{**3} - b^{**4}c^{**4}d^{**2}(2*A^{**2} + 6*A*B + 7*B^{**2}))/a*d - b*c)^{**3}/(4*A^{**2}b*d^{**3} + 12*A*B*b*d^{**3} + 14*B^{**2}b*d^{**3}))/2*g^{**3}i*(a*d - b*c)^{**3} - d^{**2}(2*A^{**2} + 6*A*B + 7*B^{**2})\log(x + (2*A^{**2}a*d^{**3} + 2*A^{**2}b*c*d^{**2} + 6*A*B*a*d^{**3} + 6*A*B*b*c*d^{**2} + 7*B^{**2}a*d^{**3} + 7*B^{**2}b*c*d^{**2} + a^{**4}d^{**6}(2*A^{**2} + 6*A*B + 7*B^{**2}))/a*d - b*c)^{**3} - 4*a^{**3}b*c*d^{**5}(2*A^{**2} + 6*A*B + 7*B^{**2}))/a*d - b*c)^{**3} + 6*a^{**2}b^{**2}c^{**2}d^{**4}(2*A^{**2} + 6*A*B + 7*B^{**2}))/a*d - b*c)^{**3} - 4*a*b^{**3}c^{**3}d^{**3}(2*A^{**2} + 6*A*B + 7*B^{**2}))/a*d - b*c)^{**3} + b^{**4}c^{**4}d^{**2}(2*A^{**2} + 6*A*B + 7*B^{**2}))/a*d - b*c)^{**3}/(4*A^{**2}b*d^{**3} + 12*A*B*b*d^{**3} + 14*B^{**2}b*d^{**3}))/2*g^{**3}i*(a*d - b*c)^{**3} + (6*A*B*a*d - 2*A*B*b*c + 4*A*B*b*d*x + 7*B^{**2}a*d - B^{**2}b*c + 6*B^{**2}b*d*x)\log(e*(a + b*x)/(c + d*x))/(2*a^{**4}d^{**2}g^{**3}i - 4*a^{**3}b*c*d*g^{**3}i + 4*a^{**3}b*d^{**2}g^{**3}i*x + 2*a^{**2}b^{**2}c^{**2}g^{**3}i - 8*a^{**2}b^{**2}c*d*g^{**3}i*x + 2*a^{**2}b^{**2}d^{**2}g^{**3}i*x**2 + 4*a*b^{**3}c^{**2}g^{**3}i*x - 4*a*b^{**3}c*d*g^{**3}i*x**2 + 2*b^{**4}c^{**2}g^{**3}i*x**2) + (-2*A*B*a^{**2}d^{**2} - 4*A*B*a*b*d^{**2}x - 2*A*B*b^{**2}d^{**2}x**2 - 4*B^{**2}a*b*c*d - 4*B^{**2}a*b*d^{**2}x + B^{**2}b^{**2}c^{**2} - 2*B^{**2}b^{**2}c*d*x - 3*B^{**2}b^{**2}d^{**2}x**2)\log(e*(a + b*x)/(c + d*x))^{**2}/(2*a^{**5}d^{**3}g^{**3}i - 6*a^{**4}b*c*d^{**2}g^{**3}i + 4*a^{**4}b*d^{**3}g^{**3}i*x + 6*a^{**3}b^{**2}c^{**2}d*g^{**3}i - 12*a^{**3}b^{**2}c*d^{**2}g^{**3}i*x + 2*a^{**3}b^{**2}d^{**3}g^{**3}i*x**2 - 2*a^{**2}b^{**3}c^{**3}g^{**3}i + 12*a^{**2}b^{**3}c^{**2}d*g^{**3}i*x - 6*a^{**2}b^{**3}c*d^{**2}g^{**3}i*x**2 - 4*a*b^{**4}c^{**3}g^{**3}i*x + 6*a*b^{**4}c^{**2}d*g^{**3}i*x**2 - 2*b^{**5}c^{**3}g^{**3}i*x**2) + (6*A^{**2}a*d - 2*A^{**2}b*c + 14*A*B*a*d - 2*A*B*b*c + 15*B^{**2}a*d - B^{**2}b*c + x*(4*A^{**2}b*d + 12*A*B*b*d + 14*B^{**2}b*d))/(4*a^{**4}d^{**2}g^{**3}i - 8*a^{**3}b*c*d*g^{**3}i + 4*a^{**2}b^{**2}c^{**2}g^{**3}i + x**2*(4*a^{**2}b^{**2}d^{**2}g^{**3}i - 8*a*b^{**3}c*d*g^{**3}i + 4*b^{**4}c^{**2}g^{**3}i) + x*(8*a^{**3}b*d^{**2}g^{**3}i - 16*a^{**2}b^{**2}c*d*g^{**3}i + 8*a*b^{**3}c^{**2}g^{**3}i))$$

$$3.91 \quad \int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^4(ci+dix)} dx$$

Optimal. Leaf size=507

$$\frac{b^3(c+dx)^3 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)^2}{3g^4i(a+bx)^3(bc-ad)^4} - \frac{2b^3B(c+dx)^3 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{9g^4i(a+bx)^3(bc-ad)^4} + \frac{3b^2d(c+dx)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)^2}{2g^4i(a+bx)^2(bc-ad)^4}$$

[Out] $-6*b*B^2*d^2*(d*x+c)/(-a*d+b*c)^4/g^4/i/(b*x+a)+3/4*b^2*B^2*d*(d*x+c)^2/(-a*d+b*c)^4/g^4/i/(b*x+a)^2-2/27*b^3*B^2*(d*x+c)^3/(-a*d+b*c)^4/g^4/i/(b*x+a)^3-6*b*B*d^2*(d*x+c)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^4/g^4/i/(b*x+a)+3/2*b^2*B*d*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^4/g^4/i/(b*x+a)^2-2/9*b^3*B*(d*x+c)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^4/g^4/i/(b*x+a)^3-3*b*d^2*(d*x+c)*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/(-a*d+b*c)^4/g^4/i/(b*x+a)+3/2*b^2*d*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/(-a*d+b*c)^4/g^4/i/(b*x+a)^2-1/3*b^3*(d*x+c)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/(-a*d+b*c)^4/g^4/i/(b*x+a)^3-1/3*d^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))^3/B/(-a*d+b*c)^4/g^4/i$

Rubi [C] time = 8.43, antiderivative size = 2044, normalized size of antiderivative = 4.03, number of steps used = 151, number of rules used = 31, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}} = 0.738$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x]))^2/((a*g + b*g*x)^4*(c*i + d*i*x)), x]

[Out] $(-2*B^2)/(27*(b*c - a*d)*g^4*i*(a + b*x)^3) + (19*B^2*d)/(36*(b*c - a*d)^2*g^4*i*(a + b*x)^2) - (85*B^2*d^2)/(18*(b*c - a*d)^3*g^4*i*(a + b*x)) - (85*B^2*d^3*Log[a + b*x])/(18*(b*c - a*d)^4*g^4*i) + (A*B*d^3*Log[a + b*x]^2)/((b*c - a*d)^4*g^4*i) + (11*B^2*d^3*Log[a + b*x]^2)/(6*(b*c - a*d)^4*g^4*i) - (B^2*d^3*Log[a + b*x]*Log[(c + d*x)^(-1)]^2)/((b*c - a*d)^4*g^4*i) + (B^2*d^3*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[(c + d*x)^(-1)]^2)/((b*c - a*d)^4*g^4*i) + (B^2*d^3*Log[-((b*c - a*d)/(d*(a + b*x))]*Log[(e*(a + b*x))/(c + d*x])^2)/((b*c - a*d)^4*g^4*i) + (B^2*d^3*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x])^2)/((b*c - a*d)^4*g^4*i) - (2*B*(A + B*Log[(e*(a + b*x))/(c + d*x])))/(9*(b*c - a*d)*g^4*i*(a + b*x)^3) + (5*B*d*(A + B*Log[(e*(a + b*x))/(c + d*x])))/(6*(b*c - a*d)^2*g^4*i*(a + b*x)^2) - (11*B*d^2*(A + B*Log[(e*(a + b*x))/(c + d*x])))/(3*(b*c - a*d)^3*g^4*i*(a + b*x)) - (11*B*d^3*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x])))/(3*(b*c - a*d)^4*g^4*i) - (A +$

$$\begin{aligned}
& B \cdot \text{Log}\left[\frac{e \cdot (a + b \cdot x)}{c + d \cdot x}\right]^2 / (3 \cdot (b \cdot c - a \cdot d) \cdot g^{4 \cdot i} \cdot (a + b \cdot x)^3) + (d \cdot (A + B \cdot \text{Log}\left[\frac{e \cdot (a + b \cdot x)}{c + d \cdot x}\right])^2) / (2 \cdot (b \cdot c - a \cdot d)^2 \cdot g^{4 \cdot i} \cdot (a + b \cdot x)^2) \\
& - (d^2 \cdot (A + B \cdot \text{Log}\left[\frac{e \cdot (a + b \cdot x)}{c + d \cdot x}\right])^2) / ((b \cdot c - a \cdot d)^3 \cdot g^{4 \cdot i} \cdot (a + b \cdot x)) - (d^3 \cdot \text{Log}[a + b \cdot x] \cdot (A + B \cdot \text{Log}\left[\frac{e \cdot (a + b \cdot x)}{c + d \cdot x}\right])^2) / ((b \cdot c - a \cdot d)^4 \cdot g^{4 \cdot i}) \\
& + (85 \cdot B^2 \cdot d^3 \cdot \text{Log}[c + d \cdot x]) / (18 \cdot (b \cdot c - a \cdot d)^4 \cdot g^{4 \cdot i}) - (B^2 \cdot d^3 \cdot \text{Log}[a + b \cdot x]^2 \cdot \text{Log}[c + d \cdot x]) / ((b \cdot c - a \cdot d)^4 \cdot g^{4 \cdot i}) \\
& - (2 \cdot A \cdot B \cdot d^3 \cdot \text{Log}\left[-\left(\frac{d \cdot (a + b \cdot x)}{b \cdot c - a \cdot d}\right)\right] \cdot \text{Log}[c + d \cdot x]) / ((b \cdot c - a \cdot d)^4 \cdot g^{4 \cdot i}) - (11 \cdot B^2 \cdot d^3 \cdot \text{Log}\left[-\left(\frac{d \cdot (a + b \cdot x)}{b \cdot c - a \cdot d}\right)\right] \cdot \text{Log}[c + d \cdot x]) / (3 \cdot (b \cdot c - a \cdot d)^4 \cdot g^{4 \cdot i}) \\
& - (2 \cdot B^2 \cdot d^3 \cdot \text{Log}[a + b \cdot x] \cdot \text{Log}[(c + d \cdot x)^{-1}] \cdot \text{Log}[c + d \cdot x]) / ((b \cdot c - a \cdot d)^4 \cdot g^{4 \cdot i}) + (2 \cdot B^2 \cdot d^3 \cdot \text{Log}\left[-\left(\frac{d \cdot (a + b \cdot x)}{b \cdot c - a \cdot d}\right)\right] \cdot (\text{Log}[a + b \cdot x] + \text{Log}[(c + d \cdot x)^{-1}])) \\
& - \text{Log}\left[\frac{e \cdot (a + b \cdot x)}{c + d \cdot x}\right] \cdot \text{Log}[c + d \cdot x]) / ((b \cdot c - a \cdot d)^4 \cdot g^{4 \cdot i}) + (11 \cdot B \cdot d^3 \cdot (A + B \cdot \text{Log}\left[\frac{e \cdot (a + b \cdot x)}{c + d \cdot x}\right]) \cdot \text{Log}[c + d \cdot x]) / (3 \cdot (b \cdot c - a \cdot d)^4 \cdot g^{4 \cdot i}) \\
& + (d^3 \cdot (A + B \cdot \text{Log}\left[\frac{e \cdot (a + b \cdot x)}{c + d \cdot x}\right])^2 \cdot \text{Log}[c + d \cdot x]) / ((b \cdot c - a \cdot d)^4 \cdot g^{4 \cdot i}) + (A \cdot B \cdot d^3 \cdot \text{Log}[c + d \cdot x]^2) / ((b \cdot c - a \cdot d)^4 \cdot g^{4 \cdot i}) + (11 \cdot B^2 \cdot d^3 \cdot \text{Log}[c + d \cdot x]^2) / (6 \cdot (b \cdot c - a \cdot d)^4 \cdot g^{4 \cdot i}) \\
& - (B^2 \cdot d^3 \cdot \text{Log}[a + b \cdot x] \cdot \text{Log}[c + d \cdot x]^2) / ((b \cdot c - a \cdot d)^4 \cdot g^{4 \cdot i}) + (B^2 \cdot d^3 \cdot \text{Log}\left[\frac{e \cdot (a + b \cdot x)}{c + d \cdot x}\right] \cdot \text{Log}[c + d \cdot x]^2) / ((b \cdot c - a \cdot d)^4 \cdot g^{4 \cdot i}) + (B^2 \cdot d^3 \cdot \text{Log}[c + d \cdot x]^3) / (3 \cdot (b \cdot c - a \cdot d)^4 \cdot g^{4 \cdot i}) \\
& - (2 \cdot A \cdot B \cdot d^3 \cdot \text{Log}[a + b \cdot x] \cdot \text{Log}\left[\frac{b \cdot (c + d \cdot x)}{b \cdot c - a \cdot d}\right]) / ((b \cdot c - a \cdot d)^4 \cdot g^{4 \cdot i}) - (11 \cdot B^2 \cdot d^3 \cdot \text{Log}[a + b \cdot x] \cdot \text{Log}\left[\frac{b \cdot (c + d \cdot x)}{b \cdot c - a \cdot d}\right]) / (3 \cdot (b \cdot c - a \cdot d)^4 \cdot g^{4 \cdot i}) \\
& + (B^2 \cdot d^3 \cdot \text{Log}[a + b \cdot x]^2 \cdot \text{Log}\left[\frac{b \cdot (c + d \cdot x)}{b \cdot c - a \cdot d}\right]) / ((b \cdot c - a \cdot d)^4 \cdot g^{4 \cdot i}) - (2 \cdot A \cdot B \cdot d^3 \cdot \text{PolyLog}[2, -\left(\frac{d \cdot (a + b \cdot x)}{b \cdot c - a \cdot d}\right)]) / ((b \cdot c - a \cdot d)^4 \cdot g^{4 \cdot i}) \\
& - (11 \cdot B^2 \cdot d^3 \cdot \text{PolyLog}[2, -\left(\frac{d \cdot (a + b \cdot x)}{b \cdot c - a \cdot d}\right)]) / (b \cdot c - a \cdot d) / ((b \cdot c - a \cdot d)^4 \cdot g^{4 \cdot i}) + (2 \cdot B^2 \cdot d^3 \cdot \text{Log}[a + b \cdot x] \cdot \text{PolyLog}[2, -\left(\frac{d \cdot (a + b \cdot x)}{b \cdot c - a \cdot d}\right)]) / ((b \cdot c - a \cdot d)^4 \cdot g^{4 \cdot i}) \\
& - (2 \cdot A \cdot B \cdot d^3 \cdot \text{PolyLog}[2, \frac{b \cdot (c + d \cdot x)}{b \cdot c - a \cdot d}]) / ((b \cdot c - a \cdot d)^4 \cdot g^{4 \cdot i}) - (11 \cdot B^2 \cdot d^3 \cdot \text{PolyLog}[2, \frac{b \cdot (c + d \cdot x)}{b \cdot c - a \cdot d}]) / (3 \cdot (b \cdot c - a \cdot d)^4 \cdot g^{4 \cdot i}) \\
& - (2 \cdot B^2 \cdot d^3 \cdot \text{Log}[(c + d \cdot x)^{-1}] \cdot \text{PolyLog}[2, \frac{b \cdot (c + d \cdot x)}{b \cdot c - a \cdot d}]) / ((b \cdot c - a \cdot d)^4 \cdot g^{4 \cdot i}) + (2 \cdot B^2 \cdot d^3 \cdot (\text{Log}[a + b \cdot x] + \text{Log}[(c + d \cdot x)^{-1}])) \\
& - \text{Log}\left[\frac{e \cdot (a + b \cdot x)}{c + d \cdot x}\right] \cdot \text{PolyLog}[2, \frac{b \cdot (c + d \cdot x)}{b \cdot c - a \cdot d}]) / ((b \cdot c - a \cdot d)^4 \cdot g^{4 \cdot i}) - (2 \cdot B^2 \cdot d^3 \cdot \text{Log}\left[\frac{e \cdot (a + b \cdot x)}{c + d \cdot x}\right] \cdot \text{PolyLog}[2, 1 + \frac{b \cdot c - a \cdot d}{d \cdot (a + b \cdot x)}]) / ((b \cdot c - a \cdot d)^4 \cdot g^{4 \cdot i}) \\
& - (2 \cdot B^2 \cdot d^3 \cdot \text{PolyLog}[3, -\left(\frac{d \cdot (a + b \cdot x)}{b \cdot c - a \cdot d}\right)]) / ((b \cdot c - a \cdot d)^4 \cdot g^{4 \cdot i}) - (2 \cdot B^2 \cdot d^3 \cdot \text{PolyLog}[3, \frac{b \cdot (c + d \cdot x)}{b \cdot c - a \cdot d}]) / ((b \cdot c - a \cdot d)^4 \cdot g^{4 \cdot i}) \\
& - (2 \cdot B^2 \cdot d^3 \cdot \text{PolyLog}[3, 1 + \frac{b \cdot c - a \cdot d}{d \cdot (a + b \cdot x)}]) / ((b \cdot c - a \cdot d)^4 \cdot g^{4 \cdot i})
\end{aligned}$$

Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 30

```
Int[(x_)^(m_), x_Symbol] := Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && NeQ[m, -1]
```

Rule 44

```
Int[((a_) + (b_)*(x_)^(m_))*((c_) + (d_)*(x_)^(n_)), x_Symbol] := Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)/(x_), x_Symbol] := Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)^(p_)/(x_), x_Symbol] := Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
x]
```

Rule 2317

```
Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)^(p_)/((d_) + (e_)*(x_)), x_Symb
ol] := Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)^(p_)/((x_)*((d_) + (e_)*(x_))),
x_Symbol] := Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_)*((e_) + (f_)*(x_)^(m_))])*((a_) + Log[(c_)*(x_)^(n_)])*(b
_)^(p_)/(x_), x_Symbol] := -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_)*((e_) + (f_)*(x_)^(m_))^(r_)]*((a_) + Log[(c_)*(x_)^(n
_)])*(b_)^(p_)/(x_), x_Symbol] := Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
```

$- 1) * (a + b * \text{Log}[c * x^n])^{(p + 1)} / (e + f * x^m), x], x] /;$ FreeQ[{a, b, c, d, e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d * e, 1]

Rule 2390

$\text{Int}[(a + \text{Log}[c * (d + (e * x)^n)] * (b * x)^p * ((f + g * x)^q)^q, x_Symbol] := \text{Dist}[1/e, \text{Subst}[\text{Int}[(f * x)/d]^q * (a + b * \text{Log}[c * x^n])^p, x], x, d + e * x], x] /;$ FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e * f - d * g, 0]

Rule 2391

$\text{Int}[\text{Log}[(c * (d + (e * x)^n))] / (x), x_Symbol] := -\text{Simp}[\text{PolyLog}[2, -(c * e * x^n)] / n, x] /;$ FreeQ[{c, d, e, n}, x] && EqQ[c * d, 1]

Rule 2393

$\text{Int}[(a + \text{Log}[c * (d + (e * x))] * (b * x)) / ((f + g * x) * x), x_Symbol] := \text{Dist}[1/g, \text{Subst}[\text{Int}[(a + b * \text{Log}[1 + (c * e * x)/g]] / x, x], x, f + g * x], x] /;$ FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e * f - d * g, 0] && EqQ[g + c * (e * f - d * g), 0]

Rule 2394

$\text{Int}[(a + \text{Log}[c * (d + (e * x)^n)] * (b * x)) / ((f + g * x) * x), x_Symbol] := \text{Simp}[(\text{Log}[(e * (f + g * x)) / (e * f - d * g)] * (a + b * \text{Log}[c * (d + e * x)^n])) / g, x] - \text{Dist}[(b * e * n) / g, \text{Int}[\text{Log}[(e * (f + g * x)) / (e * f - d * g)] / (d + e * x), x], x] /;$ FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e * f - d * g, 0]

Rule 2396

$\text{Int}[(a + \text{Log}[c * (d + (e * x)^n)] * (b * x))^p / ((f + g * x) * x), x_Symbol] := \text{Simp}[(\text{Log}[(e * (f + g * x)) / (e * f - d * g)] * (a + b * \text{Log}[c * (d + e * x)^n]))^p / g, x] - \text{Dist}[(b * e * n * p) / g, \text{Int}[(\text{Log}[(e * (f + g * x)) / (e * f - d * g)] * (a + b * \text{Log}[c * (d + e * x)^n]))^{(p - 1)} / (d + e * x), x], x] /;$ FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e * f - d * g, 0] && IGtQ[p, 1]

Rule 2411

$\text{Int}[(a + \text{Log}[c * (d + (e * x)^n)] * (b * x))^p * ((f + g * x)^q * (h + i * x)^r), x_Symbol] := \text{Dist}[1/e, \text{Subst}[\text{Int}[(g * x)/e]^q * ((e * h - d * i) / e + (i * x) / e)^r * (a + b * \text{Log}[c * x^n])^p, x], x, d + e * x], x] /;$ FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e * f - d * g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2 * r]

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol]
:> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol]
:> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e]^m)], x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n]*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x]
*(f + g*Log[h*(i + j*x)^m))]/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] :>
Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n]*(f +
g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m)], x], x, k + l*x], x] /; FreeQ[{a,
b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] :> -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q]^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)
```

```
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_.))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_.)), x_Symbol] := Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q]^r)/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_.))^(p_.)*((c_.) + (d_.)*(x_.))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_.))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_.)), x_Symbol] := Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_.))^(p_.)*((c_.) + (d_.)*(x_.)
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] := With[{g = Simplify[(v - 1)*(c + d
*x))/(a + b*x]}, h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1)/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_.))^(p_.)*((c_.) + (d_.)*(x_.))^(q_.)
)^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_.))^(t_.))^(u_.)]*(v_), x_S
ymbol] := With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
h*x)^t]^u)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/(p*r*(s + 1)*(b*c
- a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q]^r]^s)/(g + h*x), x], x] /; FreeQ[k, x] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.))/((d_.) + (e_.)*(x_.)), x_S
ymbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
```


FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]

Rule 2525

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]

Rule 2528

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]

Rule 6589

Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d, e, n, p}, x] && EqQ[b*d, a*e]

Rule 6610

Int[(u_)*PolyLog[n_, v_], x_Symbol] := With[{w = DerivativeDivides[v, u*v, x]}, Simp[w*PolyLog[n + 1, v], x] /; !FalseQ[w]] /; FreeQ[n, x]

Rule 6688

Int[u_, x_Symbol] := With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; SimplifyIntegrandQ[v, u, x]]

Rule 6742

Int[u_, x_Symbol] := With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]]

Rubi steps

$$\begin{aligned}
\int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(91c + 91dx)(ag + bgx)^4} dx &= \int \left(\frac{b\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{91(bc - ad)g^4(a + bx)^4} - \frac{bd\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{91(bc - ad)^2g^4(a + bx)^3} + \frac{bd^2\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{91(bc - ad)^3g^4(a + bx)^2} \right. \\
&= -\frac{(bd^3) \int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{a+bx} dx}{91(bc - ad)^4g^4} + \frac{d^4 \int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{c+dx} dx}{91(bc - ad)^4g^4} + \frac{(bd^2) \int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(a+bx)^2} dx}{91(bc - ad)^3g^4} \\
&= -\frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{273(bc - ad)g^4(a + bx)^3} + \frac{d\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{182(bc - ad)^2g^4(a + bx)^2} - \frac{d^2\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{91(bc - ad)^3g^4(a + bx)} \\
&= -\frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{273(bc - ad)g^4(a + bx)^3} + \frac{d\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{182(bc - ad)^2g^4(a + bx)^2} - \frac{d^2\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{91(bc - ad)^3g^4(a + bx)} \\
&= -\frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{273(bc - ad)g^4(a + bx)^3} + \frac{d\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{182(bc - ad)^2g^4(a + bx)^2} - \frac{d^2\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{91(bc - ad)^3g^4(a + bx)} \\
&= -\frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{273(bc - ad)g^4(a + bx)^3} + \frac{d\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{182(bc - ad)^2g^4(a + bx)^2} - \frac{d^2\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{91(bc - ad)^3g^4(a + bx)} \\
&= -\frac{2B\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{819(bc - ad)g^4(a + bx)^3} + \frac{5Bd\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{546(bc - ad)^2g^4(a + bx)^2} - \frac{11Bd^2\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{273(bc - ad)^3g^4(a + bx)} \\
&= -\frac{2B\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{819(bc - ad)g^4(a + bx)^3} + \frac{5Bd\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{546(bc - ad)^2g^4(a + bx)^2} - \frac{11Bd^2\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{273(bc - ad)^3g^4(a + bx)} \\
&= \frac{B^2d^3 \log(a + bx) \log^2\left(\frac{e(a+bx)}{c+dx}\right)}{91(bc - ad)^4g^4} - \frac{2B\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{819(bc - ad)g^4(a + bx)^3} + \frac{5Bd\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{546(bc - ad)^2g^4(a + bx)^2} \\
&= -\frac{2B^2}{2457(bc - ad)g^4(a + bx)^3} + \frac{19B^2d}{3276(bc - ad)^2g^4(a + bx)^2} - \frac{85B^2d^2}{1638(bc - ad)^3g^4(a + bx)} \\
&= -\frac{2B^2}{2457(bc - ad)g^4(a + bx)^3} + \frac{19B^2d}{3276(bc - ad)^2g^4(a + bx)^2} - \frac{85B^2d^2}{1638(bc - ad)^3g^4(a + bx)} \\
&= -\frac{2B^2}{2457(bc - ad)g^4(a + bx)^3} + \frac{19B^2d}{3276(bc - ad)^2g^4(a + bx)^2} - \frac{85B^2d^2}{1638(bc - ad)^3g^4(a + bx)}
\end{aligned}$$

Mathematica [A] time = 1.46, size = 442, normalized size = 0.87

$$18B(6a^3Ad^3 + 18a^2bd^2(Adx + B(c + dx)) + 9ab^2d(2Ad^2x^2 + B(-c^2 + 2cdx + 3d^2x^2))) + b^3(6Ad^3x^3 + B(2c^3$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x)])^2/((a*g + b*g*x)^4*(c*i + d*i*x)), x]

[Out]
$$-1/108*(4*(9*A^2 + 6*A*B + 2*B^2)*(b*c - a*d)^3 - 3*(18*A^2 + 30*A*B + 19*B^2)*d*(b*c - a*d)^2*(a + b*x) - 6*(18*A^2 + 66*A*B + 85*B^2)*d^2*(-(b*c) + a*d)*(a + b*x)^2 + 6*(18*A^2 + 66*A*B + 85*B^2)*d^3*(a + b*x)^3*\text{Log}[a + b*x] + 6*B*(b*c - a*d)*(4*(3*A + B)*(b*c - a*d)^2 + 3*(6*A + 5*B)*d*(-(b*c) + a*d)*(a + b*x) + 6*(6*A + 11*B)*d^2*(a + b*x)^2)*\text{Log}[(e*(a + b*x))/(c + d*x)] + 18*B*(6*a^3*A*d^3 + 18*a^2*b*d^2*(A*d*x + B*(c + d*x)) + 9*a*b^2*d*(2*A*d^2*x^2 + B*(-c^2 + 2*c*d*x + 3*d^2*x^2)) + b^3*(6*A*d^3*x^3 + B*(2*c^3 - 3*c^2*d*x + 6*c*d^2*x^2 + 11*d^3*x^3)))*\text{Log}[(e*(a + b*x))/(c + d*x)]^2 + 3*6*B^2*d^3*(a + b*x)^3*\text{Log}[(e*(a + b*x))/(c + d*x)]^3 - 6*(18*A^2 + 66*A*B + 85*B^2)*d^3*(a + b*x)^3*\text{Log}[c + d*x])/((b*c - a*d)^4*g^4*i*(a + b*x)^3)$$

fricas [A] time = 0.86, size = 940, normalized size = 1.85

$$4(9A^2 + 6AB + 2B^2)b^3c^3 - 81(2A^2 + 2AB + B^2)ab^2c^2d + 324(A^2 + 2AB + 2B^2)a^2bcd^2 - (198A^2 + 510$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^4/(d*i*x+c*i), x, algorithm="fricas")

[Out]
$$-1/108*(4*(9*A^2 + 6*A*B + 2*B^2)*b^3*c^3 - 81*(2*A^2 + 2*A*B + B^2)*a*b^2*c^2*d + 324*(A^2 + 2*A*B + 2*B^2)*a^2*b*c*d^2 - (198*A^2 + 510*A*B + 575*B^2)*a^3*d^3 + 36*(B^2*b^3*d^3*x^3 + 3*B^2*a*b^2*d^3*x^2 + 3*B^2*a^2*b*d^3*x + B^2*a^3*d^3)*\text{log}((b*e*x + a*e)/(d*x + c))^3 + 6*((18*A^2 + 66*A*B + 85*B^2)*b^3*c*d^2 - (18*A^2 + 66*A*B + 85*B^2)*a*b^2*d^3)*x^2 + 18*((6*A*B + 11*B^2)*b^3*d^3*x^3 + 2*B^2*b^3*c^3 - 9*B^2*a*b^2*c^2*d + 18*B^2*a^2*b*c*d^2 + 6*A*B*a^3*d^3 + 3*(2*B^2*b^3*c*d^2 + 3*(2*A*B + 3*B^2)*a*b^2*d^3)*x^2 - 3*(B^2*b^3*c^2*d - 6*B^2*a*b^2*c*d^2 - 6*(A*B + B^2)*a^2*b*d^3)*x)*\text{log}((b*e*x + a*e)/(d*x + c))^2 - 3*((18*A^2 + 30*A*B + 19*B^2)*b^3*c^2*d - 54*(2*A^2 + 6*A*B + 7*B^2)*a*b^2*c*d^2 + (90*A^2 + 294*A*B + 359*B^2)*a^2*b*d^3)*x + 6*((18*A^2 + 66*A*B + 85*B^2)*b^3*d^3*x^3 + 18*A^2*a^3*d^3 + 4*(3*A*B + B^2)*b^3*c^3 - 27*(2*A*B + B^2)*a*b^2*c^2*d + 108*(A*B + B^2)*a^2*b*c*d^2 + 3*(2*(6*A*B + 11*B^2)*b^3*c*d^2 + 9*(2*A^2 + 6*A*B + 7*B^2)*a*b^2*d^3)*x^2 -$$

$$3*((6*A*B + 5*B^2)*b^3*c^2*d - 18*(2*A*B + 3*B^2)*a*b^2*c*d^2 - 18*(A^2 + 2*A*B + 2*B^2)*a^2*b*d^3)*x*\log((b*e*x + a*e)/(d*x + c))/((b^7*c^4 - 4*a*b^6*c^3*d + 6*a^2*b^5*c^2*d^2 - 4*a^3*b^4*c*d^3 + a^4*b^3*d^4)*g^4*i*x^3 + 3*(a*b^6*c^4 - 4*a^2*b^5*c^3*d + 6*a^3*b^4*c^2*d^2 - 4*a^4*b^3*c*d^3 + a^5*b^2*d^4)*g^4*i*x^2 + 3*(a^2*b^5*c^4 - 4*a^3*b^4*c^3*d + 6*a^4*b^3*c^2*d^2 - 4*a^5*b^2*c*d^3 + a^6*b*d^4)*g^4*i*x + (a^3*b^4*c^4 - 4*a^4*b^3*c^3*d + 6*a^5*b^2*c^2*d^2 - 4*a^6*b*c*d^3 + a^7*d^4)*g^4*i)$$

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^4/(d*i*x+c*i),x, algorith="giac")

[Out] Timed out

maple [B] time = 0.05, size = 3093, normalized size = 6.10

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^4/(d*i*x+c*i),x)

[Out] $\frac{1}{3}d^3/i/(a*d-b*c)^5/g^4*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^3*b*c+d^3/i/(a*d-b*c)^5/g^4*A^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*c-d^4/i/(a*d-b*c)^5/g^4*A*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a-d^4/i/(a*d-b*c)^5/g^4*A^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-1/3*d^4/i/(a*d-b*c)^5/g^4*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^3*a+2/27*e^3/i/(a*d-b*c)^5/g^4*B^2*b^4/(1/(d*x+c)*a*e-1/(d*x+c))*b*c/d*e+b/d*e)^3*c+1/3*e^3/i/(a*d-b*c)^5/g^4*A^2*b^4/(1/(d*x+c)*a*e-1/(d*x+c))*b*c/d*e+b/d*e)^3*c-3*d*e^2/i/(a*d-b*c)^5/g^4*A*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c))*b*c/d*e+b/d*e)^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-2/3*d*e^3/i/(a*d-b*c)^5/g^4*A*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c))*b*c/d*e+b/d*e)^3*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+3*d^2*e^2/i/(a*d-b*c)^5/g^4*A*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c))*b*c/d*e+b/d*e)^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-6*d^3*e/i/(a*d-b*c)^5/g^4*A*B*b/(1/(d*x+c)*a*e-1/(d*x+c))*b*c/d*e+b/d*e)*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+6*d^2*e/i/(a*d-b*c)^5/g^4*A*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c))*b*c/d*e+b/d*e)*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-1/3*d*e^3/i/(a*d-b*c)^5/g^4*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c))*b*c/d*e+b/d*e)^3*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a-3/2*d*e^2/i/(a*d-b*c)^5/g^4*A*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c))*b*c/d*e+b/d*e)^2*c+2/3*e^3/i/(a*d-b*c)^5/g^4*A*B*b^4/(1/(d*x+c)*a*e-1/(d*x+c))*b*c/d*e+b/d*e)^3*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-2/9*d*e^3/i/(a*d-b*c)^5/g^4*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c))*b*c/d*e+b/d*e)^3*\ln(b/d*e+(a*d-b*c)/($

$$\begin{aligned}
& d*x+c)/d*e)*a^{-2}/9*d*e^3/i/(a*d-b*c)^5/g^4*A*B*b^3/(1/(d*x+c)*a*e^{-1}/(d*x+c)* \\
& b*c/d*e+b/d*e)^3*a+3*d^2*e/i/(a*d-b*c)^5/g^4*B^2*b^2/(1/(d*x+c)*a*e^{-1}/(d*x+ \\
& c)*b*c/d*e+b/d*e)*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c-6*d^3*e/i/(a*d-b*c)^5 \\
& /g^4*B^2*b/(1/(d*x+c)*a*e^{-1}/(d*x+c)*b*c/d*e+b/d*e)*\ln(b/d*e+(a*d-b*c)/(d*x+ \\
& c)/d*e)*a+6*d^2*e/i/(a*d-b*c)^5/g^4*B^2*b^2/(1/(d*x+c)*a*e^{-1}/(d*x+c)*b*c/d* \\
& e+b/d*e)*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+3/2*d^2*e^2/i/(a*d-b*c)^5/g^4*B^ \\
& 2*b^2/(1/(d*x+c)*a*e^{-1}/(d*x+c)*b*c/d*e+b/d*e)^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/ \\
& d*e)^2*a-3/2*d*e^2/i/(a*d-b*c)^5/g^4*B^2*b^3/(1/(d*x+c)*a*e^{-1}/(d*x+c)*b*c/d \\
& *e+b/d*e)^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c+3/2*d^2*e^2/i/(a*d-b*c)^5/g \\
& ^4*B^2*b^2/(1/(d*x+c)*a*e^{-1}/(d*x+c)*b*c/d*e+b/d*e)^2*\ln(b/d*e+(a*d-b*c)/(d* \\
& x+c)/d*e)*a-3/2*d*e^2/i/(a*d-b*c)^5/g^4*B^2*b^3/(1/(d*x+c)*a*e^{-1}/(d*x+c)*b* \\
& c/d*e+b/d*e)^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-3/4*d*e^2/i/(a*d-b*c)^5/g^ \\
& 4*B^2*b^3/(1/(d*x+c)*a*e^{-1}/(d*x+c)*b*c/d*e+b/d*e)^2*c-2/27*d*e^3/i/(a*d-b*c \\
&)^5/g^4*B^2*b^3/(1/(d*x+c)*a*e^{-1}/(d*x+c)*b*c/d*e+b/d*e)^3*a+2/9*e^3/i/(a*d- \\
& b*c)^5/g^4*A*B*b^4/(1/(d*x+c)*a*e^{-1}/(d*x+c)*b*c/d*e+b/d*e)^3*c+3/2*d^2*e^2/ \\
& i/(a*d-b*c)^5/g^4*A^2*b^2/(1/(d*x+c)*a*e^{-1}/(d*x+c)*b*c/d*e+b/d*e)^2*a-3/2*d \\
& *e^2/i/(a*d-b*c)^5/g^4*A^2*b^3/(1/(d*x+c)*a*e^{-1}/(d*x+c)*b*c/d*e+b/d*e)^2*c- \\
& 1/3*d*e^3/i/(a*d-b*c)^5/g^4*A^2*b^3/(1/(d*x+c)*a*e^{-1}/(d*x+c)*b*c/d*e+b/d*e) \\
& ^3*a+2/9*e^3/i/(a*d-b*c)^5/g^4*B^2*b^4/(1/(d*x+c)*a*e^{-1}/(d*x+c)*b*c/d*e+b/d \\
& *e)^3*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+d^3/i/(a*d-b*c)^5/g^4*A*B*\ln(b/d*e+ \\
& (a*d-b*c)/(d*x+c)/d*e)^2*b*c+1/3*e^3/i/(a*d-b*c)^5/g^4*B^2*b^4/(1/(d*x+c)*a \\
& *e^{-1}/(d*x+c)*b*c/d*e+b/d*e)^3*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c-6*d^3*e/i \\
& / (a*d-b*c)^5/g^4*B^2*b/(1/(d*x+c)*a*e^{-1}/(d*x+c)*b*c/d*e+b/d*e)*a+6*d^2*e/i/ \\
& (a*d-b*c)^5/g^4*B^2*b^2/(1/(d*x+c)*a*e^{-1}/(d*x+c)*b*c/d*e+b/d*e)*c-3*d^3*e/i \\
& / (a*d-b*c)^5/g^4*A^2*b/(1/(d*x+c)*a*e^{-1}/(d*x+c)*b*c/d*e+b/d*e)*a+3*d^2*e/i/ \\
& (a*d-b*c)^5/g^4*A^2*b^2/(1/(d*x+c)*a*e^{-1}/(d*x+c)*b*c/d*e+b/d*e)*c+3/4*d^2*e \\
& ^2/i/(a*d-b*c)^5/g^4*B^2*b^2/(1/(d*x+c)*a*e^{-1}/(d*x+c)*b*c/d*e+b/d*e)^2*a-3* \\
& d^3*e/i/(a*d-b*c)^5/g^4*B^2*b/(1/(d*x+c)*a*e^{-1}/(d*x+c)*b*c/d*e+b/d*e)*\ln(b/ \\
& d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a+3/2*d^2*e^2/i/(a*d-b*c)^5/g^4*A*B*b^2/(1/(d* \\
& x+c)*a*e^{-1}/(d*x+c)*b*c/d*e+b/d*e)^2*a-6*d^3*e/i/(a*d-b*c)^5/g^4*A*B*b/(1/(d \\
& *x+c)*a*e^{-1}/(d*x+c)*b*c/d*e+b/d*e)*a+6*d^2*e/i/(a*d-b*c)^5/g^4*A*B*b^2/(1/(\\
& d*x+c)*a*e^{-1}/(d*x+c)*b*c/d*e+b/d*e)*c
\end{aligned}$$

maxima [B] time = 4.37, size = 3434, normalized size = 6.77

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^4/(d*i*x+c*i),x, algorithm="maxima")

[Out]
$$\begin{aligned}
& -1/6*B^2*((6*b^2*d^2*x^2 + 2*b^2*c^2 - 7*a*b*c*d + 11*a^2*d^2 - 3*(b^2*c*d \\
& - 5*a*b*d^2)*x)/((b^6*c^3 - 3*a*b^5*c^2*d + 3*a^2*b^4*c*d^2 - a^3*b^3*d^3)* \\
& g^4*i*x^3 + 3*(a*b^5*c^3 - 3*a^2*b^4*c^2*d + 3*a^3*b^3*c*d^2 - a^4*b^2*d^3) \\
& *g^4*i*x^2 + 3*(a^2*b^4*c^3 - 3*a^3*b^3*c^2*d + 3*a^4*b^2*c*d^2 - a^5*b*d^3
\end{aligned}$$

$$\begin{aligned}
&) * g^{4i} * x + (a^3 * b^3 * c^3 - 3 * a^4 * b^2 * c^2 * d + 3 * a^5 * b * c * d^2 - a^6 * d^3) * g^{4i} \\
&) + 6 * d^3 * \log(b * x + a) / ((b^4 * c^4 - 4 * a * b^3 * c^3 * d + 6 * a^2 * b^2 * c^2 * d^2 - 4 * a^3 * b * c * d^3 + a^4 * d^4) * g^{4i}) - 6 * d^3 * \log(d * x + c) / ((b^4 * c^4 - 4 * a * b^3 * c^3 * d + 6 * a^2 * b^2 * c^2 * d^2 - 4 * a^3 * b * c * d^3 + a^4 * d^4) * g^{4i}) * \log(b * e * x / (d * x + c) + a * e / (d * x + c))^2 - 1/3 * A * B * ((6 * b^2 * d^2 * x^2 + 2 * b^2 * c^2 - 7 * a * b * c * d + 11 * a^2 * d^2 - 3 * (b^2 * c * d - 5 * a * b * d^2) * x) / ((b^6 * c^3 - 3 * a * b^5 * c^2 * d + 3 * a^2 * b^4 * c * d^2 - a^3 * b^3 * d^3) * g^{4i} * x^3 + 3 * (a * b^5 * c^3 - 3 * a^2 * b^4 * c^2 * d + 3 * a^3 * b^3 * c * d^2 - a^4 * b^2 * d^3) * g^{4i} * x^2 + 3 * (a^2 * b^4 * c^3 - 3 * a^3 * b^3 * c^2 * d + 3 * a^4 * b^2 * c * d^2 - a^5 * b * d^3) * g^{4i} * x + (a^3 * b^3 * c^3 - 3 * a^4 * b^2 * c^2 * d + 3 * a^5 * b * c * d^2 - a^6 * d^3) * g^{4i})) + 6 * d^3 * \log(b * x + a) / ((b^4 * c^4 - 4 * a * b^3 * c^3 * d + 6 * a^2 * b^2 * c^2 * d^2 - 4 * a^3 * b * c * d^3 + a^4 * d^4) * g^{4i}) - 6 * d^3 * \log(d * x + c) / ((b^4 * c^4 - 4 * a * b^3 * c^3 * d + 6 * a^2 * b^2 * c^2 * d^2 - 4 * a^3 * b * c * d^3 + a^4 * d^4) * g^{4i})) * \log(b * e * x / (d * x + c) + a * e / (d * x + c)) - 1/108 * B^2 * (6 * (4 * b^3 * c^3 - 27 * a * b^2 * c^2 * d + 108 * a^2 * b * c * d^2 - 85 * a^3 * d^3 + 66 * (b^3 * c * d^2 - a * b^2 * d^3) * x^2 - 18 * (b^3 * d^3 * x^3 + 3 * a * b^2 * d^3 * x^2 + 3 * a^2 * b * d^3 * x + a^3 * d^3) * \log(b * x + a)^2 - 18 * (b^3 * d^3 * x^3 + 3 * a * b^2 * d^3 * x^2 + 3 * a^2 * b * d^3 * x + a^3 * d^3) * \log(d * x + c))^2 - 3 * (5 * b^3 * c^2 * d - 54 * a * b^2 * c * d^2 + 49 * a^2 * b * d^3) * x + 66 * (b^3 * d^3 * x^3 + 3 * a * b^2 * d^3 * x^2 + 3 * a^2 * b * d^3 * x + a^3 * d^3) * \log(b * x + a) - 6 * (11 * b^3 * d^3 * x^3 + 33 * a * b^2 * d^3 * x^2 + 33 * a^2 * b * d^3 * x + 11 * a^3 * d^3 - 6 * (b^3 * d^3 * x^3 + 3 * a * b^2 * d^3 * x^2 + 3 * a^2 * b * d^3 * x + a^3 * d^3) * \log(b * x + a)) * \log(d * x + c)) * \log(b * e * x / (d * x + c) + a * e / (d * x + c)) / (a^3 * b^4 * c^4 * g^{4i} - 4 * a^4 * b^3 * c^3 * d * g^{4i} + 6 * a^5 * b^2 * c^2 * d^2 * g^{4i} - 4 * a^6 * b * c * d^3 * g^{4i} + a^7 * d^4 * g^{4i} + (b^7 * c^4 * g^{4i} - 4 * a * b^6 * c^3 * d * g^{4i} + 6 * a^2 * b^5 * c^2 * d^2 * g^{4i} - 4 * a^3 * b^4 * c * d^3 * g^{4i} + a^4 * b^3 * d^4 * g^{4i}) * x^3 + 3 * (a * b^6 * c^4 * g^{4i} - 4 * a^2 * b^5 * c^3 * d * g^{4i} + 6 * a^3 * b^4 * c^2 * d^2 * g^{4i} - 4 * a^4 * b^3 * c * d^3 * g^{4i} + a^5 * b^2 * d^4 * g^{4i}) * x^2 + 3 * (a^2 * b^5 * c^4 * g^{4i} - 4 * a^3 * b^4 * c^3 * d * g^{4i} + 6 * a^4 * b^3 * c^2 * d^2 * g^{4i} - 4 * a^5 * b^2 * c * d^3 * g^{4i} + a^6 * b * d^4 * g^{4i}) * x) + (8 * b^3 * c^3 - 81 * a * b^2 * c^2 * d + 648 * a^2 * b * c * d^2 - 575 * a^3 * d^3 + 36 * (b^3 * d^3 * x^3 + 3 * a * b^2 * d^3 * x^2 + 3 * a^2 * b * d^3 * x + a^3 * d^3) * \log(b * x + a)^3 - 36 * (b^3 * d^3 * x^3 + 3 * a * b^2 * d^3 * x^2 + 3 * a^2 * b * d^3 * x + a^3 * d^3) * \log(d * x + c))^3 + 510 * (b^3 * c * d^2 - a * b^2 * d^3) * x^2 - 198 * (b^3 * d^3 * x^3 + 3 * a * b^2 * d^3 * x^2 + 3 * a^2 * b * d^3 * x + a^3 * d^3) * \log(b * x + a)^2 - 18 * (11 * b^3 * d^3 * x^3 + 33 * a * b^2 * d^3 * x^2 + 33 * a^2 * b * d^3 * x + 11 * a^3 * d^3 - 6 * (b^3 * d^3 * x^3 + 3 * a * b^2 * d^3 * x^2 + 3 * a^2 * b * d^3 * x + a^3 * d^3) * \log(b * x + a)) * \log(d * x + c))^2 - 3 * (19 * b^3 * c^2 * d - 378 * a * b^2 * c * d^2 + 359 * a^2 * b * d^3) * x + 510 * (b^3 * d^3 * x^3 + 3 * a * b^2 * d^3 * x^2 + 3 * a^2 * b * d^3 * x + a^3 * d^3) * \log(b * x + a) - 6 * (85 * b^3 * d^3 * x^3 + 255 * a * b^2 * d^3 * x^2 + 255 * a^2 * b * d^3 * x + 85 * a^3 * d^3 + 18 * (b^3 * d^3 * x^3 + 3 * a * b^2 * d^3 * x^2 + 3 * a^2 * b * d^3 * x + a^3 * d^3) * \log(b * x + a)^2 - 66 * (b^3 * d^3 * x^3 + 3 * a * b^2 * d^3 * x^2 + 3 * a^2 * b * d^3 * x + a^3 * d^3) * \log(d * x + c)) / (a^3 * b^4 * c^4 * g^{4i} - 4 * a^4 * b^3 * c^3 * d * g^{4i} + 6 * a^5 * b^2 * c^2 * d^2 * g^{4i} - 4 * a^6 * b * c * d^3 * g^{4i} + a^7 * d^4 * g^{4i} + (b^7 * c^4 * g^{4i} - 4 * a * b^6 * c^3 * d * g^{4i} + 6 * a^2 * b^5 * c^2 * d^2 * g^{4i} - 4 * a^3 * b^4 * c * d^3 * g^{4i} + a^4 * b^3 * d^4 * g^{4i}) * x^3 + 3 * (a * b^6 * c^4 * g^{4i} - 4 * a^2 * b^5 * c^3 * d * g^{4i} + 6 * a^3 * b^4 * c^2 * d^2 * g^{4i} - 4 * a^4 * b^3 * c * d^3 * g^{4i} + a^5 * b^2 * d^4 * g^{4i}) * x^2 + 3 * (a^2 * b^5 * c^4 * g^{4i} - 4 * a^3 * b^4 * c^3 * d * g^{4i} + 6 * a^4 * b^3 * c^2 * d^2 * g^{4i} - 4 * a^5 * b^2 * c * d^3 * g^{4i} + a^6 * b * d^4 * g^{4i}) * x) - 1/6 * A^2 * ((6 * b^2 * d^2 * x^2 + 2 * b^2 * c^2 - 7 * a * b * c * d + 11 * a^2 * d^2 - 3
\end{aligned}$$

```

*(b^2*c*d - 5*a*b*d^2)*x)/((b^6*c^3 - 3*a*b^5*c^2*d + 3*a^2*b^4*c*d^2 - a^3
*b^3*d^3)*g^4*i*x^3 + 3*(a*b^5*c^3 - 3*a^2*b^4*c^2*d + 3*a^3*b^3*c*d^2 - a^
4*b^2*d^3)*g^4*i*x^2 + 3*(a^2*b^4*c^3 - 3*a^3*b^3*c^2*d + 3*a^4*b^2*c*d^2 -
a^5*b*d^3)*g^4*i*x + (a^3*b^3*c^3 - 3*a^4*b^2*c^2*d + 3*a^5*b*c*d^2 - a^6*
d^3)*g^4*i) + 6*d^3*log(b*x + a)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*
d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^4*i) - 6*d^3*log(d*x + c)/((b^4*c^4 - 4*a*
b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^4*i)) - 1/18*(4*
b^3*c^3 - 27*a*b^2*c^2*d + 108*a^2*b*c*d^2 - 85*a^3*d^3 + 66*(b^3*c*d^2 - a
*b^2*d^3)*x^2 - 18*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3
)*log(b*x + a)^2 - 18*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*
d^3)*log(d*x + c)^2 - 3*(5*b^3*c^2*d - 54*a*b^2*c*d^2 + 49*a^2*b*d^3)*x + 6
6*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*log(b*x + a) -
6*(11*b^3*d^3*x^3 + 33*a*b^2*d^3*x^2 + 33*a^2*b*d^3*x + 11*a^3*d^3 - 6*(b^3
*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*log(b*x + a))*log(d*x
+ c))*A*B/(a^3*b^4*c^4*g^4*i - 4*a^4*b^3*c^3*d*g^4*i + 6*a^5*b^2*c^2*d^2*g
^4*i - 4*a^6*b*c*d^3*g^4*i + a^7*d^4*g^4*i + (b^7*c^4*g^4*i - 4*a*b^6*c^3*d
*g^4*i + 6*a^2*b^5*c^2*d^2*g^4*i - 4*a^3*b^4*c*d^3*g^4*i + a^4*b^3*d^4*g^4*
i)*x^3 + 3*(a*b^6*c^4*g^4*i - 4*a^2*b^5*c^3*d*g^4*i + 6*a^3*b^4*c^2*d^2*g^4
*i - 4*a^4*b^3*c*d^3*g^4*i + a^5*b^2*d^4*g^4*i)*x^2 + 3*(a^2*b^5*c^4*g^4*i
- 4*a^3*b^4*c^3*d*g^4*i + 6*a^4*b^3*c^2*d^2*g^4*i - 4*a^5*b^2*c*d^3*g^4*i +
a^6*b*d^4*g^4*i)*x)

```

mupad [B] time = 11.45, size = 1882, normalized size = 3.71

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```

[In] int((A + B*log((e*(a + b*x))/(c + d*x)))^2/((a*g + b*g*x)^4*(c*i + d*i*x)),
x)

```

```

[Out] log((e*(a + b*x))/(c + d*x))^2*(((B^2*d^3*(a*((3*a^2*d^2 + b^2*c^2 - 4*a*b*
c*d)/(6*b*d^3) + (a*(a*d - b*c))/(3*b*d^2)) + (3*a^3*d^3 - b^3*c^3 + 4*a*b^
2*c^2*d - 6*a^2*b*c*d^2)/(3*b*d^4)))/(g^4*i*(a^4*d^4 + b^4*c^4 + 6*a^2*b^2*
c^2*d^2 - 4*a*b^3*c^3*d - 4*a^3*b*c*d^3)) - (B^2*d^3*x^2*((b^2*c - a*b*d)/(
3*d^2) - (2*b*(a*d - b*c))/(3*d^2)))/(g^4*i*(a^4*d^4 + b^4*c^4 + 6*a^2*b^2*
c^2*d^2 - 4*a*b^3*c^3*d - 4*a^3*b*c*d^3)) + (B^2*d^3*x*(b*((3*a^2*d^2 + b^2
*c^2 - 4*a*b*c*d)/(6*b*d^3) + (a*(a*d - b*c))/(3*b*d^2)) + (3*a^2*d^2 + b^2
*c^2 - 4*a*b*c*d)/(3*d^3) + (2*a*(a*d - b*c))/(3*d^2)))/(g^4*i*(a^4*d^4 + b
^4*c^4 + 6*a^2*b^2*c^2*d^2 - 4*a*b^3*c^3*d - 4*a^3*b*c*d^3)))/((3*a^2*x)/d
+ a^3/(b*d) + (b^2*x^3)/d + (3*a*b*x^2)/d) - (d^3*(11*B^2 + 6*A*B))/(6*g^4*
i*(a^4*d^4 + b^4*c^4 + 6*a^2*b^2*c^2*d^2 - 4*a*b^3*c^3*d - 4*a^3*b*c*d^3))
+ ((198*A^2*a^2*d^2 + 36*A^2*b^2*c^2 + 575*B^2*a^2*d^2 + 8*B^2*b^2*c^2 + 5
10*A*B*a^2*d^2 + 24*A*B*b^2*c^2 - 126*A^2*a*b*c*d - 73*B^2*a*b*c*d - 138*A*
B*a*b*c*d)/(6*(a*d - b*c)) + (x*(90*A^2*a*b*d^2 + 359*B^2*a*b*d^2 - 18*A^2*
b^2*c*d - 19*B^2*b^2*c*d + 294*A*B*a*b*d^2 - 30*A*B*b^2*c*d))/(2*(a*d - b*c

```

$$\begin{aligned} &)) + (d*x^2*(18*A^2*b^2*d + 85*B^2*b^2*d + 66*A*B*b^2*d))/(a*d - b*c))/(x*(\\ &54*a^4*b*d^2*g^4*i + 54*a^2*b^3*c^2*g^4*i - 108*a^3*b^2*c*d*g^4*i) + x^2*(5 \\ &4*a*b^4*c^2*g^4*i + 54*a^3*b^2*d^2*g^4*i - 108*a^2*b^3*c*d*g^4*i) + x^3*(18 \\ &*b^5*c^2*g^4*i + 18*a^2*b^3*d^2*g^4*i - 36*a*b^4*c*d*g^4*i) + 18*a^5*d^2*g^ \\ &4*i + 18*a^3*b^2*c^2*g^4*i - 36*a^4*b*c*d*g^4*i) - (\log((e*(a + b*x))/(c + \\ &d*x)))*(x*(B^2/(g^4*i*(a*d - b*c)^2) - (d^3*(11*B^2 + 6*A*B)*(b*((3*a^2*d^2 \\ &+ b^2*c^2 - 4*a*b*c*d)/(6*b*d^3) + (a*(a*d - b*c))/(3*b*d^2)) + (3*a^2*d^2 \\ &+ b^2*c^2 - 4*a*b*c*d)/(3*d^3) + (2*a*(a*d - b*c))/(3*d^2)))/(3*g^4*i*(a^4* \\ &d^4 + b^4*c^4 + 6*a^2*b^2*c^2*d^2 - 4*a*b^3*c^3*d - 4*a^3*b*c*d^3))) + (5*B \\ &^2*a*d - 3*B^2*b*c)/(3*b*d*g^4*i*(a*d - b*c)^2) + (B^2*a)/(3*b*g^4*i*(a*d - \\ &b*c)^2) - (d^3*(11*B^2 + 6*A*B)*(a*((3*a^2*d^2 + b^2*c^2 - 4*a*b*c*d)/(6*b \\ &*d^3) + (a*(a*d - b*c))/(3*b*d^2)) + (3*a^3*d^3 - b^3*c^3 + 4*a*b^2*c^2*d - \\ &6*a^2*b*c*d^2)/(3*b*d^4)))/(3*g^4*i*(a^4*d^4 + b^4*c^4 + 6*a^2*b^2*c^2*d^2 \\ &- 4*a*b^3*c^3*d - 4*a^3*b*c*d^3)) + (d^3*x^2*((b^2*c - a*b*d)/(3*d^2) - (2 \\ &*b*(a*d - b*c))/(3*d^2))*(11*B^2 + 6*A*B))/(3*g^4*i*(a^4*d^4 + b^4*c^4 + 6* \\ &a^2*b^2*c^2*d^2 - 4*a*b^3*c^3*d - 4*a^3*b*c*d^3)))/((3*a^2*x)/d + a^3/(b*d \\ &) + (b^2*x^3)/d + (3*a*b*x^2)/d) - (B^2*d^3*log((e*(a + b*x))/(c + d*x))^3) \\ &/((3*g^4*i*(a^4*d^4 + b^4*c^4 + 6*a^2*b^2*c^2*d^2 - 4*a*b^3*c^3*d - 4*a^3*b* \\ &c*d^3)) + (d^3*atan((d^3*(A^2 + (85*B^2)/18 + (11*A*B)/3)*(18*a^4*d^4*g^4*i \\ &- 18*b^4*c^4*g^4*i + 36*a*b^3*c^3*d*g^4*i - 36*a^3*b*c*d^3*g^4*i)*1i)/(g^4 \\ &*i*(a*d - b*c)^4*(18*A^2*d^3 + 85*B^2*d^3 + 66*A*B*d^3)) + (b*d^4*x*(A^2 + \\ &(85*B^2)/18 + (11*A*B)/3)*(a^3*d^3*g^4*i - b^3*c^3*g^4*i + 3*a*b^2*c^2*d*g^ \\ &4*i - 3*a^2*b*c*d^2*g^4*i)*36i)/(g^4*i*(a*d - b*c)^4*(18*A^2*d^3 + 85*B^2*d \\ &^3 + 66*A*B*d^3)))*(A^2 + (85*B^2)/18 + (11*A*B)/3)*2i)/(g^4*i*(a*d - b*c)^ \\ &4) \end{aligned}$$

sympy [B] time = 55.10, size = 2388, normalized size = 4.71

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)**4/(d*i*x+c*i),x)

[Out]
$$\begin{aligned} &-B**2*d**3*log(e*(a + b*x)/(c + d*x))**3/(3*a**4*d**4*g**4*i - 12*a**3*b*c* \\ &d**3*g**4*i + 18*a**2*b**2*c**2*d**2*g**4*i - 12*a*b**3*c**3*d*g**4*i + 3*b \\ &**4*c**4*g**4*i) + d**3*(18*A**2 + 66*A*B + 85*B**2)*log(x + (18*A**2*a*d** \\ &4 + 18*A**2*b*c*d**3 + 66*A*B*a*d**4 + 66*A*B*b*c*d**3 + 85*B**2*a*d**4 + 8 \\ &5*B**2*b*c*d**3 - a**5*d**8*(18*A**2 + 66*A*B + 85*B**2)/(a*d - b*c)**4 + 5 \\ &*a**4*b*c*d**7*(18*A**2 + 66*A*B + 85*B**2)/(a*d - b*c)**4 - 10*a**3*b**2*c \\ &**2*d**6*(18*A**2 + 66*A*B + 85*B**2)/(a*d - b*c)**4 + 10*a**2*b**3*c**3*d* \\ &*5*(18*A**2 + 66*A*B + 85*B**2)/(a*d - b*c)**4 - 5*a*b**4*c**4*d**4*(18*A** \\ &2 + 66*A*B + 85*B**2)/(a*d - b*c)**4 + b**5*c**5*d**3*(18*A**2 + 66*A*B + 8 \\ &5*B**2)/(a*d - b*c)**4)/(36*A**2*b*d**4 + 132*A*B*b*d**4 + 170*B**2*b*d**4) \\ &)/(18*g**4*i*(a*d - b*c)**4) - d**3*(18*A**2 + 66*A*B + 85*B**2)*log(x + (1 \\ &8*A**2*a*d**4 + 18*A**2*b*c*d**3 + 66*A*B*a*d**4 + 66*A*B*b*c*d**3 + 85*B** \end{aligned}$$

$$\begin{aligned}
& 2*a*d**4 + 85*B**2*b*c*d**3 + a**5*d**8*(18*A**2 + 66*A*B + 85*B**2)/(a*d - \\
& b*c)**4 - 5*a**4*b*c*d**7*(18*A**2 + 66*A*B + 85*B**2)/(a*d - b*c)**4 + 10 \\
& *a**3*b**2*c**2*d**6*(18*A**2 + 66*A*B + 85*B**2)/(a*d - b*c)**4 - 10*a**2* \\
& b**3*c**3*d**5*(18*A**2 + 66*A*B + 85*B**2)/(a*d - b*c)**4 + 5*a*b**4*c**4* \\
& d**4*(18*A**2 + 66*A*B + 85*B**2)/(a*d - b*c)**4 - b**5*c**5*d**3*(18*A**2 \\
& + 66*A*B + 85*B**2)/(a*d - b*c)**4)/(36*A**2*b*d**4 + 132*A*B*b*d**4 + 170* \\
& B**2*b*d**4))/(18*g**4*i*(a*d - b*c)**4) + (66*A*B*a**2*d**2 - 42*A*B*a*b*c \\
& *d + 90*A*B*a*b*d**2*x + 12*A*B*b**2*c**2 - 18*A*B*b**2*c*d*x + 36*A*B*b**2 \\
& *d**2*x**2 + 85*B**2*a**2*d**2 - 23*B**2*a*b*c*d + 147*B**2*a*b*d**2*x + 4* \\
& B**2*b**2*c**2 - 15*B**2*b**2*c*d*x + 66*B**2*b**2*d**2*x**2)*log(e*(a + b* \\
& x)/(c + d*x))/(18*a**6*d**3*g**4*i - 54*a**5*b*c*d**2*g**4*i + 54*a**5*b*d* \\
& *3*g**4*i*x + 54*a**4*b**2*c**2*d*g**4*i - 162*a**4*b**2*c*d**2*g**4*i*x + \\
& 54*a**4*b**2*d**3*g**4*i*x**2 - 18*a**3*b**3*c**3*g**4*i + 162*a**3*b**3*c* \\
& *2*d*g**4*i*x - 162*a**3*b**3*c*d**2*g**4*i*x**2 + 18*a**3*b**3*d**3*g**4*i \\
& *x**3 - 54*a**2*b**4*c**3*g**4*i*x + 162*a**2*b**4*c**2*d*g**4*i*x**2 - 54* \\
& a**2*b**4*c*d**2*g**4*i*x**3 - 54*a*b**5*c**3*g**4*i*x**2 + 54*a*b**5*c**2* \\
& d*g**4*i*x**3 - 18*b**6*c**3*g**4*i*x**3) + (-6*A*B*a**3*d**3 - 18*A*B*a**2 \\
& *b*d**3*x - 18*A*B*a*b**2*d**3*x**2 - 6*A*B*b**3*d**3*x**3 - 18*B**2*a**2*b \\
& *c*d**2 - 18*B**2*a**2*b*d**3*x + 9*B**2*a*b**2*c**2*d - 18*B**2*a*b**2*c*d \\
& **2*x - 27*B**2*a*b**2*d**3*x**2 - 2*B**2*b**3*c**3 + 3*B**2*b**3*c**2*d*x \\
& - 6*B**2*b**3*c*d**2*x**2 - 11*B**2*b**3*d**3*x**3)*log(e*(a + b*x)/(c + d* \\
& x))**2/(6*a**7*d**4*g**4*i - 24*a**6*b*c*d**3*g**4*i + 18*a**6*b*d**4*g**4* \\
& i*x + 36*a**5*b**2*c**2*d**2*g**4*i - 72*a**5*b**2*c*d**3*g**4*i*x + 18*a** \\
& 5*b**2*d**4*g**4*i*x**2 - 24*a**4*b**3*c**3*d*g**4*i + 108*a**4*b**3*c**2*d \\
& **2*g**4*i*x - 72*a**4*b**3*c*d**3*g**4*i*x**2 + 6*a**4*b**3*d**4*g**4*i*x* \\
& *3 + 6*a**3*b**4*c**4*g**4*i - 72*a**3*b**4*c**3*d*g**4*i*x + 108*a**3*b**4 \\
& *c**2*d**2*g**4*i*x**2 - 24*a**3*b**4*c*d**3*g**4*i*x**3 + 18*a**2*b**5*c** \\
& 4*g**4*i*x - 72*a**2*b**5*c**3*d*g**4*i*x**2 + 36*a**2*b**5*c**2*d**2*g**4* \\
& i*x**3 + 18*a*b**6*c**4*g**4*i*x**2 - 24*a*b**6*c**3*d*g**4*i*x**3 + 6*b**7 \\
& *c**4*g**4*i*x**3) + (198*A**2*a**2*d**2 - 126*A**2*a*b*c*d + 36*A**2*b**2* \\
& c**2 + 510*A*B*a**2*d**2 - 138*A*B*a*b*c*d + 24*A*B*b**2*c**2 + 575*B**2*a* \\
& *2*d**2 - 73*B**2*a*b*c*d + 8*B**2*b**2*c**2 + x**2*(108*A**2*b**2*d**2 + 3 \\
& 96*A*B*b**2*d**2 + 510*B**2*b**2*d**2) + x*(270*A**2*a*b*d**2 - 54*A**2*b** \\
& 2*c*d + 882*A*B*a*b*d**2 - 90*A*B*b**2*c*d + 1077*B**2*a*b*d**2 - 57*B**2*b \\
& **2*c*d))/(108*a**6*d**3*g**4*i - 324*a**5*b*c*d**2*g**4*i + 324*a**4*b**2* \\
& c**2*d*g**4*i - 108*a**3*b**3*c**3*g**4*i + x**3*(108*a**3*b**3*d**3*g**4*i \\
& - 324*a**2*b**4*c*d**2*g**4*i + 324*a*b**5*c**2*d*g**4*i - 108*b**6*c**3*g \\
& **4*i) + x**2*(324*a**4*b**2*d**3*g**4*i - 972*a**3*b**3*c*d**2*g**4*i + 97 \\
& 2*a**2*b**4*c**2*d*g**4*i - 324*a*b**5*c**3*g**4*i) + x*(324*a**5*b*d**3*g* \\
& **4*i - 972*a**4*b**2*c*d**2*g**4*i + 972*a**3*b**3*c**2*d*g**4*i - 324*a**2 \\
& *b**4*c**3*g**4*i)
\end{aligned}$$

$$3.92 \quad \int \frac{(ag+bgx)^3 \left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)^2}{(ci+dx)^2} dx$$

Optimal. Leaf size=722

$$\frac{b^3 g^3 (c+dx)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)^2}{2d^4 i^2} - \frac{6bB g^3 (bc-ad)^2 \text{Li}_2\left(\frac{d(a+bx)}{b(c+dx)}\right) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{d^4 i^2} - \frac{3b g^3 (bc-ad)^2 \log\left(\frac{bc-ad}{b(c+dx)}\right)}{d^4 i^2}$$

[Out] $2*A*B*(-a*d+b*c)^2*g^3*(b*x+a)/d^3/i^2/(d*x+c)-2*B^2*(-a*d+b*c)^2*g^3*(b*x+a)/d^3/i^2/(d*x+c)+2*B^2*(-a*d+b*c)^2*g^3*(b*x+a)*\ln(e*(b*x+a)/(d*x+c))/d^3/i^2/(d*x+c)-b*B*(-a*d+b*c)*g^3*(b*x+a)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/d^3/i^2-6*b*B*(-a*d+b*c)^2*g^3*\ln((-a*d+b*c)/b/(d*x+c))*(A+B*\ln(e*(b*x+a)/(d*x+c)))/d^4/i^2-3*b*(-a*d+b*c)*g^3*(b*x+a)*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/d^3/i^2-(-a*d+b*c)^2*g^3*(b*x+a)*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/d^3/i^2/(d*x+c)+1/2*b^3*g^3*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/d^4/i^2-3*b*(-a*d+b*c)^2*g^3*\ln((-a*d+b*c)/b/(d*x+c))*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/d^4/i^2+b*B^2*(-a*d+b*c)^2*g^3*\ln(d*x+c)/d^4/i^2+b*B*(-a*d+b*c)^2*g^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))*\ln(1-b*(d*x+c)/d/(b*x+a))/d^4/i^2-6*b*B^2*(-a*d+b*c)^2*g^3*\text{polylog}(2,d*(b*x+a)/b/(d*x+c))/d^4/i^2-6*b*B*(-a*d+b*c)^2*g^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))*\text{polylog}(2,d*(b*x+a)/b/(d*x+c))/d^4/i^2-b*B^2*(-a*d+b*c)^2*g^3*\text{polylog}(2,b*(d*x+c)/d/(b*x+a))/d^4/i^2+6*b*B^2*(-a*d+b*c)^2*g^3*\text{polylog}(3,d*(b*x+a)/b/(d*x+c))/d^4/i^2$

Rubi [B] time = 6.15, antiderivative size = 2224, normalized size of antiderivative = 3.08, number of steps used = 119, number of rules used = 28, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}} = 0.667$, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 2486, 31, 44, 6688, 6742, 2500, 2433, 2375, 2317, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

[In] Int[((a*g + b*g*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2)/(c*i + d*i*x)^2,x]

[Out] $-((A*b^2*B*(b*c - a*d)*g^3*x)/(d^3*i^2)) + (2*B^2*(b*c - a*d)^3*g^3)/(d^4*i^2*(c + d*x)) + (2*b*B^2*(b*c - a*d)^2*g^3*\text{Log}[a + b*x])/(d^4*i^2) + (a^2*b*B^2*g^3*\text{Log}[a + b*x]^2)/(2*d^2*i^2) + (a*b*B^2*(2*b*c - 3*a*d)*g^3*\text{Log}[a + b*x]^2)/(d^3*i^2) + (b*B^2*(b*c - a*d)^2*g^3*\text{Log}[a + b*x]^2)/(d^4*i^2) - (3*b*B^2*(b*c - a*d)^2*g^3*\text{Log}[a + b*x]*\text{Log}[(c + d*x)^{-1}])/d^4*i^2 + (3*b*B^2*(b*c - a*d)^2*g^3*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[(c + d*x)^{-1}])/d^4*i^2 - (b*B^2*(b*c - a*d)*g^3*(a + b*x)*\text{Log}[(e*(a + b*x))/(c + d*x]))/(d^3*i^2) - (2*B*(b*c - a*d)^3*g^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]))/(d^3*i^2)$

$$\begin{aligned}
& x)))/(d^4i^2(c + dx)) - (a^2bB^2g^3\text{Log}[a + bx](A + B\text{Log}[(e(a + bx))/(c + dx)]))/(d^2i^2) - (2a^2bB^2(2bc - 3ad)g^3\text{Log}[a + bx](A + \\
& B\text{Log}[(e(a + bx))/(c + dx)]))/(d^3i^2) - (2bB^2(bc - ad)^2g^3\text{Log}[a + bx](A + B\text{Log}[(e(a + bx))/(c + dx)]))/(d^4i^2) - (b^2(2bc - 3a \\
& ad)g^3x(A + B\text{Log}[(e(a + bx))/(c + dx)]^2)/(d^3i^2) + (b^3g^3x^2 \\
& (A + B\text{Log}[(e(a + bx))/(c + dx)]^2)/(2d^2i^2) + ((bc - ad)^3g^3(A + B\text{Log}[(e(a + bx))/(c + dx)]^2)/(d^4i^2(c + dx)) - (bB^2(bc - \\
& ad)^2g^3\text{Log}[c + dx])/(d^4i^2) - (3bB^2(bc - ad)^2g^3\text{Log}[a + bx] \\
&]^2\text{Log}[c + dx])/(d^4i^2) - (b^3B^2c^2g^3\text{Log}[-((d(a + bx))/(bc - a \\
& ad))] * \text{Log}[c + dx])/(d^4i^2) - (2b^2B^2c(2bc - 3ad)g^3\text{Log}[-((d(a + bx))/(bc - a \\
& ad))] * \text{Log}[c + dx])/(d^4i^2) - (6A^2bB^2(bc - ad)^2g^3 \\
& \text{Log}[-((d(a + bx))/(bc - a \\
& ad))] * \text{Log}[c + dx])/(d^4i^2) - (2bB^2(bc - \\
& ad)^2g^3\text{Log}[-((d(a + bx))/(bc - a \\
& ad))] * \text{Log}[c + dx])/(d^4i^2) - (6bB^2(bc - ad)^2g^3\text{Log}[a + bx] * \text{Log}[(c + dx)^{-1}] * \text{Log}[c + dx])/(d \\
& ^4i^2) + (6bB^2(bc - ad)^2g^3\text{Log}[-((d(a + bx))/(bc - a \\
& ad))] * (\text{Log} \\
& [a + bx] + \text{Log}[(c + dx)^{-1}] - \text{Log}[(e(a + bx))/(c + dx)]) * \text{Log}[c + dx] \\
&])/(d^4i^2) + (b^3B^2c^2g^3(A + B\text{Log}[(e(a + bx))/(c + dx)]) * \text{Log}[c + \\
& dx])/(d^4i^2) + (2b^2B^2c(2bc - 3ad)g^3(A + B\text{Log}[(e(a + bx))/(c + dx)]) * \text{Log}[c + dx])/(d^4i^2) + (2bB^2(bc - ad)^2g^3(A + B\text{Log}[(e \\
& (a + bx))/(c + dx)]) * \text{Log}[c + dx])/(d^4i^2) + (3b(bc - ad)^2g^3(A \\
& + B\text{Log}[(e(a + bx))/(c + dx)])^2 * \text{Log}[c + dx])/(d^4i^2) + (b^3B^2c^2 \\
& g^3\text{Log}[c + dx]^2)/(2d^4i^2) + (b^2B^2c(2bc - 3ad)g^3\text{Log}[c + d \\
& x]^2)/(d^4i^2) + (3A^2bB^2(bc - ad)^2g^3\text{Log}[c + dx]^2)/(d^4i^2) + (\\
& bB^2(bc - ad)^2g^3\text{Log}[c + dx]^2)/(d^4i^2) - (3bB^2(bc - ad)^2g \\
& ^3\text{Log}[a + bx] * \text{Log}[c + dx]^2)/(d^4i^2) + (3bB^2(bc - ad)^2g^3\text{Log} \\
& [(e(a + bx))/(c + dx)] * \text{Log}[c + dx]^2)/(d^4i^2) + (bB^2(bc - ad)^2g \\
& ^3\text{Log}[c + dx]^3)/(d^4i^2) - (a^2bB^2g^3\text{Log}[a + bx] * \text{Log}[(b(c + dx) \\
&)/(bc - ad)])/(d^2i^2) - (2a^2bB^2(2bc - 3ad)g^3\text{Log}[a + bx] * \text{Lo \\
& g}[(b(c + dx))/(bc - ad)])/(d^3i^2) - (2bB^2(bc - ad)^2g^3\text{Log}[a \\
& + bx] * \text{Log}[(b(c + dx))/(bc - ad)])/(d^4i^2) + (3bB^2(bc - ad)^2g \\
& ^3\text{Log}[a + bx]^2 * \text{Log}[(b(c + dx))/(bc - ad)])/(d^4i^2) - (a^2bB^2g^3 \\
& \text{PolyLog}[2, -((d(a + bx))/(bc - ad))]/(d^2i^2) - (2a^2bB^2(2bc - \\
& 3ad)g^3\text{PolyLog}[2, -((d(a + bx))/(bc - ad))]/(d^3i^2) - (2bB^2 \\
& (bc - ad)^2g^3\text{PolyLog}[2, -((d(a + bx))/(bc - ad))]/(d^4i^2) + (6 \\
& bB^2(bc - ad)^2g^3\text{Log}[a + bx] * \text{PolyLog}[2, -((d(a + bx))/(bc - ad) \\
&)]/(d^4i^2) - (b^3B^2c^2g^3\text{PolyLog}[2, (b(c + dx))/(bc - ad)]/(d^ \\
& 4i^2) - (2b^2B^2c(2bc - 3ad)g^3\text{PolyLog}[2, (b(c + dx))/(bc - a \\
& ad)]/(d^4i^2) - (6A^2bB^2(bc - ad)^2g^3\text{PolyLog}[2, (b(c + dx))/(bc \\
& - ad)]/(d^4i^2) - (2bB^2(bc - ad)^2g^3\text{PolyLog}[2, (b(c + dx))/(b \\
& c - ad)]/(d^4i^2) - (6bB^2(bc - ad)^2g^3\text{Log}[(c + dx)^{-1}] * \text{Poly} \\
& \text{Log}[2, (b(c + dx))/(bc - ad)]/(d^4i^2) + (6bB^2(bc - ad)^2g^3(\\
& \text{Log}[a + bx] + \text{Log}[(c + dx)^{-1}] - \text{Log}[(e(a + bx))/(c + dx)]) * \text{PolyLog}[\\
& 2, (b(c + dx))/(bc - ad)]/(d^4i^2) - (6bB^2(bc - ad)^2g^3\text{PolyL} \\
& \text{og}[3, -((d(a + bx))/(bc - ad))]/(d^4i^2) - (6bB^2(bc - ad)^2g^3 \\
& * \text{PolyLog}[3, (b(c + dx))/(bc - ad)]/(d^4i^2)
\end{aligned}$$

Rule 12

$\text{Int}[(a_*)(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \ \&\& \ !\text{MatchQ}[u, (b_*)(v_)] /; \text{FreeQ}[b, x]$

Rule 30

$\text{Int}[(x_)^(m_), x_Symbol] \rightarrow \text{Simp}[x^{(m+1)}/(m+1), x] /; \text{FreeQ}[m, x] \ \&\& \ \text{NeQ}[m, -1]$

Rule 31

$\text{Int}[(a_*) + (b_*)(x_)^(-1), x_Symbol] \rightarrow \text{Simp}[\text{Log}[\text{RemoveContent}[a + b*x, x]]/b, x] /; \text{FreeQ}[\{a, b\}, x]$

Rule 44

$\text{Int}[(a_*) + (b_*)(x_)^(m_)*((c_*) + (d_*)(x_)^(n_)), x_Symbol] \rightarrow \text{Int}[\text{ExpandIntegrand}[(a + b*x)^m*(c + d*x)^n, x], x] /; \text{FreeQ}[\{a, b, c, d\}, x] \ \&\& \ \text{NeQ}[b*c - a*d, 0] \ \&\& \ \text{ILtQ}[m, 0] \ \&\& \ \text{IntegerQ}[n] \ \&\& \ !(\text{IGtQ}[n, 0] \ \&\& \ \text{LtQ}[m + n + 2, 0])$

Rule 2301

$\text{Int}[(a_*) + \text{Log}[(c_*)(x_)^(n_)]*(b_)]/(x_), x_Symbol] \rightarrow \text{Simp}[(a + b*\text{Log}[c*x^n])^2/(2*b*n), x] /; \text{FreeQ}[\{a, b, c, n\}, x]$

Rule 2302

$\text{Int}[(a_*) + \text{Log}[(c_*)(x_)^(n_)]*(b_)]^(p_)/(x_), x_Symbol] \rightarrow \text{Dist}[1/(b*n), \text{Subst}[\text{Int}[x^p, x], x, a + b*\text{Log}[c*x^n]], x] /; \text{FreeQ}[\{a, b, c, n, p\}, x]$

Rule 2317

$\text{Int}[(a_*) + \text{Log}[(c_*)(x_)^(n_)]*(b_)]^(p_)/((d_*) + (e_*)(x_)), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[1 + (e*x)/d]*(a + b*\text{Log}[c*x^n])^p)/e, x] - \text{Dist}[(b*n*p)/e, \text{Int}[(\text{Log}[1 + (e*x)/d]*(a + b*\text{Log}[c*x^n])^(p-1))/x, x], x] /; \text{FreeQ}[\{a, b, c, d, e, n\}, x] \ \&\& \ \text{IGtQ}[p, 0]$

Rule 2374

$\text{Int}[(\text{Log}[(d_)*((e_*) + (f_*)(x_)^(m_))])*(a_*) + \text{Log}[(c_*)(x_)^(n_)]*(b_)]^(p_)/(x_), x_Symbol] \rightarrow -\text{Simp}[(\text{PolyLog}[2, -(d*f*x^m)]*(a + b*\text{Log}[c*x^n])^p)/m, x] + \text{Dist}[(b*n*p)/m, \text{Int}[(\text{PolyLog}[2, -(d*f*x^m)]*(a + b*\text{Log}[c*x^n])^p)/m, x]]$

$n])^{(p-1)}/x, x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, m, n\}, x] \ \&\& \ \text{IGtQ}[p, 0]$
 $\&\& \ \text{EqQ}[d*e, 1]$

Rule 2375

$\text{Int}[(\text{Log}[(d_.) * ((e_.) + (f_.) * (x_)^{(m_.)})^{(r_.)}] * ((a_.) + \text{Log}[(c_.) * (x_)^{(n_.)}]) * (b_.)^{(p_.)}) / (x_), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[d * (e + f * x^m)^r] * (a + b * \text{Log}[c * x^n])^{(p+1)}) / (b * n * (p+1)), x] - \text{Dist}[(f * m * r) / (b * n * (p+1)), \text{Int}[(x^{(m-1)} * (a + b * \text{Log}[c * x^n])^{(p+1)}) / (e + f * x^m), x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, r, m, n\}, x] \ \&\& \ \text{IGtQ}[p, 0] \ \&\& \ \text{NeQ}[d * e, 1]$

Rule 2390

$\text{Int}[(a_.) + \text{Log}[(c_.) * ((d_) + (e_.) * (x_)^{(n_.)})] * (b_.)^{(p_.)} * ((f_) + (g_.) * (x_)^{(q_.)}) / (x_), x_Symbol] \rightarrow \text{Dist}[1/e, \text{Subst}[\text{Int}[(f * x) / d]^q * (a + b * \text{Log}[c * x^n])^p, x], x, d + e * x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g, n, p, q\}, x] \ \&\& \ \text{EqQ}[e * f - d * g, 0]$

Rule 2391

$\text{Int}[\text{Log}[(c_.) * ((d_) + (e_.) * (x_)^{(n_.)})] / (x_), x_Symbol] \rightarrow -\text{Simp}[\text{PolyLog}[2, -(c * e * x^n)] / n, x] /; \text{FreeQ}[\{c, d, e, n\}, x] \ \&\& \ \text{EqQ}[c * d, 1]$

Rule 2393

$\text{Int}[(a_.) + \text{Log}[(c_.) * ((d_) + (e_.) * (x_))] * (b_.) / ((f_.) + (g_.) * (x_)), x_Symbol] \rightarrow \text{Dist}[1/g, \text{Subst}[\text{Int}[(a + b * \text{Log}[1 + (c * e * x) / g]] / x, x], x, f + g * x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g\}, x] \ \&\& \ \text{NeQ}[e * f - d * g, 0] \ \&\& \ \text{EqQ}[g + c * (e * f - d * g), 0]$

Rule 2394

$\text{Int}[(a_.) + \text{Log}[(c_.) * ((d_) + (e_.) * (x_)^{(n_.)})] * (b_.) / ((f_.) + (g_.) * (x_)), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[(e * (f + g * x)) / (e * f - d * g)] * (a + b * \text{Log}[c * (d + e * x)^n]) / g, x] - \text{Dist}[(b * e * n) / g, \text{Int}[\text{Log}[(e * (f + g * x)) / (e * f - d * g)] / (d + e * x), x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g, n\}, x] \ \&\& \ \text{NeQ}[e * f - d * g, 0]$

Rule 2396

$\text{Int}[(a_.) + \text{Log}[(c_.) * ((d_) + (e_.) * (x_)^{(n_.)})] * (b_.)^{(p_.)} / ((f_.) + (g_.) * (x_)), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[(e * (f + g * x)) / (e * f - d * g)] * (a + b * \text{Log}[c * (d + e * x)^n])^p) / g, x] - \text{Dist}[(b * e * n * p) / g, \text{Int}[(\text{Log}[(e * (f + g * x)) / (e * f - d * g)] * (a + b * \text{Log}[c * (d + e * x)^n])^{(p-1)}) / (d + e * x), x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g, n, p\}, x] \ \&\& \ \text{NeQ}[e * f - d * g, 0] \ \&\& \ \text{IGtQ}[p, 1]$

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] := Dist[1/e, Subst[Int[(k*x)/d]^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] := Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n]*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m)))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] :=
Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n]*(f +
g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m)], x], x, k + l*x], x] /; FreeQ[{a,
b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)
^(r_.)]^(s_.), x_Symbol] := Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)
^q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q]^r]^s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] := Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
```

$e^{(f*(a + b*x)^p*(c + d*x)^q)^r} / (k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^{(m + 1)/(a + b*x)}, x], x] - Dist[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^{(m + 1)/(c + d*x)}, x], x]) /;$ FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r}, x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]

Rule 2500

$Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^{(p_.)*((c_.) + (d_.)*(x_))^{(q_.)})^{(r_.)}]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^{(n_.)}]*(t_.)))/((j_.) + (k_.)*(x_)), x_Symbol] := Dist[Log[e^{(f*(a + b*x)^p*(c + d*x)^q)^r} - Log[(a + b*x)^{p*r}] - Log[(c + d*x)^{q*r}], Int[(s + t*Log[i*(g + h*x)^n])^{(j + k*x)}, x], x] + (Int[(Log[(a + b*x)^{p*r}]* (s + t*Log[i*(g + h*x)^n]))^{(j + k*x)}, x] + Int[(Log[(c + d*x)^{q*r}]* (s + t*Log[i*(g + h*x)^n]))^{(j + k*x)}, x]) /;$ FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ[b*c - a*d, 0]

Rule 2523

$Int[((a_.) + Log[(c_.)*(RFX_)^{(p_.)}]*(b_.))^{(n_.)}, x_Symbol] := Simp[x*(a + b*Log[c*RFX^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*RFX^p])^{(n - 1)}*D[RFX, x])/RFX, x], x] /;$ FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFX, x] && IGtQ[n, 0]

Rule 2524

$Int[((a_.) + Log[(c_.)*(RFX_)^{(p_.)}]*(b_.))^{(n_.)}/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFX^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFX^p])^{(n - 1)}*D[RFX, x])/RFX, x], x] /;$ FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFX, x] && IGtQ[n, 0]

Rule 2525

$Int[((a_.) + Log[(c_.)*(RFX_)^{(p_.)}]*(b_.))^{(n_.)*((d_.) + (e_.)*(x_))^{(m_.)}), x_Symbol] := Simp[((d + e*x)^{(m + 1)}*(a + b*Log[c*RFX^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^{(m + 1)}*(a + b*Log[c*RFX^p])^{(n - 1)}*D[RFX, x])/RFX, x], x] /;$ FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFX, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]

Rule 2528

$Int[((a_.) + Log[(c_.)*(RFX_)^{(p_.)}]*(b_.))^{(n_.)}*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFX^p])^n, RGx, x]}, Int[u, x] /;$ SumQ[u]] /;

FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFX, x] && RationalFunctionQ[RGx, x]

onQ[RGx, x] && IGtQ[n, 0]

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_Symbol]
:> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d, e, n, p}, x]
&& EqQ[b*d, a*e]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; SimplifierIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]]
```

Rubi steps

$$\begin{aligned}
\int \frac{(ag + bgx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{(92c + 92dx)^2} dx &= \int \left(-\frac{b^2(2bc - 3ad)g^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{8464d^3} + \frac{b^3g^3x \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{8464d^2} \right) dx \\
&= \frac{(b^3g^3) \int x \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 dx}{8464d^2} - \frac{(b^2(2bc - 3ad)g^3) \int \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 dx}{8464d^3} \\
&= -\frac{b^2(2bc - 3ad)g^3x \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{8464d^3} + \frac{b^3g^3x^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{16928d^2} \\
&= -\frac{b^2(2bc - 3ad)g^3x \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{8464d^3} + \frac{b^3g^3x^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{16928d^2} \\
&= -\frac{b^2(2bc - 3ad)g^3x \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{8464d^3} + \frac{b^3g^3x^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{16928d^2} \\
&= -\frac{b^2(2bc - 3ad)g^3x \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{8464d^3} + \frac{b^3g^3x^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{16928d^2} \\
&= -\frac{Ab^2B(bc - ad)g^3x}{8464d^3} - \frac{B(bc - ad)^3g^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{4232d^4(c + dx)} - \frac{a^2bBg^3}{8464d^3} \\
&= -\frac{Ab^2B(bc - ad)g^3x}{8464d^3} - \frac{bB^2(bc - ad)g^3(a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{8464d^3} - \frac{B(bc - ad)^3g^3}{8464d^3} \\
&= -\frac{Ab^2B(bc - ad)g^3x}{8464d^3} - \frac{bB^2(bc - ad)g^3(a + bx) \log \left(\frac{e(a+bx)}{c+dx} \right)}{8464d^3} - \frac{B(bc - ad)^3g^3}{8464d^3} \\
&= -\frac{Ab^2B(bc - ad)g^3x}{8464d^3} + \frac{B^2(bc - ad)^3g^3}{4232d^4(c + dx)} + \frac{bB^2(bc - ad)^2g^3 \log(a + bx)}{4232d^4} \\
&= -\frac{Ab^2B(bc - ad)g^3x}{8464d^3} + \frac{B^2(bc - ad)^3g^3}{4232d^4(c + dx)} + \frac{bB^2(bc - ad)^2g^3 \log(a + bx)}{4232d^4} \\
&= -\frac{Ab^2B(bc - ad)g^3x}{8464d^3} + \frac{B^2(bc - ad)^3g^3}{4232d^4(c + dx)} + \frac{bB^2(bc - ad)^2g^3 \log(a + bx)}{4232d^4}
\end{aligned}$$

Mathematica [B] time = 7.41, size = 5193, normalized size = 7.19

Result too large to show

Antiderivative was successfully verified.

[In] Integrate[((a*g + b*g*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(c*i + d*i*x)^2,x]

[Out] Result too large to show

fricas [F] time = 0.91, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{A^2 b^3 g^3 x^3 + 3 A^2 a b^2 g^3 x^2 + 3 A^2 a^2 b g^3 x + A^2 a^3 g^3 + (B^2 b^3 g^3 x^3 + 3 B^2 a b^2 g^3 x^2 + 3 B^2 a^2 b g^3 x + B^2 a^3 g^3)}{d^2 i^2 x^2 + 2 c d i^2 x + c^2 i^2} \right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^2,x, algorithm="fricas")

[Out] integral((A^2*b^3*g^3*x^3 + 3*A^2*a*b^2*g^3*x^2 + 3*A^2*a^2*b*g^3*x + A^2*a^3*g^3 + (B^2*b^3*g^3*x^3 + 3*B^2*a*b^2*g^3*x^2 + 3*B^2*a^2*b*g^3*x + B^2*a^3*g^3)*log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*B*b^3*g^3*x^3 + 3*A*B*a*b^2*g^3*x^2 + 3*A*B*a^2*b*g^3*x + A*B*a^3*g^3)*log((b*e*x + a*e)/(d*x + c)))/(d^2*i^2*x^2 + 2*c*d*i^2*x + c^2*i^2), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^2,x, algorithm="giac")

[Out] Timed out

maple [F] time = 2.18, size = 0, normalized size = 0.00

$$\int \frac{(bgx + ag)^3 \left(B \ln \left(\frac{(bx+a)e}{dx+c} \right) + A \right)^2}{(dix + ci)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] $\int ((b*gx+ag)^3*(B*\ln((b*x+a)/(d*x+c)*e)+A)^2/(d*i*x+c*i)^2, x)$

[Out] $\int ((b*gx+ag)^3*(B*\ln((b*x+a)/(d*x+c)*e)+A)^2/(d*i*x+c*i)^2, x)$

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{integrate}((b*gx+ag)^3*(A+B*\log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^2, x, \text{algorithm}="maxima")$

[Out] $\frac{1}{2}*(2*c^3/(d^5*i^2*x + c*d^4*i^2) + 6*c^2*\log(d*x + c)/(d^4*i^2) + (d*x^2 - 4*c*x)/(d^3*i^2))*A^2*b^3*g^3 - 3*A^2*a*b^2*(c^2/(d^4*i^2*x + c*d^3*i^2) - x/(d^2*i^2) + 2*c*\log(d*x + c)/(d^3*i^2))*g^3 + 3*A^2*a^2*b*g^3*(c/(d^3*i^2*x + c*d^2*i^2) + \log(d*x + c)/(d^2*i^2)) - 2*A*B*a^3*g^3*(\log(b*e*x/(d*x + c) + a*e/(d*x + c))/(d^2*i^2*x + c*d*i^2) - 1/(d^2*i^2*x + c*d*i^2) - b*\log(b*x + a)/((b*c*d - a*d^2)*i^2) + b*\log(d*x + c)/((b*c*d - a*d^2)*i^2)) - A^2*a^3*g^3/(d^2*i^2*x + c*d*i^2) + 1/2*(2*((b^3*c^2*d*g^3 - 2*a*b^2*c*d^2*g^3 + a^2*b*d^3*g^3)*B^2*x + (b^3*c^3*g^3 - 2*a*b^2*c^2*d*g^3 + a^2*b*c*d^2*g^3)*B^2)*\log(d*x + c)^3 + (B^2*b^3*d^3*g^3*x^3 - 3*(b^3*c*d^2*g^3 - 2*a*b^2*d^3*g^3)*B^2*x^2 - 2*(2*b^3*c^2*d*g^3 - 3*a*b^2*c*d^2*g^3)*B^2*x + 2*(b^3*c^3*g^3 - 3*a*b^2*c^2*d*g^3 + 3*a^2*b*c*d^2*g^3 - a^3*d^3*g^3)*B^2)*\log(d*x + c)^2)/(d^5*i^2*x + c*d^4*i^2) - \text{integrate}(- (B^2*a^3*d^3*g^3*\log(e)^2 + (B^2*b^3*d^3*g^3*\log(e)^2 + 2*A*B*b^3*d^3*g^3*\log(e))*x^3 + 3*(B^2*a*b^2*d^3*g^3*\log(e)^2 + 2*A*B*a*b^2*d^3*g^3*\log(e))*x^2 + (B^2*b^3*d^3*g^3*x^3 + 3*B^2*a*b^2*d^3*g^3*x^2 + 3*B^2*a^2*b*d^3*g^3*x + B^2*a^3*d^3*g^3)*\log(b*x + a)^2 + 3*(B^2*a^2*b*d^3*g^3*\log(e)^2 + 2*A*B*a^2*b*d^3*g^3*\log(e))*x + 2*(B^2*a^3*d^3*g^3*\log(e) + (B^2*b^3*d^3*g^3*\log(e) + A*B*b^3*d^3*g^3))*x^3 + 3*(B^2*a*b^2*d^3*g^3*\log(e) + A*B*a*b^2*d^3*g^3))*x^2 + 3*(B^2*a^2*b*d^3*g^3*\log(e) + A*B*a^2*b*d^3*g^3)*x*\log(b*x + a) - ((2*A*B*b^3*d^3*g^3 + (2*g^3*\log(e) + g^3)*B^2*b^3*d^3)*x^3 + 2*(b^3*c^3*g^3 - 3*a*b^2*c^2*d*g^3 + 3*a^2*b*c*d^2*g^3 + (g^3*\log(e) - g^3)*a^3*d^3)*B^2 + 3*(2*A*B*a*b^2*d^3*g^3 - (b^3*c*d^2*g^3 - 2*(g^3*\log(e) + g^3)*a*b^2*d^3)*B^2))*x^2 + 2*(3*A*B*a^2*b*d^3*g^3 + (3*a^2*b*d^3*g^3*\log(e) - 2*b^3*c^2*d*g^3 + 3*a*b^2*c*d^2*g^3)*B^2)*x + 2*(B^2*b^3*d^3*g^3*x^3 + 3*B^2*a*b^2*d^3*g^3*x^2 + 3*B^2*a^2*b*d^3*g^3*x + B^2*a^3*d^3*g^3)*\log(b*x + a))*\log(d*x + c))/(d^5*i^2*x^2 + 2*c*d^4*i^2*x + c^2*d^3*i^2), x)$

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ag + b gx)^3 \left(A + B \ln \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{(ci + dix)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)^3*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(c*i + d*i*x)^2,x)
```

```
[Out] int(((a*g + b*g*x)^3*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(c*i + d*i*x)^2, x)
```

```
sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00
```

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**3*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(d*i*x+c*i)**2,x)
```

```
[Out] Timed out
```

$$3.93 \quad \int \frac{(ag+bgx)^2 \left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)^2}{(ci+dix)^2} dx$$

Optimal. Leaf size=469

$$\frac{4bBg^2(bc-ad)\text{Li}_2\left(\frac{d(a+bx)}{b(c+dx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{d^3i^2} + \frac{2bg^2(bc-ad)\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{d^3i^2} + \frac{2bBg^2(bc-ad)\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{d^3i^2}$$

[Out] $-2*A*B*(-a*d+b*c)*g^2*(b*x+a)/d^2/i^2/(d*x+c)+2*B^2*(-a*d+b*c)*g^2*(b*x+a)/d^2/i^2/(d*x+c)-2*B^2*(-a*d+b*c)*g^2*(b*x+a)*\ln(e*(b*x+a)/(d*x+c))/d^2/i^2/(d*x+c)+2*b*B*(-a*d+b*c)*g^2*\ln((-a*d+b*c)/b/(d*x+c))*(A+B*\ln(e*(b*x+a)/(d*x+c)))/d^3/i^2+b*g^2*(b*x+a)*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/d^2/i^2+(-a*d+b*c)*g^2*(b*x+a)*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/d^2/i^2/(d*x+c)+2*b*(-a*d+b*c)*g^2*\ln((-a*d+b*c)/b/(d*x+c))*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/d^3/i^2+2*b*B^2*(-a*d+b*c)*g^2*\text{polylog}(2,d*(b*x+a)/b/(d*x+c))/d^3/i^2+4*b*B*(-a*d+b*c)*g^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))*\text{polylog}(2,d*(b*x+a)/b/(d*x+c))/d^3/i^2-4*b*B^2*(-a*d+b*c)*g^2*\text{polylog}(3,d*(b*x+a)/b/(d*x+c))/d^3/i^2$

Rubi [B] time = 5.09, antiderivative size = 1681, normalized size of antiderivative = 3.58, number of steps used = 94, number of rules used = 26, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}} = 0.619$, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 44, 6688, 6742, 2500, 2433, 2375, 2317, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

[In] Int[((a*g + b*g*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2)/(c*i + d*i*x)^2,x]

[Out] $(-2*B^2*(b*c - a*d)^2*g^2)/(d^3*i^2*(c + d*x)) - (2*b*B^2*(b*c - a*d)*g^2*\text{Log}[a + b*x])/(d^3*i^2) - (a*b*B^2*g^2*\text{Log}[a + b*x]^2)/(d^2*i^2) - (b*B^2*(b*c - a*d)*g^2*\text{Log}[a + b*x]^2)/(d^3*i^2) + (2*b*B^2*(b*c - a*d)*g^2*\text{Log}[a + b*x]*\text{Log}[(c + d*x)^{-1}]^2)/(d^3*i^2) - (2*b*B^2*(b*c - a*d)*g^2*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[(c + d*x)^{-1}]^2)/(d^3*i^2) + (2*B*(b*c - a*d)^2*g^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]))/(d^3*i^2*(c + d*x)) + (2*a*b*B*g^2*\text{Log}[a + b*x]*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]))/(d^2*i^2) + (2*b*B*(b*c - a*d)*g^2*\text{Log}[a + b*x]*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]))/(d^3*i^2) + (b^2*g^2*x*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]))^2)/(d^2*i^2) - ((b*c - a*d)^2*g^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]))^2)/(d^3*i^2*(c + d*x)) + (2*b*B^2*(b*c - a*d)*g^2*\text{Log}[c + d*x])/(d^3*i^2) + (2*b*B^2*(b*c - a*d)*g^2*\text{Log}[a + b*x]^2*\text{Log}[c + d*x])/(d^3*i^2) + (2*b^2*B^2*c*g^2*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c + d*x])/(d^3*i^2) + (4*A*b*B*(b*c - a*d)*g^2*\text{Log}[-((d$

$$\begin{aligned}
& * (a + b*x) / (b*c - a*d) \Big] * \text{Log}[c + d*x] / (d^3*i^2) + (2*b*B^2*(b*c - a*d)*g^2 \\
& * \text{Log}[-((d*(a + b*x)) / (b*c - a*d))] * \text{Log}[c + d*x] / (d^3*i^2) + (4*b*B^2*(b*c \\
& - a*d)*g^2 * \text{Log}[a + b*x] * \text{Log}[(c + d*x)^{-1}] * \text{Log}[c + d*x] / (d^3*i^2) - (4*b \\
& * B^2*(b*c - a*d)*g^2 * \text{Log}[-((d*(a + b*x)) / (b*c - a*d))] * (\text{Log}[a + b*x] + \text{Log} \\
& [(c + d*x)^{-1}]) - \text{Log}[(e*(a + b*x)) / (c + d*x)] * \text{Log}[c + d*x] / (d^3*i^2) - (\\
& 2*b^2*B*c*g^2*(A + B*\text{Log}[(e*(a + b*x)) / (c + d*x)]) * \text{Log}[c + d*x] / (d^3*i^2) \\
& - (2*b*B*(b*c - a*d)*g^2*(A + B*\text{Log}[(e*(a + b*x)) / (c + d*x)]) * \text{Log}[c + d*x] \\
& / (d^3*i^2) - (2*b*(b*c - a*d)*g^2*(A + B*\text{Log}[(e*(a + b*x)) / (c + d*x)])^2 * \text{Log} \\
& [c + d*x] / (d^3*i^2) - (b^2*B^2*c*g^2 * \text{Log}[c + d*x]^2) / (d^3*i^2) - (2*A*b*B \\
& *(b*c - a*d)*g^2 * \text{Log}[c + d*x]^2) / (d^3*i^2) - (b*B^2*(b*c - a*d)*g^2 * \text{Log}[c + \\
& d*x]^2) / (d^3*i^2) + (2*b*B^2*(b*c - a*d)*g^2 * \text{Log}[a + b*x] * \text{Log}[c + d*x]^2) / \\
& (d^3*i^2) - (2*b*B^2*(b*c - a*d)*g^2 * \text{Log}[(e*(a + b*x)) / (c + d*x)] * \text{Log}[c + d \\
& *x]^2) / (d^3*i^2) - (2*b*B^2*(b*c - a*d)*g^2 * \text{Log}[c + d*x]^3) / (3*d^3*i^2) + (\\
& 2*a*b*B^2*g^2 * \text{Log}[a + b*x] * \text{Log}[(b*(c + d*x)) / (b*c - a*d)]) / (d^2*i^2) + (2*b \\
& * B^2*(b*c - a*d)*g^2 * \text{Log}[a + b*x] * \text{Log}[(b*(c + d*x)) / (b*c - a*d)]) / (d^3*i^2) \\
& - (2*b*B^2*(b*c - a*d)*g^2 * \text{Log}[a + b*x]^2 * \text{Log}[(b*(c + d*x)) / (b*c - a*d)]) / \\
& (d^3*i^2) + (2*a*b*B^2*g^2 * \text{PolyLog}[2, -((d*(a + b*x)) / (b*c - a*d))]) / (d^2*i \\
& ^2) + (2*b*B^2*(b*c - a*d)*g^2 * \text{PolyLog}[2, -((d*(a + b*x)) / (b*c - a*d))]) / (d \\
& ^3*i^2) - (4*b*B^2*(b*c - a*d)*g^2 * \text{Log}[a + b*x] * \text{PolyLog}[2, -((d*(a + b*x)) / \\
& (b*c - a*d))]) / (d^3*i^2) + (2*b^2*B^2*c*g^2 * \text{PolyLog}[2, (b*(c + d*x)) / (b*c - \\
& a*d)]) / (d^3*i^2) + (4*A*b*B*(b*c - a*d)*g^2 * \text{PolyLog}[2, (b*(c + d*x)) / (b*c \\
& - a*d)]) / (d^3*i^2) + (2*b*B^2*(b*c - a*d)*g^2 * \text{PolyLog}[2, (b*(c + d*x)) / (b*c \\
& - a*d)]) / (d^3*i^2) + (4*b*B^2*(b*c - a*d)*g^2 * \text{Log}[(c + d*x)^{-1}] * \text{PolyLog} \\
& [2, (b*(c + d*x)) / (b*c - a*d)]) / (d^3*i^2) - (4*b*B^2*(b*c - a*d)*g^2 * (\text{Log}[a \\
& + b*x] + \text{Log}[(c + d*x)^{-1}] - \text{Log}[(e*(a + b*x)) / (c + d*x)]) * \text{PolyLog}[2, (b \\
& (c + d*x)) / (b*c - a*d)]) / (d^3*i^2) + (4*b*B^2*(b*c - a*d)*g^2 * \text{PolyLog}[3, -(\\
& (d*(a + b*x)) / (b*c - a*d)]) / (d^3*i^2) + (4*b*B^2*(b*c - a*d)*g^2 * \text{PolyLog}[3 \\
& , (b*(c + d*x)) / (b*c - a*d)]) / (d^3*i^2)
\end{aligned}$$

Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] := Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2302

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] := Dist[1/(b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p}, x]

Rule 2317

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol] := Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e, Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]

Rule 2374

Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.))/(x_), x_Symbol] := -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0] && EqQ[d*e, 1]

Rule 2375

Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.))/(x_), x_Symbol] := Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m - 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d, e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.)]*(b_.))^(p_.)*((f_) + (g_.)*(x_)^(q_.)), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x
), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n]))^p/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n]))^(p - 1)/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*(RFx_), x_Sy
mbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] := Dist[1/e, Subst[Int[(k*x)/d]^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
e*i - d*j)/e + (j*x)/e]^m), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] := Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n]*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m))]/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
```


, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]

Rule 2440

Int[((a_.) + Log[(c_.)*((d_.) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.) *((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] := Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n)]*(f + g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]

Rule 2499

Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]*(s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.) + (k_.)*(x_)), x_Symbol] := Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r)/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dist[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x), x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r}, x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]

Rule 2500

Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]*(s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k_.)*(x_)), x_Symbol] := Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r] - Log[(a + b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x), x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ[b*c - a*d, 0]

Rule 2523

Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.), x_Symbol] := Simp[x*(a + b*Log[c*RFX^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*RFX^p])^(n - 1)*D[RFX, x])/RFX, x], x], x] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFX, x] && IGtQ[n, 0]

Rule 2524

Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.))/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFX^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFX^p])^(n - 1)*D[RFX, x])/RFX, x], x] /;

FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]

Rule 2525

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]

Rule 2528

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]

Rule 6589

Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d, e, n, p}, x] && EqQ[b*d, a*e]

Rule 6688

Int[u_, x_Symbol] := With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; SimplifierIntegrandQ[v, u, x]]

Rule 6742

Int[u_, x_Symbol] := With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]]

Rubi steps

$$\begin{aligned}
\int \frac{(ag + bgx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{(93c + 93dx)^2} dx &= \int \left(\frac{b^2 g^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{8649d^2} + \frac{(-bc + ad)^2 g^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{8649d^2(c + dx)^2} \right) dx \\
&= \frac{(b^2 g^2) \int \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 dx}{8649d^2} - \frac{(2b(bc - ad)g^2) \int \frac{\left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{c+dx} dx}{8649d^2} \\
&= \frac{b^2 g^2 x \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{8649d^2} - \frac{(bc - ad)^2 g^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{8649d^3(c + dx)} \\
&= \frac{b^2 g^2 x \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{8649d^2} - \frac{(bc - ad)^2 g^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{8649d^3(c + dx)} \\
&= \frac{b^2 g^2 x \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{8649d^2} - \frac{(bc - ad)^2 g^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{8649d^3(c + dx)} \\
&= \frac{b^2 g^2 x \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{8649d^2} - \frac{(bc - ad)^2 g^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{8649d^3(c + dx)} \\
&= \frac{2B(bc - ad)^2 g^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{8649d^3(c + dx)} + \frac{2abB g^2 \log(a + bx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{8649d^2} \\
&= \frac{2B(bc - ad)^2 g^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{8649d^3(c + dx)} + \frac{2abB g^2 \log(a + bx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{8649d^2} \\
&= \frac{2B(bc - ad)^2 g^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{8649d^3(c + dx)} + \frac{2abB g^2 \log(a + bx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{8649d^2} \\
&= -\frac{2B^2(bc - ad)^2 g^2}{8649d^3(c + dx)} - \frac{2bB^2(bc - ad)g^2 \log(a + bx)}{8649d^3} + \frac{2B(bc - ad)^2 g^2}{8649d^2} \\
&= -\frac{2B^2(bc - ad)^2 g^2}{8649d^3(c + dx)} - \frac{2bB^2(bc - ad)g^2 \log(a + bx)}{8649d^3} + \frac{2B(bc - ad)^2 g^2}{8649d^2} \\
&= -\frac{2B^2(bc - ad)^2 g^2}{8649d^3(c + dx)} - \frac{2bB^2(bc - ad)g^2 \log(a + bx)}{8649d^3} - \frac{abB^2 g^2 \log^2(a + bx)}{8649d^2}
\end{aligned}$$

Mathematica [B] time = 4.21, size = 1969, normalized size = 4.20

result too large to display

Antiderivative was successfully verified.

[In] Integrate[((a*g + b*g*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(c*i + d*i*x)^2,x]

[Out] (g^2*(A^2*b^2*d*x - (A^2*(b*c - a*d)^2)/(c + d*x) + 2*A^2*b*(-(b*c) + a*d)*Log[c + d*x] + (2*a^2*A*B*d^2*(b*c - a*d + b*(c + d*x)*Log[a/b + x] + (-(b*c) + a*d)*Log[(e*(a + b*x))/(c + d*x)] - b*c*Log[(b*(c + d*x))/(b*c - a*d)] - b*d*x*Log[(b*(c + d*x))/(b*c - a*d)]))/((b*c - a*d)*(c + d*x)) + 2*a*A*b*B*d*(-Log[c/d + x]^2 + 2*Log[c/d + x]*Log[c + d*x] + 2*(-(c/(c + d*x)) + (b*c*Log[a + b*x])/(-(b*c) + a*d) + (b*c*Log[c + d*x])/(b*c - a*d) - Log[a/b + x]*Log[c + d*x] + Log[(e*(a + b*x))/(c + d*x])*(c/(c + d*x) + Log[c + d*x]) + Log[a/b + x]*Log[(b*(c + d*x))/(b*c - a*d)]) + 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + 2*A*b^2*B*(d*(a/b + x)*(-1 + Log[a/b + x]) - (c^2*Log[a/b + x])/(c + d*x) - (c + d*x)*(-1 + Log[c/d + x]) + c*Log[c/d + x]^2 + (c^2*(1 + Log[c/d + x]))/(c + d*x) + (b*c^2*(Log[a + b*x] - Log[c + d*x]))/(b*c - a*d) + (-Log[a/b + x] + Log[c/d + x] + Log[(e*(a + b*x))/(c + d*x]))*(d*x - c^2/(c + d*x) - 2*c*Log[c + d*x]) - 2*c*(Log[a/b + x]*Log[(b*(c + d*x))/(b*c - a*d)] + PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) - (a^2*B^2*d^2*(2*b*c - 2*a*d + 2*b*(c + d*x)*Log[a + b*x] - 2*(b*c - a*d)*Log[(e*(a + b*x))/(c + d*x)] - 2*b*(c + d*x)*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)] + (b*c - a*d)*Log[(e*(a + b*x))/(c + d*x)]^2 - 2*b*(c + d*x)*Log[c + d*x] - 2*b*(c + d*x)*Log[(e*(a + b*x))/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] + b*(c + d*x)*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + b*(c + d*x)*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b*c) + a*d)] + Log[(b*c - a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))/((b*c - a*d)*(c + d*x)) + b^2*B^2*((d*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)]^2)/b - (c^2*Log[(e*(a + b*x))/(c + d*x)]^2)/(c + d*x) + 2*c*Log[(e*(a + b*x))/(c + d*x)]^2*Log[(b*c - a*d)/(b*c + b*d*x)] - (c^2*(2*b*c - 2*a*d + 2*b*(c + d*x)*Log[a + b*x] - 2*(b*c - a*d)*Log[(e*(a + b*x))/(c + d*x)] - 2*b*(c + d*x)*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)] - 2*b*(c + d*x)*Log[(e*(a + b*x))/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] + b*(c + d*x)*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + b*(c + d*x)*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b*c) + a*d)] + Log[(b*c - a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))/((b*c - a*d)*(c + d*x)) - ((b*c - a*d)*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - 2*Log[(e*(a + b*x))/(c + d*x)] + Log[(b*c - a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))/b + 4*c*(Log[(e*(a + b*x))/(c + d*x)]*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))] - PolyLog[3, (d*(a + b

$$\frac{\begin{aligned} & *x)) / (b*(c + d*x))]) + 2*a*b*B^2*d*((c*\text{Log}[(e*(a + b*x))/(c + d*x)]^2)/(c + d*x) - \text{Log}[(e*(a + b*x))/(c + d*x)]^2*\text{Log}[(b*c - a*d)/(b*c + b*d*x)] - 2*\text{Log}[(e*(a + b*x))/(c + d*x)]*\text{PolyLog}[2, (d*(a + b*x))/(b*(c + d*x))] + (c*(2*b*c - 2*a*d + 2*b*(c + d*x)*\text{Log}[a + b*x] - 2*(b*c - a*d)*\text{Log}[(e*(a + b*x))/(c + d*x)] - 2*b*(c + d*x)*\text{Log}[a + b*x]*\text{Log}[(e*(a + b*x))/(c + d*x)] - 2*b*(c + d*x)*\text{Log}[c + d*x] - 2*b*(c + d*x)*\text{Log}[(e*(a + b*x))/(c + d*x)]*\text{Log}[(b*c - a*d)/(b*c + b*d*x)] + b*(c + d*x)*(\text{Log}[a + b*x]*(\text{Log}[a + b*x] - 2*\text{Log}[(b*(c + d*x))/(b*c - a*d)]) - 2*\text{PolyLog}[2, (d*(a + b*x))/(-b*c + a*d)]) + b*(c + d*x)*(\text{Log}[(b*c - a*d)/(b*c + b*d*x)]*(2*\text{Log}[(d*(a + b*x))/(-b*c + a*d)] + \text{Log}[(b*c - a*d)/(b*c + b*d*x)]) - 2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])))/(b*c - a*d)*(c + d*x)) + 2*\text{PolyLog}[3, (d*(a + b*x))/(b*(c + d*x))])))) / (d^3*i^2) \end{aligned}$$

fricas [F] time = 0.59, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{A^2 b^2 g^2 x^2 + 2 A^2 a b g^2 x + A^2 a^2 g^2 + (B^2 b^2 g^2 x^2 + 2 B^2 a b g^2 x + B^2 a^2 g^2) \log\left(\frac{bex+ae}{dx+c}\right)^2 + 2 (ABb^2 g^2 x^2 + \dots)}{d^2 i^2 x^2 + 2 c d i^2 x + c^2 i^2} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^2,x, algorithm="fricas")

[Out] integral((A^2*b^2*g^2*x^2 + 2*A^2*a*b*g^2*x + A^2*a^2*g^2 + (B^2*b^2*g^2*x^2 + 2*B^2*a*b*g^2*x + B^2*a^2*g^2)*log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*B*b^2*g^2*x^2 + 2*A*B*a*b*g^2*x + A*B*a^2*g^2)*log((b*e*x + a*e)/(d*x + c)))/(d^2*i^2*x^2 + 2*c*d*i^2*x + c^2*i^2), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^2,x, algorithm="giac")

[Out] Timed out

maple [F] time = 1.97, size = 0, normalized size = 0.00

$$\int \frac{(bgx + ag)^2 \left(B \ln\left(\frac{bx+ae}{dx+c}\right) + A \right)^2}{(dix + ci)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((b*g*x+a*g)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(d*i*x+c*i)^2,x)`

[Out] `int((b*g*x+a*g)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(d*i*x+c*i)^2,x)`

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-A^2b^2\left(\frac{c^2}{d^4i^2x + cd^3i^2} - \frac{x}{d^2i^2} + \frac{2c \log(dx + c)}{d^3i^2}\right)g^2 + 2A^2abg^2\left(\frac{c}{d^3i^2x + cd^2i^2} + \frac{\log(dx + c)}{d^2i^2}\right) - 2ABa^2g^2\left(\frac{\log\left(\frac{bex}{dx+c}\right)}{d^2i^2x - \dots}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((b*g*x+a*g)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^2,x, algorithm="maxima")`

[Out] `-A^2*b^2*(c^2/(d^4*i^2*x + c*d^3*i^2) - x/(d^2*i^2) + 2*c*log(d*x + c)/(d^3*i^2))*g^2 + 2*A^2*a*b*g^2*(c/(d^3*i^2*x + c*d^2*i^2) + log(d*x + c)/(d^2*i^2)) - 2*A*B*a^2*g^2*(log(b*e*x/(d*x + c) + a*e/(d*x + c))/(d^2*i^2*x + c*d*i^2) - 1/(d^2*i^2*x + c*d*i^2) - b*log(b*x + a)/((b*c*d - a*d^2)*i^2) + b*log(d*x + c)/((b*c*d - a*d^2)*i^2)) - A^2*a^2*g^2/(d^2*i^2*x + c*d*i^2) - 1/3*(2*((b^2*c*d*g^2 - a*b*d^2*g^2)*B^2*x + (b^2*c^2*g^2 - a*b*c*d*g^2)*B^2)*log(d*x + c)^3 - 3*(B^2*b^2*d^2*g^2*x^2 + B^2*b^2*c*d*g^2*x - (b^2*c^2*g^2 - 2*a*b*c*d*g^2 + a^2*d^2*g^2)*B^2)*log(d*x + c)^2)/(d^4*i^2*x + c*d^3*i^2) - integrate(-(B^2*a^2*d^2*g^2*log(e)^2 + (B^2*b^2*d^2*g^2*log(e)^2 + 2*A*B*b^2*d^2*g^2*log(e))*x^2 + (B^2*b^2*d^2*g^2*x^2 + 2*B^2*a*b*d^2*g^2*x + B^2*a^2*d^2*g^2)*log(b*x + a)^2 + 2*(B^2*a*b*d^2*g^2*log(e)^2 + 2*A*B*a*b*d^2*g^2*log(e))*x + 2*(B^2*a^2*d^2*g^2*log(e) + (B^2*b^2*d^2*g^2*log(e) + A*B*b^2*d^2*g^2))*x^2 + 2*(B^2*a*b*d^2*g^2*log(e) + A*B*a*b*d^2*g^2)*x)*log(b*x + a) + 2*((b^2*c^2*g^2 - 2*a*b*c*d*g^2 - (g^2*log(e) - g^2)*a^2*d^2)*B^2 - (A*B*b^2*d^2*g^2 + (g^2*log(e) + g^2)*B^2*b^2*d^2)*x^2 - (2*A*B*a*b*d^2*g^2 + (2*a*b*d^2*g^2*log(e) + b^2*c*d*g^2)*B^2)*x - (B^2*b^2*d^2*g^2*x^2 + 2*B^2*a*b*d^2*g^2*x + B^2*a^2*d^2*g^2)*log(b*x + a))*log(d*x + c))/(d^4*i^2*x^2 + 2*c*d^3*i^2*x + c^2*d^2*i^2), x)`

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ag + bgx)^2 \left(A + B \ln\left(\frac{e(a+bx)}{c+dx}\right) \right)^2}{(ci + dix)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int(((a*g + b*g*x)^2*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(c*i + d*i*x)^2,x)`

```
[Out] int(((a*g + b*g*x)^2*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(c*i + d*i*x)^2, x)
```

```
sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00
```

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**2*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(d*i*x+c*i)**2,x)
```

```
[Out] Timed out
```

$$3.94 \quad \int \frac{(ag+bgx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ci+dix)^2} dx$$

Optimal. Leaf size=261

$$\frac{2bBgLi_2\left(\frac{d(a+bx)}{b(c+dx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{d^2i^2} - \frac{bg\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{d^2i^2} - \frac{g(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{di^2(c+dx)}$$

[Out] $2*A*B*g*(b*x+a)/d/i^2/(d*x+c)-2*B^2*g*(b*x+a)/d/i^2/(d*x+c)+2*B^2*g*(b*x+a)*\ln(e*(b*x+a)/(d*x+c))/d/i^2/(d*x+c)-g*(b*x+a)*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/d/i^2/(d*x+c)-b*g*\ln((-a*d+b*c)/b/(d*x+c))*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/d^2/i^2-2*b*B*g*(A+B*\ln(e*(b*x+a)/(d*x+c)))*\text{polylog}(2,d*(b*x+a)/b/(d*x+c))/d^2/i^2+2*b*B^2*g*\text{polylog}(3,d*(b*x+a)/b/(d*x+c))/d^2/i^2$

Rubi [B] time = 4.24, antiderivative size = 1060, normalized size of antiderivative = 4.06, number of steps used = 72, number of rules used = 25, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.625$, Rules used = {2528, 2525, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 44, 6688, 6742, 2500, 2433, 2375, 2317, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

$$\frac{bB^2g\log^3(c+dx)}{3d^2i^2} - \frac{bB^2g\log(a+bx)\log^2(c+dx)}{d^2i^2} + \frac{bB^2g\log\left(\frac{e(a+bx)}{c+dx}\right)\log^2(c+dx)}{d^2i^2} + \frac{bB^2g\log^2(c+dx)}{d^2i^2} + \frac{AbBg\log}{d}$$

Antiderivative was successfully verified.

[In] Int[((a*g + b*g*x)*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2)/(c*i + d*i*x)^2, x]

[Out] $(2*B^2*(b*c - a*d)*g)/(d^2*i^2*(c + d*x)) + (2*b*B^2*g*Log[a + b*x])/(d^2*i^2) + (b*B^2*g*Log[a + b*x]^2)/(d^2*i^2) - (b*B^2*g*Log[a + b*x]*Log[(c + d*x)^{-1}])^2/(d^2*i^2) + (b*B^2*g*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[(c + d*x)^{-1}])^2/(d^2*i^2) - (2*B*(b*c - a*d)*g*(A + B*Log[(e*(a + b*x))/(c + d*x]))/(d^2*i^2*(c + d*x)) - (2*b*B*g*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x]))/(d^2*i^2) + ((b*c - a*d)*g*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2/(d^2*i^2*(c + d*x)) - (2*b*B^2*g*Log[c + d*x])/(d^2*i^2) - (b*B^2*g*Log[a + b*x]^2*Log[c + d*x])/(d^2*i^2) - (2*A*b*B*g*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(d^2*i^2) - (2*b*B^2*g*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(d^2*i^2) - (2*b*B^2*g*Log[a + b*x]*Log[(c + d*x)^{-1}])*Log[c + d*x]/(d^2*i^2) + (2*b*B^2*g*Log[-((d*(a + b*x))/(b*c - a*d))]*(Log[a + b*x] + Log[(c + d*x)^{-1}] - Log[(e*(a + b*x))/(c + d*x]))*Log[c + d*x]/(d^2*i^2) + (2*b*B*g*(A + B*Log[(e*(a + b*x))/(c + d*x]))*Log[c + d*x]/(d^2*i^2) + (b*g*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2*Log[c + d*x]/(d^2*i^2) + (A*b*B*g*Log[c + d*x]^2)/(d^2*i^2) + (b*B^2*g*Log[c + d*x]^2)/(d$

$$\begin{aligned} &^2i^2) - (b*B^2*g*Log[a + b*x]*Log[c + d*x]^2)/(d^2*i^2) + (b*B^2*g*Log[(e \\ &*(a + b*x))/(c + d*x])*Log[c + d*x]^2)/(d^2*i^2) + (b*B^2*g*Log[c + d*x]^3) \\ &/ (3*d^2*i^2) - (2*b*B^2*g*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(d^2 \\ &*i^2) + (b*B^2*g*Log[a + b*x]^2*Log[(b*(c + d*x))/(b*c - a*d)])/(d^2*i^2) - \\ &(2*b*B^2*g*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))]/(d^2*i^2) + (2*b*B^2* \\ &g*Log[a + b*x]*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))]/(d^2*i^2) - (2*A*b \\ &*B*g*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]/(d^2*i^2) - (2*b*B^2*g*PolyLog[\\ &2, (b*(c + d*x))/(b*c - a*d)]/(d^2*i^2) - (2*b*B^2*g*Log[(c + d*x)^(-1)]*P \\ &olyLog[2, (b*(c + d*x))/(b*c - a*d)]/(d^2*i^2) + (2*b*B^2*g*(Log[a + b*x] \\ &+ Log[(c + d*x)^(-1)] - Log[(e*(a + b*x))/(c + d*x)])*PolyLog[2, (b*(c + d* \\ &x))/(b*c - a*d)]/(d^2*i^2) - (2*b*B^2*g*PolyLog[3, -((d*(a + b*x))/(b*c - \\ &a*d))]/(d^2*i^2) - (2*b*B^2*g*PolyLog[3, (b*(c + d*x))/(b*c - a*d)]/(d^2* \\ &i^2) \end{aligned}$$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 30

Int[(x_)^(m_), x_Symbol] := Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && NeQ[m, -1]

Rule 44

Int[((a_) + (b_)*(x_))^(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])

Rule 2301

Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2302

Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)^(p_)/(x_), x_Symbol] := Dist[1/(b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p}, x]

Rule 2317

Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)^(p_)/((d_) + (e_)*(x_)), x_Symbol] := Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,

Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]

Rule 2374

Int[(Log[(d_)*((e_) + (f_)*(x_)^(m_))]*((a_) + Log[(c_)*(x_)^(n_)])*(b_)^(p_))/(x_), x_Symbol] := -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0] && EqQ[d*e, 1]

Rule 2375

Int[(Log[(d_)*((e_) + (f_)*(x_)^(m_))^(r_)]*((a_) + Log[(c_)*(x_)^(n_)])*(b_)^(p_))/(x_), x_Symbol] := Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m - 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d, e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]

Rule 2390

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_)^(n_))])*(b_)^(p_)*((f_) + (g_)*(x_)^(q_)), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_)*((d_) + (e_)*(x_)^(n_))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))])*(b_)/((f_) + (g_)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_)^(n_))])*(b_)/((f_) + (g_)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)/((f_.) + (g_.
)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] := Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
e*i - d*j)/e + (j*x)/e]^m)], x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] := Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m))]/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] :=
Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*(s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] := Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
```

$e*(f*(a + b*x)^p*(c + d*x)^q)^r)/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dist[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x), x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r}, x] \&\& NeQ[b*c - a*d, 0] \&\& EqQ[h*j - g*k, 0] \&\& IGtQ[m, 0]$

Rule 2500

$Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.))]^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a + b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x), x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] \&\& NeQ[b*c - a*d, 0]$

Rule 2524

$Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] \&\& RationalFunctionQ[Rfx, x] \&\& IGtQ[n, 0]$

Rule 2525

$Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] \&\& RationalFunctionQ[Rfx, x] \&\& IGtQ[n, 0] \&\& (EqQ[n, 1] || IntegerQ[m]) \&\& NeQ[m, -1]$

Rule 2528

$Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] \&\& RationalFunctionQ[Rfx, x] \&\& RationalFunctionQ[RGx, x] \&\& IGtQ[n, 0]$

Rule 6589

$Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_Symbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d$

, e, n, p}, x] && EqQ[b*d, a*e]

Rule 6688

Int[u_, x_Symbol] :=> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; SimplifyIntegrandQ[v, u, x]]

Rule 6742

Int[u_, x_Symbol] :=> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]]

Rubi steps

$$\begin{aligned}
\int \frac{(ag + bgx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{(94c + 94dx)^2} dx &= \int \left(\frac{(-bc + ad)g \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{8836d(c + dx)^2} + \frac{bg \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{8836d(c + dx)} \right) dx \\
&= \frac{(bg) \int \frac{\left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{c+dx} dx}{8836d} - \frac{((bc - ad)g) \int \frac{\left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{(c+dx)^2} dx}{8836d} \\
&= \frac{(bc - ad)g \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{8836d^2(c + dx)} + \frac{bg \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 \log(c + dx)}{8836d^2} \\
&= \frac{(bc - ad)g \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{8836d^2(c + dx)} + \frac{bg \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 \log(c + dx)}{8836d^2} \\
&= \frac{(bc - ad)g \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{8836d^2(c + dx)} + \frac{bg \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 \log(c + dx)}{8836d^2} \\
&= \frac{(bc - ad)g \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{8836d^2(c + dx)} + \frac{bg \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 \log(c + dx)}{8836d^2} \\
&= -\frac{B(bc - ad)g \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{4418d^2(c + dx)} - \frac{bBg \log(a + bx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{4418d^2} \\
&= -\frac{B(bc - ad)g \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{4418d^2(c + dx)} - \frac{bBg \log(a + bx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{4418d^2} \\
&= -\frac{B(bc - ad)g \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{4418d^2(c + dx)} - \frac{bBg \log(a + bx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{4418d^2} \\
&= \frac{B^2(bc - ad)g}{4418d^2(c + dx)} + \frac{bB^2g \log(a + bx)}{4418d^2} - \frac{B(bc - ad)g \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{4418d^2(c + dx)} \\
&= \frac{B^2(bc - ad)g}{4418d^2(c + dx)} + \frac{bB^2g \log(a + bx)}{4418d^2} - \frac{B(bc - ad)g \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{4418d^2(c + dx)} \\
&= \frac{B^2(bc - ad)g}{4418d^2(c + dx)} + \frac{bB^2g \log(a + bx)}{4418d^2} + \frac{bB^2g \log^2(a + bx)}{8836d^2} - \frac{B(bc - ad)g}{4418d^2}
\end{aligned}$$

Mathematica [B] time = 1.71, size = 1107, normalized size = 4.24

$$g \left(b \log(c + dx) A^2 + \frac{(bc-ad)A^2}{c+dx} + \frac{2aBd \left(bc - b \log\left(\frac{b(c+dx)}{bc-ad}\right) c - ad + b(c+dx) \log\left(\frac{a}{b} + x\right) + (ad-bc) \log\left(\frac{e(a+bx)}{c+dx}\right) - bdx \log\left(\frac{b(c+dx)}{bc-ad}\right) \right) A}{(bc-ad)(c+dx)} + bB \left(-1 \right. \right.$$

Antiderivative was successfully verified.

[In] Integrate[((a*g + b*g*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(c*i + d*i*x)^2,x]

[Out] (g*((A^2*(b*c - a*d))/(c + d*x) + A^2*b*Log[c + d*x] + (2*a*A*B*d*(b*c - a*d + b*(c + d*x)*Log[a/b + x] + (-b*c) + a*d)*Log[(e*(a + b*x))/(c + d*x)] - b*c*Log[(b*(c + d*x))/(b*c - a*d)] - b*d*x*Log[(b*(c + d*x))/(b*c - a*d)]))/((b*c - a*d)*(c + d*x)) + A*b*B*(-Log[c/d + x]^2 + 2*Log[c/d + x]*Log[c + d*x] + 2*(-(c/(c + d*x)) + (b*c*Log[a + b*x])/(-b*c) + a*d) + (b*c*Log[c + d*x]))/(b*c - a*d) - Log[a/b + x]*Log[c + d*x] + Log[(e*(a + b*x))/(c + d*x)]*(c/(c + d*x) + Log[c + d*x]) + Log[a/b + x]*Log[(b*(c + d*x))/(b*c - a*d))] + 2*PolyLog[2, (d*(a + b*x))/(-b*c) + a*d]) - (a*B^2*d*(2*b*c - 2*a*d + 2*b*(c + d*x)*Log[a + b*x] - 2*(b*c - a*d)*Log[(e*(a + b*x))/(c + d*x)] - 2*b*(c + d*x)*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)] + (b*c - a*d)*Log[(e*(a + b*x))/(c + d*x)]^2 - 2*b*(c + d*x)*Log[c + d*x] - 2*b*(c + d*x)*Log[(e*(a + b*x))/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] + b*(c + d*x)*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-b*c) + a*d]) + b*(c + d*x)*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-b*c) + a*d]) + Log[(b*c - a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d])]))/(b*c - a*d)*(c + d*x) + b*B^2*((c*Log[(e*(a + b*x))/(c + d*x)]^2)/(c + d*x) - Log[(e*(a + b*x))/(c + d*x)]^2*Log[(b*c - a*d)/(b*c + b*d*x)] - 2*Log[(e*(a + b*x))/(c + d*x)]*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))] + (c*(2*b*c - 2*a*d + 2*b*(c + d*x)*Log[a + b*x] - 2*(b*c - a*d)*Log[(e*(a + b*x))/(c + d*x)] - 2*b*(c + d*x)*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)] - 2*b*(c + d*x)*Log[c + d*x] - 2*b*(c + d*x)*Log[(e*(a + b*x))/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] + b*(c + d*x)*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-b*c) + a*d]) + b*(c + d*x)*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-b*c) + a*d]) + Log[(b*c - a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d])]))/(b*c - a*d)*(c + d*x) + 2*PolyLog[3, (d*(a + b*x))/(b*(c + d*x))]))/(d^2*i^2)

fricas [F] time = 1.18, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{A^2 b g x + A^2 a g + (B^2 b g x + B^2 a g) \log\left(\frac{b e x + a e}{d x + c}\right)^2 + 2 (A B b g x + A B a g) \log\left(\frac{b e x + a e}{d x + c}\right)}{d^2 i^2 x^2 + 2 c d i^2 x + c^2 i^2}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^2,x, algorithm="fricas")
```

```
[Out] integral((A^2*b*g*x + A^2*a*g + (B^2*b*g*x + B^2*a*g)*log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*B*b*g*x + A*B*a*g)*log((b*e*x + a*e)/(d*x + c)))/(d^2*i^2*x^2 + 2*c*d*i^2*x + c^2*i^2), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^2,x, algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 1.61, size = 0, normalized size = 0.00

$$\int \frac{(bgx + ag) \left(B \ln \left(\frac{bx+a}{dx+c} \right) + A \right)^2}{(dix + ci)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(d*i*x+c*i)^2,x)
```

```
[Out] int((b*g*x+a*g)*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(d*i*x+c*i)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$A^2bg \left(\frac{c}{d^3i^2x + cd^2i^2} + \frac{\log(dx+c)}{d^2i^2} \right) - 2ABag \left(\frac{\log \left(\frac{bex}{dx+c} + \frac{ae}{dx+c} \right)}{d^2i^2x + cdi^2} - \frac{1}{d^2i^2x + cdi^2} - \frac{b \log(bx+a)}{(bcd - ad^2)i^2} + \frac{b \log(dx+c)}{(bcd - ad^2)i^2} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^2,x, algorithm="maxima")
```

```
[Out] A^2*b*g*(c/(d^3*i^2*x + c*d^2*i^2) + log(d*x + c)/(d^2*i^2)) - 2*A*B*a*g*(1*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(d^2*i^2*x + c*d*i^2) - 1/(d^2*i^2*x + c*d*i^2) - b*log(b*x + a)/((b*c*d - a*d^2)*i^2) + b*log(d*x + c)/((b*c*d - a*d^2)*i^2)) - A^2*a*g/(d^2*i^2*x + c*d*i^2) + 1/3*(3*(b*c*g - a*d*g)*B^2*1
```



```
og(d*x + c)^2 + (B^2*b*d*g*x + B^2*b*c*g)*log(d*x + c)^3)/(d^3*i^2*x + c*d^
2*i^2) - integrate(-(B^2*a*d*g*log(e)^2 + (B^2*b*d*g*x + B^2*a*d*g)*log(b*x
+ a)^2 + (B^2*b*d*g*log(e)^2 + 2*A*B*b*d*g*log(e))*x + 2*(B^2*a*d*g*log(e)
+ (B^2*b*d*g*log(e) + A*B*b*d*g)*x)*log(b*x + a) - 2*(((g*log(e) - g)*a*d
+ b*c*g)*B^2 + (B^2*b*d*g*log(e) + A*B*b*d*g)*x + (B^2*b*d*g*x + B^2*a*d*g)
*log(b*x + a))*log(d*x + c))/(d^3*i^2*x^2 + 2*c*d^2*i^2*x + c^2*d*i^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ag + bgx) \left(A + B \ln \left(\frac{e^{(a+bx)}}{c+dx} \right) \right)^2}{(ci + dix)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a*g + b*g*x)*(A + B*log((e*(a + b*x))/(c + d*x))))^2)/(c*i + d*i*x)^2,
x)
```

```
[Out] int((((a*g + b*g*x)*(A + B*log((e*(a + b*x))/(c + d*x))))^2)/(c*i + d*i*x)^2,
x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(d*i*x+c*i)**2,x)
```

```
[Out] Timed out
```

$$3.95 \quad \int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ci+dx)^2} dx$$

Optimal. Leaf size=152

$$\frac{(a+bx)\left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)^2}{i^2(c+dx)(bc-ad)} - \frac{2AB(a+bx)}{i^2(c+dx)(bc-ad)} - \frac{2B^2(a+bx) \log\left(\frac{e(a+bx)}{c+dx}\right)}{i^2(c+dx)(bc-ad)} + \frac{2B^2(a+bx)}{i^2(c+dx)(bc-ad)}$$

[Out] $-2*A*B*(b*x+a)/(-a*d+b*c)/i^2/(d*x+c)+2*B^2*(b*x+a)/(-a*d+b*c)/i^2/(d*x+c)-2*B^2*(b*x+a)*\ln(e*(b*x+a)/(d*x+c))/(-a*d+b*c)/i^2/(d*x+c)+(b*x+a)*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/(-a*d+b*c)/i^2/(d*x+c)$

Rubi [C] time = 0.78, antiderivative size = 472, normalized size of antiderivative = 3.11, number of steps used = 26, number of rules used = 11, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}} = 0.344$, Rules used = {2525, 12, 2528, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 44}

$$\frac{2bB^2 \text{PolyLog}\left(2, -\frac{d(a+bx)}{bc-ad}\right)}{di^2(bc-ad)} + \frac{2bB^2 \text{PolyLog}\left(2, \frac{b(c+dx)}{bc-ad}\right)}{di^2(bc-ad)} + \frac{2bB \log(a+bx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{di^2(bc-ad)} + \frac{2B \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)^2}{di^2(c+dx)}$$

Antiderivative was successfully verified.

[In] $\text{Int}[(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]))^2/(c*i + d*i*x)^2, x]$

[Out] $(-2*B^2)/(d*i^2*(c + d*x)) - (2*b*B^2*\text{Log}[a + b*x])/(d*(b*c - a*d)*i^2) - (b*B^2*\text{Log}[a + b*x]^2)/(d*(b*c - a*d)*i^2) + (2*B*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(d*i^2*(c + d*x)) + (2*b*B*\text{Log}[a + b*x]*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)]))/(d*(b*c - a*d)*i^2) - (A + B*\text{Log}[(e*(a + b*x))/(c + d*x)])^2/(d*i^2*(c + d*x)) + (2*b*B^2*\text{Log}[c + d*x])/(d*(b*c - a*d)*i^2) + (2*b*B^2*\text{Log}[-((d*(a + b*x))/(b*c - a*d))*\text{Log}[c + d*x])/(d*(b*c - a*d)*i^2) - (2*b*B*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x)])*\text{Log}[c + d*x])/(d*(b*c - a*d)*i^2) - (b*B^2*\text{Log}[c + d*x]^2)/(d*(b*c - a*d)*i^2) + (2*b*B^2*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)])/(d*(b*c - a*d)*i^2) + (2*b*B^2*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))])/(d*(b*c - a*d)*i^2) + (2*b*B^2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/(d*(b*c - a*d)*i^2)$

Rule 12

$\text{Int}[(a_*)*(u_), x_Symbol] := \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \ \&\& \ !\text{MatchQ}[u, (b_*)*(v_)] /; \text{FreeQ}[b, x]$

Rule 44

$\text{Int}[(a_*) + (b_*)*(x_)^(m_*)*((c_*) + (d_*)*(x_)^(n_)), x_Symbol] := \text{Int}[\text{ExpandIntegrand}[(a + b*x)^m*(c + d*x)^n, x], x] /; \text{FreeQ}[\{a, b, c, d\}, x] \ \&$

& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])

Rule 2301

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.)]*(b_.))^(p_.)*((f_) + (g_.)*(x_)^(q_.)), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.)]*(b_.))/((f_.) + (g_.)*(x_))), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e^n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2418

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]

Rule 2524

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e

```
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.),
x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)),
x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(95c + 95dx)^2} dx &= -\frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9025d(c + dx)} + \frac{(2B) \int \frac{(bc-ad)\left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{95(a+bx)(c+dx)^2} dx}{95d} \\
&= -\frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9025d(c + dx)} + \frac{(2B(bc - ad)) \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{(a+bx)(c+dx)^2} dx}{9025d} \\
&= -\frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9025d(c + dx)} + \frac{(2B(bc - ad)) \int \left(\frac{b^2\left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(bc-ad)^2(a+bx)} - \frac{d\left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(bc-ad)(c+dx)^2}\right) dx}{9025d} \\
&= -\frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9025d(c + dx)} - \frac{(2B) \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{(c+dx)^2} dx}{9025} - \frac{(2bB) \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{c+dx} dx}{9025(bc - ad)} \\
&= \frac{2B\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9025d(c + dx)} + \frac{2bB \log(a + bx)\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9025d(bc - ad)} - \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9025d(c + dx)} \\
&= \frac{2B\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9025d(c + dx)} + \frac{2bB \log(a + bx)\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9025d(bc - ad)} - \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9025d(c + dx)} \\
&= \frac{2B\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9025d(c + dx)} + \frac{2bB \log(a + bx)\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9025d(bc - ad)} - \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9025d(c + dx)} \\
&= -\frac{2B^2}{9025d(c + dx)} - \frac{2bB^2 \log(a + bx)}{9025d(bc - ad)} + \frac{2B\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9025d(c + dx)} + \frac{2bB \log(a + bx)\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9025d(bc - ad)} \\
&= -\frac{2B^2}{9025d(c + dx)} - \frac{2bB^2 \log(a + bx)}{9025d(bc - ad)} + \frac{2B\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9025d(c + dx)} + \frac{2bB \log(a + bx)\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9025d(bc - ad)} \\
&= -\frac{2B^2}{9025d(c + dx)} - \frac{2bB^2 \log(a + bx)}{9025d(bc - ad)} - \frac{bB^2 \log^2(a + bx)}{9025d(bc - ad)} + \frac{2B\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9025d(c + dx)} \\
&= -\frac{2B^2}{9025d(c + dx)} - \frac{2bB^2 \log(a + bx)}{9025d(bc - ad)} - \frac{bB^2 \log^2(a + bx)}{9025d(bc - ad)} + \frac{2B\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9025d(c + dx)}
\end{aligned}$$

Mathematica [C] time = 0.49, size = 315, normalized size = 2.07

$$\frac{B(2(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)+2b(c+dx)\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)-2b(c+dx)\log(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)-bB(c+dx)\left(\log(a+bx)\left(\log(a+bx)-2\right)\right)}{bc-c}$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x)])^2/(c*i + d*i*x)^2,x]

[Out] $(- (A + B \operatorname{Log}[(e(a + b x)) / (c + d x)])^2 + (B(2(b c - a d)(A + B \operatorname{Log}[(e(a + b x)) / (c + d x)]) + 2 b(c + d x) \operatorname{Log}[a + b x](A + B \operatorname{Log}[(e(a + b x)) / (c + d x)]) - 2 b(c + d x)(A + B \operatorname{Log}[(e(a + b x)) / (c + d x)]) \operatorname{Log}[c + d x] - 2 B(b c - a d + b(c + d x) \operatorname{Log}[a + b x] - b(c + d x) \operatorname{Log}[c + d x]) - b B(c + d x)(\operatorname{Log}[a + b x](\operatorname{Log}[a + b x] - 2 \operatorname{Log}[(b(c + d x)) / (b c - a d)]) - 2 \operatorname{PolyLog}[2, (d(a + b x)) / (-b c) + a d]) + b B(c + d x)((2 \operatorname{Log}[(d(a + b x)) / (-b c) + a d] - \operatorname{Log}[c + d x]) \operatorname{Log}[c + d x] + 2 \operatorname{PolyLog}[2, (b(c + d x)) / (b c - a d)])) / (b c - a d)) / (d i^2 (c + d x))$

fricas [A] time = 0.87, size = 155, normalized size = 1.02

$$\frac{(A^2 - 2AB + 2B^2)bc - (A^2 - 2AB + 2B^2)ad - (B^2bdx + B^2ad)\log\left(\frac{bex+ae}{dx+c}\right)^2 - 2((AB - B^2)bdx + (AB - B^2))}{(bcd^2 - ad^3)i^2x + (bc^2d - acd^2)i^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^2,x, algorithm="fricas")

[Out] $-((A^2 - 2AB + 2B^2)b*c - (A^2 - 2AB + 2B^2)a*d - (B^2*b*d*x + B^2*a*d)*\log((b*e*x + a*e)/(d*x + c))^2 - 2*((AB - B^2)*b*d*x + (AB - B^2)*a*d)*\log((b*e*x + a*e)/(d*x + c)))/((b*c*d^2 - a*d^3)*i^2*x + (b*c^2*d - a*c*d^2)*i^2)$

giac [A] time = 1.27, size = 179, normalized size = 1.18

$$\left[\frac{(bxe + ae)B^2 \log\left(\frac{bxe+ae}{dx+c}\right)^2}{dx + c} + \frac{2(bxe + ae)(AB - B^2) \log\left(\frac{bxe+ae}{dx+c}\right)}{dx + c} + \frac{(bxe + ae)(A^2 - 2AB + 2B^2)}{dx + c} \right] \left(\frac{bc}{(bce - ade)} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^2,x, algorithm="giac")

```
[Out] -((b*x*e + a*e)*B^2*log((b*x*e + a*e)/(d*x + c))^2/(d*x + c) + 2*(b*x*e + a
*e)*(A*B - B^2)*log((b*x*e + a*e)/(d*x + c))/(d*x + c) + (b*x*e + a*e)*(A^2
- 2*A*B + 2*B^2)/(d*x + c))*(b*c/((b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c
*e - a*d*e)*(b*c - a*d)))
```

maple [B] time = 0.05, size = 1236, normalized size = 8.13

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)^2/(d*i*x+c*i)^2, x)
```

```
[Out] -2*d/(a*d-b*c)^2/i^2*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*a^2+2/(a*d
-b*c)^2/i^2*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d*x+c)*a*b*c-4/(a*d-b*c)
^2/i^2*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*a*b*c-2/d/(a*d-b*c)^2/i^
2*A*B*b^2*c+2/(a*d-b*c)^2/i^2*A*B*b*a-d/(a*d-b*c)^2/i^2*B^2*ln(b/d*e+(a*d-b
*c)/(d*x+c)/d*e)^2/(d*x+c)*a^2-2/d/(a*d-b*c)^2/i^2*B^2*ln(b/d*e+(a*d-b*c)/(
d*x+c)/d*e)*b^2*c+2/(a*d-b*c)^2/i^2*A^2/(d*x+c)*a*b*c+4/(a*d-b*c)^2/i^2*B^2
/(d*x+c)*a*b*c+2*d/(a*d-b*c)^2/i^2*A*B/(d*x+c)*a^2-1/d/(a*d-b*c)^2/i^2*A^2/
(d*x+c)*b^2*c^2-2/d/(a*d-b*c)^2/i^2*B^2/(d*x+c)*b^2*c^2+2*d/(a*d-b*c)^2/i^2
*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*a^2-2/(a*d-b*c)^2/i^2*A*B*ln(b
/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*a+1/d/(a*d-b*c)^2/i^2*B^2*ln(b/d*e+(a*d-b*c)/(
d*x+c)/d*e)^2*b^2*c+1/d/(a*d-b*c)^2/i^2*A^2*b^2*c-d/(a*d-b*c)^2/i^2*A^2/(d
*x+c)*a^2-2*d/(a*d-b*c)^2/i^2*B^2/(d*x+c)*a^2-1/(a*d-b*c)^2/i^2*B^2*ln(b/d*
e+(a*d-b*c)/(d*x+c)/d*e)^2*b*a+2/(a*d-b*c)^2/i^2*B^2*ln(b/d*e+(a*d-b*c)/(d*
x+c)/d*e)*b*a-2/(a*d-b*c)^2/i^2*B^2*b*a+2/d/(a*d-b*c)^2/i^2*B^2*b^2*c-1/(a*
d-b*c)^2/i^2*A^2*b*a-4/(a*d-b*c)^2/i^2*A*B/(d*x+c)*a*b*c+2/d/(a*d-b*c)^2/i^
2*A*B/(d*x+c)*b^2*c^2+2/d/(a*d-b*c)^2/i^2*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*
e)/(d*x+c)*b^2*c^2+2/d/(a*d-b*c)^2/i^2*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*
b^2*c-1/d/(a*d-b*c)^2/i^2*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d*x+c)*b^2
*c^2-2/d/(a*d-b*c)^2/i^2*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*b^2*c^
2+4/(a*d-b*c)^2/i^2*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*a*b*c
```

maxima [B] time = 1.30, size = 416, normalized size = 2.74

$$\left(2\left(\frac{1}{d^2i^2x + cdi^2} + \frac{b \log(bx + a)}{(bcd - ad^2)i^2} - \frac{b \log(dx + c)}{(bcd - ad^2)i^2}\right)\log\left(\frac{bex}{dx + c} + \frac{ae}{dx + c}\right) - \frac{(bdx + bc) \log(bx + a)^2 + (bdx + b}{\dots}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^2, x, algorithm="maxima
")
```

```
[Out] (2*(1/(d^2*i^2*x + c*d*i^2) + b*log(b*x + a)/((b*c*d - a*d^2)*i^2) - b*log(
d*x + c)/((b*c*d - a*d^2)*i^2))*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - ((b*
```

$d*x + b*c)*\log(b*x + a)^2 + (b*d*x + b*c)*\log(d*x + c)^2 + 2*b*c - 2*a*d +$
 $2*(b*d*x + b*c)*\log(b*x + a) - 2*(b*d*x + b*c + (b*d*x + b*c)*\log(b*x + a))$
 $*\log(d*x + c))/(b*c^2*d*i^2 - a*c*d^2*i^2 + (b*c*d^2*i^2 - a*d^3*i^2)*x)*B$
 $^2 - 2*A*B*(\log(b*e*x/(d*x + c) + a*e/(d*x + c)))/(d^2*i^2*x + c*d*i^2) - 1/$
 $(d^2*i^2*x + c*d*i^2) - b*\log(b*x + a)/((b*c*d - a*d^2)*i^2) + b*\log(d*x +$
 $c)/((b*c*d - a*d^2)*i^2)) - B^2*\log(b*e*x/(d*x + c) + a*e/(d*x + c))^2/(d^2$
 $*i^2*x + c*d*i^2) - A^2/(d^2*i^2*x + c*d*i^2)$

mupad [B] time = 5.62, size = 222, normalized size = 1.46

$$\frac{\ln\left(\frac{e(a+bx)}{c+dx}\right)\left(\frac{2B^2}{bd^2i^2} - \frac{2AB}{bd^2i^2}\right) - \ln\left(\frac{e(a+bx)}{c+dx}\right)^2\left(\frac{B^2}{d^2i^2\left(x+\frac{c}{d}\right)} + \frac{B^2b}{di^2(ad-bc)}\right) - \frac{A^2 - 2AB + 2B^2}{xd^2i^2 + cdi^2} + Bb \operatorname{atan}\left(\frac{2}{\dots}\right)}{\frac{\frac{x}{b} + \frac{c}{bd}}{\dots}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((A + B*log((e*(a + b*x))/(c + d*x)))^2/(c*i + d*i*x)^2,x)`

[Out] `(log((e*(a + b*x))/(c + d*x))*((2*B^2)/(b*d^2*i^2) - (2*A*B)/(b*d^2*i^2)))/`
`(x/b + c/(b*d)) - log((e*(a + b*x))/(c + d*x))^2*(B^2/(d^2*i^2*(x + c/d) +`
`(B^2*b)/(d*i^2*(a*d - b*c))) - (A^2 + 2*B^2 - 2*A*B)/(d^2*i^2*x + c*d*i^2)`
`+ (B*b*atan(((2*b*d*x + (a*d^2*i^2 + b*c*d*i^2)/(d*i^2))*1i)/(a*d - b*c))*`
`(A - B)*4i)/(d*i^2*(a*d - b*c))`

sympy [B] time = 3.46, size = 432, normalized size = 2.84

$$\frac{2Bb(A - B) \log\left(x + \frac{2ABabd + 2ABb^2c - 2B^2abd - 2B^2b^2c - \frac{2Ba^2bd^2(A-B)}{ad-bc} + \frac{4Bab^2cd(A-B)}{ad-bc} - \frac{2Bb^3c^2(A-B)}{ad-bc}}{4ABb^2d - 4B^2b^2d}\right) + 2Bb(A - B) \log\left(x + \frac{2ABabd + 2ABb^2c - 2B^2abd - 2B^2b^2c}{4ABb^2d - 4B^2b^2d}\right)}{di^2(ad - bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((A+B*ln(e*(b*x+a)/(d*x+c)))**2/(d*i*x+c*i)**2,x)`

[Out] `2*B*b*(A - B)*log(x + (2*A*B*a*b*d + 2*A*B*b**2*c - 2*B**2*a*b*d - 2*B**2*b`
`**2*c - 2*B*a**2*b*d**2*(A - B)/(a*d - b*c) + 4*B*a*b**2*c*d*(A - B)/(a*d -`
`b*c) - 2*B*b**3*c**2*(A - B)/(a*d - b*c))/(4*A*B*b**2*d - 4*B**2*b**2*d))/`
`(d*i**2*(a*d - b*c)) - 2*B*b*(A - B)*log(x + (2*A*B*a*b*d + 2*A*B*b**2*c -`
`2*B**2*a*b*d - 2*B**2*b**2*c + 2*B*a**2*b*d**2*(A - B)/(a*d - b*c) - 4*B*a`
`b**2*c*d*(A - B)/(a*d - b*c) + 2*B*b**3*c**2*(A - B)/(a*d - b*c))/(4*A*B*b`
`**2*d - 4*B**2*b**2*d))/(d*i**2*(a*d - b*c)) + (-2*A*B + 2*B**2)*log(e*(a +`
`b*x)/(c + d*x))/(c*d*i**2 + d**2*i**2*x) + (-B**2*a - B**2*b*x)*log(e*(a +`
`b*x)/(c + d*x))**2/(a*c*d*i**2 + a*d**2*i**2*x - b*c**2*i**2 - b*c*d*i**2*x`
`) + (-A**2 + 2*A*B - 2*B**2)/(c*d*i**2 + d**2*i**2*x)`

$$3.96 \quad \int \frac{\left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)(ci+dix)^2} dx$$

Optimal. Leaf size=214

$$\frac{b\left(B \log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^3}{3Bgi^2(bc-ad)^2} - \frac{d(a+bx)\left(B \log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{gi^2(c+dx)(bc-ad)^2} + \frac{2ABd(a+bx)}{gi^2(c+dx)(bc-ad)^2} + \frac{2B^2d(a+bx) \log\left(\frac{e(a+bx)}{c+dx}\right)}{gi^2(c+dx)(bc-ad)^2} + \dots$$

[Out] $2*A*B*d*(b*x+a)/(-a*d+b*c)^2/g/i^2/(d*x+c)-2*B^2*d*(b*x+a)/(-a*d+b*c)^2/g/i^2/(d*x+c)+2*B^2*d*(b*x+a)*\ln(e*(b*x+a)/(d*x+c))/(-a*d+b*c)^2/g/i^2/(d*x+c)-d*(b*x+a)*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/(-a*d+b*c)^2/g/i^2/(d*x+c)+1/3*b*(A+B*\ln(e*(b*x+a)/(d*x+c)))^3/B/(-a*d+b*c)^2/g/i^2$

Rubi [C] time = 6.47, antiderivative size = 1687, normalized size of antiderivative = 7.88, number of steps used = 87, number of rules used = 31, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}} = 0.738$, Rules used = {2528, 2524, 12, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2525, 44, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x)])^2/((a*g + b*g*x)*(c*i + d*i*x)^2), x]

[Out] $(2*B^2)/((b*c - a*d)*g*i^2*(c + d*x)) + (2*b*B^2*Log[a + b*x])/((b*c - a*d)^2*g*i^2) - (A*b*B*Log[a + b*x]^2)/((b*c - a*d)^2*g*i^2) + (b*B^2*Log[a + b*x]^2)/((b*c - a*d)^2*g*i^2) + (b*B^2*Log[a + b*x]*Log[(c + d*x)^{-1}]^2)/((b*c - a*d)^2*g*i^2) - (b*B^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[(c + d*x)^{-1}]^2)/((b*c - a*d)^2*g*i^2) - (b*B^2*Log[-((b*c - a*d)/(d*(a + b*x))])*Log[(e*(a + b*x))/(c + d*x)]^2)/((b*c - a*d)^2*g*i^2) - (b*B^2*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)]^2)/((b*c - a*d)^2*g*i^2) - (2*B*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/((b*c - a*d)*g*i^2*(c + d*x)) - (2*b*B*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/((b*c - a*d)^2*g*i^2) + (A + B*Log[(e*(a + b*x))/(c + d*x)]^2)/((b*c - a*d)*g*i^2*(c + d*x)) + (b*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]^2)/((b*c - a*d)^2*g*i^2) - (2*b*B^2*Log[c + d*x])/((b*c - a*d)^2*g*i^2) + (b*B^2*Log[a + b*x]^2*Log[c + d*x])/((b*c - a*d)^2*g*i^2) + (2*A*b*B*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/((b*c - a*d)^2*g*i^2) - (2*b*B^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/((b*c - a*d)^2*g*i^2) + (2*b*B^2*Log[a + b*x]*Log[(c + d*x)^{-1}])*Log[c + d*x])/((b*c - a*d)^2*g*i^2) - (2*b*B^2*Log[-((d*(a + b*x))/(b*c - a*d))]*(Log[a + b*x] + Log[(c + d*x)^{-1}] - Log[(e*(a + b*x))/(c + d*x)])$

$$\begin{aligned} &) * \text{Log}[c + d*x] / ((b*c - a*d)^{2*g*i^2}) + (2*b*B*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x])) * \text{Log}[c + d*x] / ((b*c - a*d)^{2*g*i^2}) - (b*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]))^2 * \text{Log}[c + d*x] / ((b*c - a*d)^{2*g*i^2}) - (A*b*B*\text{Log}[c + d*x]^2) / ((b*c - a*d)^{2*g*i^2}) + (b*B^2*\text{Log}[c + d*x]^2) / ((b*c - a*d)^{2*g*i^2}) + (b*B^2*\text{Log}[a + b*x]*\text{Log}[c + d*x]^2) / ((b*c - a*d)^{2*g*i^2}) - (b*B^2*\text{Log}[(e*(a + b*x))/(c + d*x)] * \text{Log}[c + d*x]^2) / ((b*c - a*d)^{2*g*i^2}) - (b*B^2*\text{Log}[c + d*x]^3) / (3*(b*c - a*d)^{2*g*i^2}) + (2*A*b*B*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)]) / ((b*c - a*d)^{2*g*i^2}) - (2*b*B^2*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)]) / ((b*c - a*d)^{2*g*i^2}) - (b*B^2*\text{Log}[a + b*x]^2 * \text{Log}[(b*(c + d*x))/(b*c - a*d)]) / ((b*c - a*d)^{2*g*i^2}) + (2*A*b*B*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))] / ((b*c - a*d)^{2*g*i^2}) - (2*b*B^2*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))] / ((b*c - a*d)^{2*g*i^2}) - (2*b*B^2*\text{Log}[a + b*x]*\text{PolyLog}[2, -(d*(a + b*x))/(b*c - a*d)]) / ((b*c - a*d)^{2*g*i^2}) + (2*A*b*B*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]) / ((b*c - a*d)^{2*g*i^2}) - (2*b*B^2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]) / ((b*c - a*d)^{2*g*i^2}) + (2*b*B^2*\text{Log}[(c + d*x)^{-1}] * \text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]) / ((b*c - a*d)^{2*g*i^2}) - (2*b*B^2*(\text{Log}[a + b*x] + \text{Log}[(c + d*x)^{-1}] - \text{Log}[(e*(a + b*x))/(c + d*x])) * \text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]) / ((b*c - a*d)^{2*g*i^2}) + (2*b*B^2*\text{Log}[(e*(a + b*x))/(c + d*x)] * \text{PolyLog}[2, 1 + (b*c - a*d)/(d*(a + b*x))]) / ((b*c - a*d)^{2*g*i^2}) + (2*b*B^2*\text{PolyLog}[3, -((d*(a + b*x))/(b*c - a*d))] / ((b*c - a*d)^{2*g*i^2}) + (2*b*B^2*\text{PolyLog}[3, (b*(c + d*x))/(b*c - a*d)] / ((b*c - a*d)^{2*g*i^2}) + (2*b*B^2*\text{PolyLog}[3, 1 + (b*c - a*d)/(d*(a + b*x))] / ((b*c - a*d)^{2*g*i^2})) \end{aligned}$$

Rule 12

$$\text{Int}[(a_*)(u_), x_Symbol] := \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \ \&\& \ !\text{MatchQ}[u, (b_*)(v_)] /; \text{FreeQ}[b, x]$$

Rule 30

$$\text{Int}[(x_)^{(m_.)}, x_Symbol] := \text{Simp}[x^{(m + 1)}/(m + 1), x] /; \text{FreeQ}[m, x] \ \&\& \ \text{NeQ}[m, -1]$$

Rule 44

$$\text{Int}[((a_) + (b_.)(x_))^{(m_.)} * ((c_.) + (d_.)(x_))^{(n_.)}, x_Symbol] := \text{Int}[\text{ExpandIntegrand}[(a + b*x)^m * (c + d*x)^n, x], x] /; \text{FreeQ}\{a, b, c, d\}, x] \ \&\& \ \text{NeQ}[b*c - a*d, 0] \ \&\& \ \text{ILtQ}[m, 0] \ \&\& \ \text{IntegerQ}[n] \ \&\& \ !(\text{IGtQ}[n, 0] \ \&\& \ \text{LtQ}[m + n + 2, 0])$$

Rule 2301

$$\text{Int}[(a_.) + \text{Log}[(c_.)(x_)]^{(n_.)}] * (b_.) / (x_), x_Symbol] := \text{Simp}[(a + b*\text{Log}[c*x^n])^2 / (2*b*n), x] /; \text{FreeQ}\{a, b, c, n\}, x]$$

Rule 2302

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] := Dist[1/(b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p}, x]

Rule 2317

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol] := Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e, Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]

Rule 2344

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))), x_Symbol] := Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]

Rule 2374

Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] := -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0] && EqQ[d*e, 1]

Rule 2375

Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] := Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m - 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d, e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])^p/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*((f_.) + (g_.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] := Dist[1/e, Subst[Int[(g*x)/e]^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_)^(m_.))]*(g_.))*((k_.) + (l_.)*(x_)^(r_.)), x_Symbol] := Dist[1/e, Subst[Int[(k*x)/d]^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
```

$(e*i - d*j)/e + (j*x)/e^m$), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]

Rule 2434

Int[(((a_.) + Log[(c_.)*((d_.) + (e_.)*(x_.))^(n_.)]*(b_.))*((f_.) + Log[(h_.)*(i_.) + (j_.)*(x_.)]^(m_.)]*(g_.)))/(x_), x_Symbol] := Simp[Log[x]*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Log[x]*(a + b*Log[c*(d + e*x)^n])]/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x]*(f + g*Log[h*(i + j*x)^m])]/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]

Rule 2440

Int[((a_.) + Log[(c_.)*((d_.) + (e_.)*(x_.))^(n_.)]*(b_.))*((f_.) + Log[(h_.)*(i_.) + (j_.)*(x_.)]^(m_.)]*(g_.))*((k_.) + (l_.)*(x_.))^(r_.), x_Symbol] := Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f + g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]

Rule 2488

Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_.))^(p_.))*((c_.) + (d_.)*(x_.))^(q_.))^(r_.)]^(s_.)/((g_.) + (h_.)*(x_.)), x_Symbol] := -Simp[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/h, x] + Dist[(p*r*s*(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1)/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c, d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ[b*g - a*h, 0] && IGtQ[s, 0]

Rule 2499

Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_.))^(p_.))*((c_.) + (d_.)*(x_.))^(q_.))^(r_.)]*(s_.) + Log[(i_.)*((g_.) + (h_.)*(x_.))^(n_.)]*(t_.))^(m_.))/((j_.) + (k_.)*(x_.)), x_Symbol] := Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dist[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x), x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r}, x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]

Rule 2500

Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_.))^(p_.))*((c_.) + (d_.)*(x_.))^(q_.))^(r_.)]*(s_.) + Log[(i_.)*((g_.) + (h_.)*(x_.))^(n_.)]*(t_.)))/((j_.) + (k

```

_.)*(x_)), x_Symbol] := Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]

```

Rule 2506

```

Int[Log[v]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))
^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] := With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]

```

Rule 2507

```

Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] := With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1))/(p*r*(s + 1)*(b*c
- a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q)^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
EqQ[p + q, 0] && NeQ[s, -1]

```

Rule 2524

```

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]

```

Rule 2525

```

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]

```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[ {u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunc
tionQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] := With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /; !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] := With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] := With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\begin{aligned}
\int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(96c + 96dx)^2(ag + bgx)} dx &= \int \left(\frac{b^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9216(bc - ad)^2g(a + bx)} - \frac{d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9216(bc - ad)g(c + dx)^2} - \frac{bd \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9216(bc - ad)^2g(c + dx)} \right) dx \\
&= \frac{b^2 \int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{a+bx} dx}{9216(bc - ad)^2g} - \frac{(bd) \int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{c+dx} dx}{9216(bc - ad)^2g} - \frac{d \int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(c+dx)^2} dx}{9216(bc - ad)g} \\
&= \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9216(bc - ad)g(c + dx)} + \frac{b \log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9216(bc - ad)^2g} - \frac{b \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9216(bc - ad)^2g} \\
&= \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9216(bc - ad)g(c + dx)} + \frac{b \log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9216(bc - ad)^2g} - \frac{b \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9216(bc - ad)^2g} \\
&= \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9216(bc - ad)g(c + dx)} + \frac{b \log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9216(bc - ad)^2g} - \frac{b \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9216(bc - ad)^2g} \\
&= \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9216(bc - ad)g(c + dx)} + \frac{b \log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9216(bc - ad)^2g} - \frac{b \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9216(bc - ad)^2g} \\
&= -\frac{B \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{4608(bc - ad)g(c + dx)} - \frac{bB \log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{4608(bc - ad)^2g} + \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9216(bc - ad)^2g} \\
&= -\frac{B \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{4608(bc - ad)g(c + dx)} - \frac{bB \log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{4608(bc - ad)^2g} + \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9216(bc - ad)^2g} \\
&= -\frac{bB^2 \log(a + bx) \log^2\left(\frac{e(a+bx)}{c+dx}\right)}{9216(bc - ad)^2g} - \frac{B \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{4608(bc - ad)g(c + dx)} - \frac{bB \log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{4608(bc - ad)^2g} \\
&= \frac{B^2}{4608(bc - ad)g(c + dx)} + \frac{bB^2 \log(a + bx)}{4608(bc - ad)^2g} - \frac{bB^2 \log\left(-\frac{bc-ad}{d(a+bx)}\right) \log^2\left(\frac{e(a+bx)}{c+dx}\right)}{9216(bc - ad)^2g} \\
&= \frac{B^2}{4608(bc - ad)g(c + dx)} + \frac{bB^2 \log(a + bx)}{4608(bc - ad)^2g} - \frac{AbB \log^2(a + bx)}{9216(bc - ad)^2g} - \frac{bB^2 \log\left(-\frac{bc-ad}{d(a+bx)}\right)}{9216(bc - ad)^2g} \\
&= \frac{B^2}{4608(bc - ad)g(c + dx)} + \frac{bB^2 \log(a + bx)}{4608(bc - ad)^2g} - \frac{AbB \log^2(a + bx)}{9216(bc - ad)^2g} + \frac{bB^2 \log^2(a + bx)}{9216(bc - ad)^2g}
\end{aligned}$$

Mathematica [A] time = 0.74, size = 187, normalized size = 0.87

$$\frac{3b(A^2 - 2AB + 2B^2)(c + dx) \log(a + bx) - 3(A^2 - 2AB + 2B^2)(ad + b(c + dx) \log(c + dx) - bc) + 3B(Ab(c + dx) \log(a + bx) - bc)}{3gi^2(c + dx)(bc - a)}$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x]))^2/((a*g + b*g*x)*(c*i + d*i*x)^2), x]

[Out] (3*b*(A^2 - 2*A*B + 2*B^2)*(c + d*x)*Log[a + b*x] + 6*(A - B)*B*(b*c - a*d)*Log[(e*(a + b*x))/(c + d*x)] + 3*B*(-(B*d*(a + b*x)) + A*b*(c + d*x))*Log[(e*(a + b*x))/(c + d*x)]^2 + b*B^2*(c + d*x)*Log[(e*(a + b*x))/(c + d*x)]^3 - 3*(A^2 - 2*A*B + 2*B^2)*(-(b*c) + a*d + b*(c + d*x)*Log[c + d*x]))/(3*(b*c - a*d)^2*g*i^2*(c + d*x))

fricas [A] time = 0.90, size = 236, normalized size = 1.10

$$\frac{(B^2bdx + B^2bc) \log\left(\frac{bex+ae}{dx+c}\right)^3 + 3(A^2 - 2AB + 2B^2)bc - 3(A^2 - 2AB + 2B^2)ad + 3(ABbc - B^2ad + (AB - B^2)c)}{3((b^2c^2d - 2abcd^2 + a^2d^3)gi^2x + (b^2c^3 - 2abcd^2 + a^2d^3))}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)/(d*i*x+c*i)^2,x, algorithm="fricas")

[Out] 1/3*((B^2*b*d*x + B^2*b*c)*log((b*e*x + a*e)/(d*x + c))^3 + 3*(A^2 - 2*A*B + 2*B^2)*b*c - 3*(A^2 - 2*A*B + 2*B^2)*a*d + 3*(A*B*b*c - B^2*a*d + (A*B - B^2)*b*d*x)*log((b*e*x + a*e)/(d*x + c))^2 + 3*(A^2*b*c + (A^2 - 2*A*B + 2*B^2)*b*d*x - 2*(A*B - B^2)*a*d)*log((b*e*x + a*e)/(d*x + c)))/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*g*i^2*x + (b^2*c^3 - 2*a*b*c^2*d + a^2*c*d^2)*g*i^2)

giac [A] time = 1.44, size = 349, normalized size = 1.63

$$\frac{\left(B^2be \log\left(\frac{bxe+ae}{dx+c}\right)^3 + 3ABbe \log\left(\frac{bxe+ae}{dx+c}\right)^2 + 3A^2be \log\left(\frac{bxe+ae}{dx+c}\right) - \frac{3(bxe+ae)B^2d \log\left(\frac{bxe+ae}{dx+c}\right)^2}{dx+c} - \frac{6(bxe+ae)ABd \log\left(\frac{bxe+ae}{dx+c}\right)}{dx+c} \right)}{3(bcg - adg)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)/(d*i*x+c*i)^2,x, algorithm="giac")

```
[Out] -1/3*(B^2*b*e*log((b*x*e + a*e)/(d*x + c))^3 + 3*A*B*b*e*log((b*x*e + a*e)/(d*x + c))^2 + 3*A^2*b*e*log((b*x*e + a*e)/(d*x + c)) - 3*(b*x*e + a*e)*B^2*d*log((b*x*e + a*e)/(d*x + c))^2/(d*x + c) - 6*(b*x*e + a*e)*A*B*d*log((b*x*e + a*e)/(d*x + c))/(d*x + c) + 6*(b*x*e + a*e)*B^2*d*log((b*x*e + a*e)/(d*x + c))/(d*x + c) - 3*(b*x*e + a*e)*A^2*d/(d*x + c) + 6*(b*x*e + a*e)*A*B*d/(d*x + c) - 6*(b*x*e + a*e)*B^2*d/(d*x + c))*(b*c/((b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))/(b*c*g - a*d*g)
```

maple [B] time = 0.05, size = 1633, normalized size = 7.63

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)/(d*i*x+c*i)^2,x)
```

```
[Out] -1/i^2/(a*d-b*c)^3/g*A*B*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c-1/i^2/(a*d-b*c)^3/g*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d*x+c)*b^2*c^2+2/i^2/(a*d-b*c)^3/g*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*b^2*c^2+2/i^2/(a*d-b*c)^3/g*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2*c+d/i^2/(a*d-b*c)^3/g*A^2*b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+2*d^2/i^2/(a*d-b*c)^3/g*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*a^2+1/3*d/i^2/(a*d-b*c)^3/g*B^2*b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^3*a-d^2/i^2/(a*d-b*c)^3/g*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d*x+c)*a^2+2*d/i^2/(a*d-b*c)^3/g*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*a-d/i^2/(a*d-b*c)^3/g*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b*a+2/i^2/(a*d-b*c)^3/g*A*B/(d*x+c)*b^2*c^2+2*d^2/i^2/(a*d-b*c)^3/g*A*B/(d*x+c)*a^2-2*d/i^2/(a*d-b*c)^3/g*B^2*b*a+2/i^2/(a*d-b*c)^3/g*B^2*b^2*c+2*d/i^2/(a*d-b*c)^3/g*A*B*b*a-2/i^2/(a*d-b*c)^3/g*A*B*b^2*c-1/i^2/(a*d-b*c)^3/g*A^2/(d*x+c)*b^2*c^2-1/3/i^2/(a*d-b*c)^3/g*B^2*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^3*c-1/i^2/(a*d-b*c)^3/g*A^2*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+1/i^2/(a*d-b*c)^3/g*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b^2*c-2/i^2/(a*d-b*c)^3/g*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2*c-d^2/i^2/(a*d-b*c)^3/g*A^2/(d*x+c)*a^2-2/i^2/(a*d-b*c)^3/g*B^2/(d*x+c)*b^2*c^2-2*d^2/i^2/(a*d-b*c)^3/g*B^2/(d*x+c)*a^2-d/i^2/(a*d-b*c)^3/g*A^2*b*a+1/i^2/(a*d-b*c)^3/g*A^2*b^2*c+4*d/i^2/(a*d-b*c)^3/g*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*a*b*c+2*d/i^2/(a*d-b*c)^3/g*A^2/(d*x+c)*a*b*c-2*d/i^2/(a*d-b*c)^3/g*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*a-2*d^2/i^2/(a*d-b*c)^3/g*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*a^2+2*d/i^2/(a*d-b*c)^3/g*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d*x+c)*a*b*c-4*d/i^2/(a*d-b*c)^3/g*A*B/(d*x+c)*a*b*c-4*d/i^2/(a*d-b*c)^3/g*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*a*b*c+d/i^2/(a*d-b*c)^3/g*A*B*b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a+4*d/i^2/(a*d-b*c)^3/g*B^2/(d*x+c)*a*b*c-2/i^2/(a*d-b*c)^3/g*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*b^2*c^2
```

maxima [B] time = 1.92, size = 1004, normalized size = 4.69

$$B^2 \left(\frac{1}{(bcd - ad^2)gi^2x + (bc^2 - acd)gi^2} + \frac{b \log(bx + a)}{(b^2c^2 - 2abcd + a^2d^2)gi^2} - \frac{b \log(dx + c)}{(b^2c^2 - 2abcd + a^2d^2)gi^2} \right) \log \left(\frac{bex}{dx + c} + \frac{a}{d} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)/(d*i*x+c*i)^2,x, algorithm="maxima")

[Out] B^2*(1/((b*c*d - a*d^2)*g*i^2*x + (b*c^2 - a*c*d)*g*i^2) + b*log(b*x + a)/((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*g*i^2) - b*log(d*x + c)/((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*g*i^2))*log(b*e*x/(d*x + c) + a*e/(d*x + c))^2 + 2*A*B*(1/((b*c*d - a*d^2)*g*i^2*x + (b*c^2 - a*c*d)*g*i^2) + b*log(b*x + a)/((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*g*i^2) - b*log(d*x + c)/((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*g*i^2))*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 1/3*B^2*(3*((b*d*x + b*c)*log(b*x + a)^2 + (b*d*x + b*c)*log(d*x + c)^2 + 2*b*c - 2*a*d + 2*(b*d*x + b*c)*log(b*x + a) - 2*(b*d*x + b*c + (b*d*x + b*c)*log(b*x + a))*log(d*x + c))*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^2*c^3*g*i^2 - 2*a*b*c^2*d*g*i^2 + a^2*c*d^2*g*i^2 + (b^2*c^2*d*g*i^2 - 2*a*b*c*d^2*g*i^2 + a^2*d^3*g*i^2)*x) - ((b*d*x + b*c)*log(b*x + a)^3 - (b*d*x + b*c)*log(d*x + c)^3 + 3*(b*d*x + b*c)*log(b*x + a)^2 + 3*(b*d*x + b*c + (b*d*x + b*c)*log(b*x + a))*log(d*x + c)^2 + 6*b*c - 6*a*d + 6*(b*d*x + b*c)*log(b*x + a) - 3*(2*b*d*x + (b*d*x + b*c)*log(b*x + a)^2 + 2*b*c + 2*(b*d*x + b*c)*log(b*x + a))*log(d*x + c))/(b^2*c^3*g*i^2 - 2*a*b*c^2*d*g*i^2 + a^2*c*d^2*g*i^2 + (b^2*c^2*d*g*i^2 - 2*a*b*c*d^2*g*i^2 + a^2*d^3*g*i^2)*x)) + A^2*(1/((b*c*d - a*d^2)*g*i^2*x + (b*c^2 - a*c*d)*g*i^2) + b*log(b*x + a)/((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*g*i^2) - b*log(d*x + c)/((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*g*i^2)) - ((b*d*x + b*c)*log(b*x + a)^2 + (b*d*x + b*c)*log(d*x + c)^2 + 2*b*c - 2*a*d + 2*(b*d*x + b*c)*log(b*x + a) - 2*(b*d*x + b*c + (b*d*x + b*c)*log(b*x + a))*log(d*x + c))*A*B/(b^2*c^3*g*i^2 - 2*a*b*c^2*d*g*i^2 + a^2*c*d^2*g*i^2 + (b^2*c^2*d*g*i^2 - 2*a*b*c*d^2*g*i^2 + a^2*d^3*g*i^2)*x)

mupad [B] time = 6.28, size = 423, normalized size = 1.98

$$\ln \left(\frac{e(a+bx)}{c+dx} \right)^2 \left(\frac{Bb(A-B)}{g^2(a^2d^2 - 2abcd + b^2c^2)} - \frac{B^2(ad-bc)}{bdgi^2 \left(\frac{x}{b} + \frac{c}{bd} \right) (a^2d^2 - 2abcd + b^2c^2)} \right) - \frac{A^2 - 2AB}{(ad-bc)(cgi^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((A + B*log((e*(a + b*x))/(c + d*x)))^2/((a*g + b*g*x)*(c*i + d*i*x)^2), x)

```
[Out] log((e*(a + b*x))/(c + d*x))^2*((B*b*(A - B))/(g*i^2*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) - (B^2*(a*d - b*c))/(b*d*g*i^2*(x/b + c/(b*d))*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))) - (A^2 + 2*B^2 - 2*A*B)/((a*d - b*c)*(c*g*i^2 + d*g*i^2*x)) + (B^2*b*log((e*(a + b*x))/(c + d*x))^3)/(3*g*i^2*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) - (b*atan((b*(2*b*d*x + (a^2*d^2*g*i^2 - b^2*c^2*g*i^2))/(g*i^2*(a*d - b*c)))*(A^2 + 2*B^2 - 2*A*B)*1i)/((a*d - b*c)*(A^2*b + 2*B^2*b - 2*A*B*b)))*(A^2 + 2*B^2 - 2*A*B)*2i)/(g*i^2*(a*d - b*c)^2) - (2*B*log((e*(a + b*x))/(c + d*x))*(A - B)*(a*d - b*c))/(b*d*g*i^2*(x/b + c/(b*d))*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))
```

sympy [B] time = 6.19, size = 539, normalized size = 2.52

$$\frac{B^2 b \log\left(\frac{e(a+bx)}{c+dx}\right)^3}{3a^2 d^2 g i^2 - 6abcd g i^2 + 3b^2 c^2 g i^2} + \frac{(-2AB + 2B^2) \log\left(\frac{e(a+bx)}{c+dx}\right)}{acd g i^2 + ad^2 g i^2 x - bc^2 g i^2 - bcd g i^2 x} + (A^2 - 2AB + 2B^2) \left(\frac{b \log\left(x + \frac{-\frac{a^3 b d^3}{(ad-bc)^2} + \dots}{g i^2}\right)}{g i^2} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)/(d*i*x+c*i)**2,x)
```

```
[Out] B**2*b*log(e*(a + b*x)/(c + d*x))**3/(3*a**2*d**2*g*i**2 - 6*a*b*c*d*g*i**2 + 3*b**2*c**2*g*i**2) + (-2*A*B + 2*B**2)*log(e*(a + b*x)/(c + d*x))/(a*c*d*g*i**2 + a*d**2*g*i**2*x - b*c**2*g*i**2 - b*c*d*g*i**2*x) + (A**2 - 2*A*B + 2*B**2)*(-b*log(x + (-a**3*b*d**3/(a*d - b*c))**2 + 3*a**2*b**2*c*d**2/(a*d - b*c)**2 - 3*a*b**3*c**2*d/(a*d - b*c)**2 + a*b*d + b**4*c**3/(a*d - b*c)**2 + b**2*c)/(2*b**2*d))/(g*i**2*(a*d - b*c)**2) + b*log(x + (a**3*b*d**3/(a*d - b*c)**2 - 3*a**2*b**2*c*d**2/(a*d - b*c)**2 + 3*a*b**3*c**2*d/(a*d - b*c)**2 + a*b*d - b**4*c**3/(a*d - b*c)**2 + b**2*c)/(2*b**2*d))/(g*i**2*(a*d - b*c)**2) - 1/(a*c*d*g*i**2 - b*c**2*g*i**2 + x*(a*d**2*g*i**2 - b*c*d*g*i**2)) + (A*B*b*c + A*B*b*d*x - B**2*a*d - B**2*b*d*x)*log(e*(a + b*x)/(c + d*x))**2/(a**2*c*d**2*g*i**2 + a**2*d**3*g*i**2*x - 2*a*b*c**2*d*g*i**2 - 2*a*b*c*d**2*g*i**2*x + b**2*c**3*g*i**2 + b**2*c**2*d*g*i**2*x)
```

$$3.97 \quad \int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^2(ci+dix)^2} dx$$

Optimal. Leaf size=365

$$\frac{b^2(c+dx)\left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)^2}{g^2i^2(a+bx)(bc-ad)^3} - \frac{2b^2B(c+dx)\left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{g^2i^2(a+bx)(bc-ad)^3} + \frac{d^2(a+bx)\left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)^2}{g^2i^2(c+dx)(bc-ad)^3} - \frac{2bd^2(a+bx)\left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{g^2i^2(c+dx)(bc-ad)^3}$$

[Out] $-2ABd^2(bx+a)/(-ad+bc)^3/g^2/i^2/(dx+c) + 2B^2d^2(bx+a)/(-ad+bc)^3/g^2/i^2/(dx+c) - 2b^2B^2(d^2x+c)/(-ad+bc)^3/g^2/i^2/(bx+a) - 2B^2d^2(bx+a)*\ln(e*(bx+a)/(dx+c))/(-ad+bc)^3/g^2/i^2/(dx+c) - 2b^2B*(d^2x+c)*(A+B*\ln(e*(bx+a)/(dx+c)))/(-ad+bc)^3/g^2/i^2/(bx+a) + d^2(bx+a)*(A+B*\ln(e*(bx+a)/(dx+c)))^2/(-ad+bc)^3/g^2/i^2/(dx+c) - b^2(d^2x+c)*(A+B*\ln(e*(bx+a)/(dx+c)))^2/(-ad+bc)^3/g^2/i^2/(bx+a) - 2/3*b*d*(A+B*\ln(e*(bx+a)/(dx+c)))^3/B/(-ad+bc)^3/g^2/i^2$

Rubi [C] time = 7.18, antiderivative size = 1521, normalized size of antiderivative = 4.17, number of steps used = 113, number of rules used = 31, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}} = 0.738$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x]))^2/((a*g + b*g*x)^2*(c*i + d*i*x)^2), x]

[Out] $(-2bB^2)/((bc-ad)^2g^2i^2(a+bx)) - (2B^2d)/((bc-ad)^2g^2i^2(c+dx)) - (4bB^2d*Log[a+bx])/((bc-ad)^3g^2i^2) + (2A*bB*d*Log[a+bx]^2)/((bc-ad)^3g^2i^2) - (2bB^2d*Log[a+bx]*Log[(c+dx)^{-1}]^2)/((bc-ad)^3g^2i^2) + (2bB^2d*Log[-((d*(a+bx))/(bc-ad))]*Log[(c+dx)^{-1}]^2)/((bc-ad)^3g^2i^2) + (2bB^2d*Log[-((bc-ad)/(d*(a+bx)))]*Log[(e*(a+bx))/(c+dx)]^2)/((bc-ad)^3g^2i^2) + (2bB^2d*Log[a+bx]*Log[(e*(a+bx))/(c+dx)]^2)/((bc-ad)^3g^2i^2) - (2bB*(A+B*Log[(e*(a+bx))/(c+dx)]))/((bc-ad)^2g^2i^2*(a+bx)) + (2B*d*(A+B*Log[(e*(a+bx))/(c+dx)]))/((bc-ad)^2g^2i^2*(c+dx)) - (b*(A+B*Log[(e*(a+bx))/(c+dx)]))^2/((bc-ad)^2g^2i^2*(a+bx)) - (d*(A+B*Log[(e*(a+bx))/(c+dx)]))^2/((bc-ad)^2g^2i^2*(c+dx)) - (2b*d*Log[a+bx]*(A+B*Log[(e*(a+bx))/(c+dx)]))^2/((bc-ad)^3g^2i^2) + (4bB^2d*Log[c+dx])/((bc-ad)^3g^2i^2) - (2bB^2d*Log[a+bx]^2*Log[c+dx])/((bc-ad)^3g^2i^2) - (4A*bB*d*Log[-((d*(a+bx))/(bc-ad))]*Log[c +$

$$\begin{aligned} & d*x))/((b*c - a*d)^3*g^2*i^2) - (4*b*B^2*d*Log[a + b*x]*Log[(c + d*x)^{-1}] \\ & *Log[c + d*x])/((b*c - a*d)^3*g^2*i^2) + (4*b*B^2*d*Log[-((d*(a + b*x))/(b* \\ & c - a*d))]*(Log[a + b*x] + Log[(c + d*x)^{-1}] - Log[(e*(a + b*x))/(c + d*x \\ &)]))*Log[c + d*x])/((b*c - a*d)^3*g^2*i^2) + (2*b*d*(A + B*Log[(e*(a + b*x)) \\ & / (c + d*x)])^2*Log[c + d*x])/((b*c - a*d)^3*g^2*i^2) + (2*A*b*B*d*Log[c + d \\ & *x]^2)/((b*c - a*d)^3*g^2*i^2) - (2*b*B^2*d*Log[a + b*x]*Log[c + d*x]^2)/((\\ & b*c - a*d)^3*g^2*i^2) + (2*b*B^2*d*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x \\ &]^2)/((b*c - a*d)^3*g^2*i^2) + (2*b*B^2*d*Log[c + d*x]^3)/(3*(b*c - a*d)^3* \\ & g^2*i^2) - (4*A*b*B*d*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - \\ & a*d)^3*g^2*i^2) + (2*b*B^2*d*Log[a + b*x]^2*Log[(b*(c + d*x))/(b*c - a*d)]) \\ & /((b*c - a*d)^3*g^2*i^2) - (4*A*b*B*d*PolyLog[2, -((d*(a + b*x))/(b*c - a*d \\ &))])/((b*c - a*d)^3*g^2*i^2) + (4*b*B^2*d*Log[a + b*x]*PolyLog[2, -((d*(a + \\ & b*x))/(b*c - a*d))])/((b*c - a*d)^3*g^2*i^2) - (4*A*b*B*d*PolyLog[2, (b*(c \\ & + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g^2*i^2) - (4*b*B^2*d*Log[(c + d*x)^{-1}] \\ & *PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g^2*i^2) + (4*b*B \\ & B^2*d*(Log[a + b*x] + Log[(c + d*x)^{-1}] - Log[(e*(a + b*x))/(c + d*x)])*P \\ & olyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g^2*i^2) - (4*b*B^2*d* \\ & Log[(e*(a + b*x))/(c + d*x)]*PolyLog[2, 1 + (b*c - a*d)/(d*(a + b*x))])/((b \\ & *c - a*d)^3*g^2*i^2) - (4*b*B^2*d*PolyLog[3, -((d*(a + b*x))/(b*c - a*d))]) \\ & /((b*c - a*d)^3*g^2*i^2) - (4*b*B^2*d*PolyLog[3, (b*(c + d*x))/(b*c - a*d)]) \\ &)/((b*c - a*d)^3*g^2*i^2) - (4*b*B^2*d*PolyLog[3, 1 + (b*c - a*d)/(d*(a + b \\ & *x))])/((b*c - a*d)^3*g^2*i^2) \end{aligned}$$

Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 30

```
Int[(x_)^(m_), x_Symbol] := Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] := Dist[1/(b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p}, x]

Rule 2317

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol] := Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e, Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]

Rule 2344

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))), x_Symbol] := Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]

Rule 2374

Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*(a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] := -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0] && EqQ[d*e, 1]

Rule 2375

Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]^(r_.))*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] := Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m - 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d, e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])^p/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*((f_.) + (g_.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] := Dist[1/e, Subst[Int[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_)^(m_.))]*(g_.))*((k_.) + (l_.)*(x_)^(r_.)), x_Symbol] := Dist[1/e, Subst[Int[(k*x)/d]^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
```


$(e*i - d*j)/e + (j*x)/e^m$), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]

Rule 2434

Int[(((a_.) + Log[(c_.)*((d_.) + (e_.)*(x_.))^(n_.)]*(b_.))*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_.))^(m_.)]*(g_.)))/(x_), x_Symbol] := Simp[Log[x]*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Log[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x]*(f + g*Log[h*(i + j*x)^m))]/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]

Rule 2440

Int[((a_.) + Log[(c_.)*((d_.) + (e_.)*(x_.))^(n_.)]*(b_.))*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_.))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_.))^(r_.), x_Symbol] := Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f + g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]

Rule 2488

Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_.))^(p_.))*((c_.) + (d_.)*(x_.))^(q_.))^(r_.)]^(s_.)/((g_.) + (h_.)*(x_.), x_Symbol] := -Simp[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/h, x] + Dist[(p*r*s*(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1)/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c, d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ[b*g - a*h, 0] && IGtQ[s, 0]

Rule 2499

Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_.))^(p_.))*((c_.) + (d_.)*(x_.))^(q_.))^(r_.)]*(s_.) + Log[(i_.)*((g_.) + (h_.)*(x_.))^(n_.)]*(t_.))^(m_.))/((j_.) + (k_.)*(x_.), x_Symbol] := Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dist[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x), x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r}, x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]

Rule 2500

Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_.))^(p_.))*((c_.) + (d_.)*(x_.))^(q_.))^(r_.)]*(s_.) + Log[(i_.)*((g_.) + (h_.)*(x_.))^(n_.)]*(t_.)))/((j_.) + (k

```

_.)*(x_)), x_Symbol] := Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]

```

Rule 2506

```

Int[Log[v]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))
^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] := With[{g = Simplify[(v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]

```

Rule 2507

```

Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] := With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1))/(p*r*(s + 1)*(b*c
- a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q)^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
EqQ[p + q, 0] && NeQ[s, -1]

```

Rule 2524

```

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]

```

Rule 2525

```

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]

```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[ {u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunc
tionQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] := With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /; !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] := With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] := With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\begin{aligned}
\int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(97c + 97dx)^2(ag + bgx)^2} dx &= \int \left(\frac{b^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9409(bc - ad)^2 g^2 (a + bx)^2} - \frac{2b^2 d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9409(bc - ad)^3 g^2 (a + bx)} + \frac{d^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9409(bc - ad)^4 g^2} \right) dx \\
&= -\frac{(2b^2 d) \int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{a+bx} dx}{9409(bc - ad)^3 g^2} + \frac{(2bd^2) \int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{c+dx} dx}{9409(bc - ad)^3 g^2} + \frac{b^2 \int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(a+bx)^2} dx}{9409(bc - ad)^3 g^2} \\
&= -\frac{b \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9409(bc - ad)^2 g^2 (a + bx)} - \frac{d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9409(bc - ad)^2 g^2 (c + dx)} - \frac{2bd \log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9409(bc - ad)^2 g^2} \\
&= -\frac{b \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9409(bc - ad)^2 g^2 (a + bx)} - \frac{d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9409(bc - ad)^2 g^2 (c + dx)} - \frac{2bd \log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9409(bc - ad)^2 g^2} \\
&= -\frac{b \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9409(bc - ad)^2 g^2 (a + bx)} - \frac{d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9409(bc - ad)^2 g^2 (c + dx)} - \frac{2bd \log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9409(bc - ad)^2 g^2} \\
&= -\frac{b \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9409(bc - ad)^2 g^2 (a + bx)} - \frac{d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9409(bc - ad)^2 g^2 (c + dx)} - \frac{2bd \log(a + bx) \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9409(bc - ad)^2 g^2} \\
&= -\frac{2bB \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9409(bc - ad)^2 g^2 (a + bx)} + \frac{2Bd \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9409(bc - ad)^2 g^2 (c + dx)} - \frac{b \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9409(bc - ad)^2 g^2} \\
&= -\frac{2bB \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9409(bc - ad)^2 g^2 (a + bx)} + \frac{2Bd \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9409(bc - ad)^2 g^2 (c + dx)} - \frac{b \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9409(bc - ad)^2 g^2} \\
&= \frac{2bB^2 d \log(a + bx) \log^2\left(\frac{e(a+bx)}{c+dx}\right)}{9409(bc - ad)^3 g^2} - \frac{2bB \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9409(bc - ad)^2 g^2 (a + bx)} + \frac{2Bd \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9409(bc - ad)^2 g^2} \\
&= -\frac{2bB^2}{9409(bc - ad)^2 g^2 (a + bx)} - \frac{2B^2 d}{9409(bc - ad)^2 g^2 (c + dx)} - \frac{4bB^2 d \log(a + bx)}{9409(bc - ad)^3 g^2} \\
&= -\frac{2bB^2}{9409(bc - ad)^2 g^2 (a + bx)} - \frac{2B^2 d}{9409(bc - ad)^2 g^2 (c + dx)} - \frac{4bB^2 d \log(a + bx)}{9409(bc - ad)^3 g^2} \\
&= -\frac{2bB^2}{9409(bc - ad)^2 g^2 (a + bx)} - \frac{2B^2 d}{9409(bc - ad)^2 g^2 (c + dx)} - \frac{4bB^2 d \log(a + bx)}{9409(bc - ad)^3 g^2}
\end{aligned}$$

Mathematica [A] time = 1.10, size = 307, normalized size = 0.84

$$3B(-a^2Bd^2 + 2abd(A(c + dx) - Bdx) + b^2(2Adx(c + dx) + Bc(c + 2dx))) \log^2\left(\frac{e(a+bx)}{c+dx}\right) - 3d(A^2 - 2AB + 2B^2)$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x)])^2/((a*g + b*g*x)^2*(c*i + d*i*x)^2), x]

[Out]
$$-1/3*(-3*(A^2 - 2*A*B + 2*B^2)*d*(-(b*c) + a*d)*(a + b*x) + 3*b*(A^2 + 2*A*B + 2*B^2)*(b*c - a*d)*(c + d*x) + 6*b*(A^2 + 2*B^2)*d*(a + b*x)*(c + d*x)*\log[a + b*x] + 6*B*(b*c - a*d)*(A*b*c + b*B*c + a*A*d - a*B*d + 2*A*b*d*x)*\log[(e*(a + b*x))/(c + d*x)] + 3*B*(-(a^2*B*d^2) + 2*a*b*d*(-(B*d*x) + A*(c + d*x)) + b^2*(2*A*d*x*(c + d*x) + B*c*(c + 2*d*x)))*\log[(e*(a + b*x))/(c + d*x)]^2 + 2*b*B^2*d*(a + b*x)*(c + d*x)*\log[(e*(a + b*x))/(c + d*x)]^3 - 6*b*(A^2 + 2*B^2)*d*(a + b*x)*(c + d*x)*\log[c + d*x])/((b*c - a*d)^3*g^2*i^2*(a + b*x)*(c + d*x))$$

fricas [A] time = 0.92, size = 515, normalized size = 1.41

$$12 ABabcd - 3(A^2 + 2AB + 2B^2)b^2c^2 + 3(A^2 - 2AB + 2B^2)a^2d^2 - 2(B^2b^2d^2x^2 + B^2abcd + (B^2b^2cd + B^2aba$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^2/(d*i*x+c*i)^2,x, algorithm="fricas")

[Out]
$$1/3*(12*A*B*a*b*c*d - 3*(A^2 + 2*A*B + 2*B^2)*b^2*c^2 + 3*(A^2 - 2*A*B + 2*B^2)*a^2*d^2 - 2*(B^2*b^2*d^2*x^2 + B^2*a*b*c*d + (B^2*b^2*c*d + B^2*a*b*d^2)*x)*\log((b*e*x + a*e)/(d*x + c))^3 - 3*(2*A*B*b^2*d^2*x^2 + B^2*b^2*c^2 + 2*A*B*a*b*c*d - B^2*a^2*d^2 + 2*((A*B + B^2)*b^2*c*d + (A*B - B^2)*a*b*d^2)*x)*\log((b*e*x + a*e)/(d*x + c))^2 - 6*((A^2 + 2*B^2)*b^2*c*d - (A^2 + 2*B^2)*a*b*d^2)*x - 6*((A^2 + 2*B^2)*b^2*d^2*x^2 + A^2*a*b*c*d + (A*B + B^2)*b^2*c^2 - (A*B - B^2)*a^2*d^2 + ((A^2 + 2*A*B + 2*B^2)*b^2*c*d + (A^2 - 2*A*B + 2*B^2)*a*b*d^2)*x)*\log((b*e*x + a*e)/(d*x + c)))/((b^4*c^3*d - 3*a*b^3*c^2*d^2 + 3*a^2*b^2*c*d^3 - a^3*b*d^4)*g^2*i^2*x^2 + (b^4*c^4 - 2*a*b^3*c^3*d + 2*a^3*b*c*d^3 - a^4*d^4)*g^2*i^2*x + (a*b^3*c^4 - 3*a^2*b^2*c^3*d + 3*a^3*b*c^2*d^2 - a^4*c*d^3)*g^2*i^2)$$

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^2/(d*i*x+c*i)^2,x, alg
orithm="giac")
```

```
[Out] Timed out
```

```
maple [B] time = 0.06, size = 2572, normalized size = 7.05
```

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^2/(d*i*x+c*i)^2,x)
```

```
[Out] 4*d^2/i^2/(a*d-b*c)^4/g^2*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*b*c*a
+2*d*e/i^2/(a*d-b*c)^4/g^2*A*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*
ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+2*d^3/i^2/(a*d-b*c)^4/g^2*A*B/(d*x+c)*a^2
-2*e/i^2/(a*d-b*c)^4/g^2*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c-
e/i^2/(a*d-b*c)^4/g^2*A^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c-d/i
^2/(a*d-b*c)^4/g^2*A^2/(d*x+c)*b^2*c^2-2*d/i^2/(a*d-b*c)^4/g^2*B^2/(d*x+c)*
b^2*c^2-2*d/i^2/(a*d-b*c)^4/g^2*A^2*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+2
*d^3/i^2/(a*d-b*c)^4/g^2*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*a^2+2/
3*d^2/i^2/(a*d-b*c)^4/g^2*B^2*b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^3*a-2/3*d/i
^2/(a*d-b*c)^4/g^2*B^2*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^3*c+2*d^2/i^2/(a
*d-b*c)^4/g^2*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*a-2*d/i^2/(a*d-b*c)^4/g
^2*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2*c-d^2/i^2/(a*d-b*c)^4/g^2*B^2*ln
(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b*a+d/i^2/(a*d-b*c)^4/g^2*B^2*ln(b/d*e+(a*d
-b*c)/(d*x+c)/d*e)^2*b^2*c+2*d^2/i^2/(a*d-b*c)^4/g^2*A^2*b*ln(b/d*e+(a*d-b*
c)/(d*x+c)/d*e)*a-d^3/i^2/(a*d-b*c)^4/g^2*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*
e)^2/(d*x+c)*a^2-d^2/i^2/(a*d-b*c)^4/g^2*A^2*b*a+d/i^2/(a*d-b*c)^4/g^2*A^2*
b^2*c-2*d^2/i^2/(a*d-b*c)^4/g^2*B^2*b*a+2*d/i^2/(a*d-b*c)^4/g^2*B^2*b^2*c-d
^3/i^2/(a*d-b*c)^4/g^2*A^2/(d*x+c)*a^2-2*d^3/i^2/(a*d-b*c)^4/g^2*B^2/(d*x+c
)*a^2+d*e/i^2/(a*d-b*c)^4/g^2*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*
e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a-2*d/i^2/(a*d-b*c)^4/g^2*A*B*ln(b/d*e
+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*b^2*c^2-4*d^2/i^2/(a*d-b*c)^4/g^2*A*B/(d*x+
c)*a*b*c-4*d^2/i^2/(a*d-b*c)^4/g^2*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x
+c)*a*b*c+2*d^2/i^2/(a*d-b*c)^4/g^2*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(
d*x+c)*a*b*c-2*e/i^2/(a*d-b*c)^4/g^2*A*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d
*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+2*d*e/i^2/(a*d-b*c)^4/g^2*B^2*b
^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*
a-2*d/i^2/(a*d-b*c)^4/g^2*A*B*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c+d*e/i
^2/(a*d-b*c)^4/g^2*A^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a+2*d*e/
i^2/(a*d-b*c)^4/g^2*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a-2*e/i
^2/(a*d-b*c)^4/g^2*A*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c+2*d^2/
i^2/(a*d-b*c)^4/g^2*A^2/(d*x+c)*a*b*c+4*d^2/i^2/(a*d-b*c)^4/g^2*B^2/(d*x+c)
```

$$\begin{aligned} & a*b*c-2*d^2/i^2/(a*d-b*c)^4/g^2*A*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*a+2* \\ & d/i^2/(a*d-b*c)^4/g^2*A*B/(d*x+c)*b^2*c^2+2*d^2/i^2/(a*d-b*c)^4/g^2*A*B*b*\ln \\ & n(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a-e/i^2/(a*d-b*c)^4/g^2*B^2*b^3/(1/(d*x+c) \\ & *a*e-1/(d*x+c)*b*c/d*e+b/d*e)*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c-2*e/i^2/(\\ & a*d-b*c)^4/g^2*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*\ln(b/d*e+(a* \\ & d-b*c)/(d*x+c)/d*e)*c+2*d/i^2/(a*d-b*c)^4/g^2*A*B*\ln(b/d*e+(a*d-b*c)/(d*x+c) \\ &)/d*e)*b^2*c-2*d^3/i^2/(a*d-b*c)^4/g^2*A*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/ \\ & (d*x+c)*a^2-d/i^2/(a*d-b*c)^4/g^2*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d* \\ & x+c)*b^2*c^2+2*d/i^2/(a*d-b*c)^4/g^2*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d \\ & *x+c)*b^2*c^2+2*d^2/i^2/(a*d-b*c)^4/g^2*A*B*b*a-2*d/i^2/(a*d-b*c)^4/g^2*A*B \\ & *b^2*c+2*d*e/i^2/(a*d-b*c)^4/g^2*A*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b \\ & /d*e)*a \end{aligned}$$

maxima [B] time = 2.61, size = 1995, normalized size = 5.47

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^2/(d*i*x+c*i)^2,x, alg
orithm="maxima")

[Out]
$$\begin{aligned} & -B^2*((2*b*d*x + b*c + a*d)/((b^3*c^2*d - 2*a*b^2*c*d^2 + a^2*b*d^3)*g^2*i^ \\ & 2*x^2 + (b^3*c^3 - a*b^2*c^2*d - a^2*b*c*d^2 + a^3*d^3)*g^2*i^2*x + (a*b^2* \\ & c^3 - 2*a^2*b*c^2*d + a^3*c*d^2)*g^2*i^2) + 2*b*d*\log(b*x + a)/((b^3*c^3 - \\ & 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^2*i^2) - 2*b*d*\log(d*x + c)/((b^ \\ & 3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^2*i^2))*\log(b*e*x/(d*x + \\ & c) + a*e/(d*x + c))^2 - 2*A*B*((2*b*d*x + b*c + a*d)/((b^3*c^2*d - 2*a*b^2 \\ & *c*d^2 + a^2*b*d^3)*g^2*i^2*x^2 + (b^3*c^3 - a*b^2*c^2*d - a^2*b*c*d^2 + a^ \\ & 3*d^3)*g^2*i^2*x + (a*b^2*c^3 - 2*a^2*b*c^2*d + a^3*c*d^2)*g^2*i^2) + 2*b*d \\ & * \log(b*x + a)/((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^2*i^2) \\ & - 2*b*d*\log(d*x + c)/((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)* \\ & g^2*i^2))*\log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 2/3*B^2*(3*(b^2*c^2 - 2*a* \\ & b*c*d + a^2*d^2 - (b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a*b*d^2)*x)*\log(b*x + \\ & a)^2 + 2*(b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a*b*d^2)*x)*\log(b*x + a)*\log(\\ & d*x + c) - (b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a*b*d^2)*x)*\log(d*x + c)^2)* \\ & \log(b*e*x/(d*x + c) + a*e/(d*x + c))/(a*b^3*c^4*g^2*i^2 - 3*a^2*b^2*c^3*d*g \\ & ^2*i^2 + 3*a^3*b*c^2*d^2*g^2*i^2 - a^4*c*d^3*g^2*i^2 + (b^4*c^3*d*g^2*i^2 - \\ & 3*a*b^3*c^2*d^2*g^2*i^2 + 3*a^2*b^2*c*d^3*g^2*i^2 - a^3*b*d^4*g^2*i^2)*x^2 \\ & + (b^4*c^4*g^2*i^2 - 2*a*b^3*c^3*d*g^2*i^2 + 2*a^3*b*c*d^3*g^2*i^2 - a^4*d \\ & ^4*g^2*i^2)*x) + (3*b^2*c^2 - 3*a^2*d^2 + (b^2*d^2*x^2 + a*b*c*d + (b^2*c*d \\ & + a*b*d^2)*x)*\log(b*x + a)^3 + 3*(b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a*b*d \\ & ^2)*x)*\log(b*x + a)*\log(d*x + c)^2 - (b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a* \\ & b*d^2)*x)*\log(d*x + c)^3 + 6*(b^2*c*d - a*b*d^2)*x + 6*(b^2*d^2*x^2 + a*b*c \\ & *d + (b^2*c*d + a*b*d^2)*x)*\log(b*x + a) - 3*(2*b^2*d^2*x^2 + 2*a*b*c*d + (\\ & b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a*b*d^2)*x)*\log(b*x + a)^2 + 2*(b^2*c*d \end{aligned}$$

+ a*b*d^2)*x)*log(d*x + c))/(a*b^3*c^4*g^2*i^2 - 3*a^2*b^2*c^3*d*g^2*i^2 + 3*a^3*b*c^2*d^2*g^2*i^2 - a^4*c*d^3*g^2*i^2 + (b^4*c^3*d*g^2*i^2 - 3*a*b^3*c^2*d^2*g^2*i^2 + 3*a^2*b^2*c*d^3*g^2*i^2 - a^3*b*d^4*g^2*i^2)*x^2 + (b^4*c^4*g^2*i^2 - 2*a*b^3*c^3*d*g^2*i^2 + 2*a^3*b*c*d^3*g^2*i^2 - a^4*d^4*g^2*i^2)*x)) - A^2*((2*b*d*x + b*c + a*d)/((b^3*c^2*d - 2*a*b^2*c*d^2 + a^2*b*d^3)*g^2*i^2*x^2 + (b^3*c^3 - a*b^2*c^2*d - a^2*b*c*d^2 + a^3*d^3)*g^2*i^2*x + (a*b^2*c^3 - 2*a^2*b*c^2*d + a^3*c*d^2)*g^2*i^2) + 2*b*d*log(b*x + a)/((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^2*i^2) - 2*b*d*log(d*x + c)/((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^2*i^2)) - 2*(b^2*c^2 - 2*a*b*c*d + a^2*d^2 - (b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a*b*d^2)*x)*log(b*x + a)^2 + 2*(b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a*b*d^2)*x)*log(b*x + a)*log(d*x + c) - (b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a*b*d^2)*x)*log(d*x + c)^2)*A*B/(a*b^3*c^4*g^2*i^2 - 3*a^2*b^2*c^3*d*g^2*i^2 + 3*a^3*b*c^2*d^2*g^2*i^2 - a^4*c*d^3*g^2*i^2 + (b^4*c^3*d*g^2*i^2 - 3*a*b^3*c^2*d^2*g^2*i^2 + 3*a^2*b^2*c*d^3*g^2*i^2 - a^3*b*d^4*g^2*i^2)*x^2 + (b^4*c^4*g^2*i^2 - 2*a*b^3*c^3*d*g^2*i^2 + 2*a^3*b*c*d^3*g^2*i^2 - a^4*d^4*g^2*i^2)*x)

mupad [B] time = 7.20, size = 731, normalized size = 2.00

$$\frac{2B^2bd \ln\left(\frac{e(a+bx)}{c+dx}\right)^3}{3g^2i^2(ad-bc)^3} \frac{A^2ad+A^2bc+2B^2ad+2B^2bc-2ABad+2ABbc}{ad-bc} + \frac{2x(bdA^2+2bdB^2)}{ad-bc} \ln\left(\frac{e(a+bx)}{c+dx}\right)$$

$$x\left(a^2d^2g^2i^2 - b^2c^2g^2i^2\right) + x^2\left(abd^2g^2i^2 - b^2cdg^2i^2\right) - abc^2g^2i^2 + a^2cdg^2i^2$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((A + B*log((e*(a + b*x))/(c + d*x)))^2/((a*g + b*g*x)^2*(c*i + d*i*x)^2),x)

[Out] (2*B^2*b*d*log((e*(a + b*x))/(c + d*x))^3)/(3*g^2*i^2*(a*d - b*c)^3) - ((A^2*a*d + A^2*b*c + 2*B^2*a*d + 2*B^2*b*c - 2*A*B*a*d + 2*A*B*b*c)/(a*d - b*c) + (2*x*(A^2*b*d + 2*B^2*b*d))/(a*d - b*c))/(x*(a^2*d^2*g^2*i^2 - b^2*c^2*g^2*i^2) + x^2*(a*b*d^2*g^2*i^2 - b^2*c*d*g^2*i^2) - a*b*c^2*g^2*i^2 + a^2*c*d*g^2*i^2) - (log((e*(a + b*x))/(c + d*x))*((2*(B^2*b*c - B^2*a*d + A*B*a*d + A*B*b*c))/(g^2*i^2*(a^2*b*d^3 + b^3*c^2*d - 2*a*b^2*c*d^2)) + (4*A*B*x)/(g^2*i^2*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))))/(x^2 + (x*(a*d + b*c))/(b*d) + (a*c)/(b*d)) - (b*d*atan((b*d*(A^2 + 2*B^2))*((a^3*d^3*g^2*i^2 + b^3*c^3*g^2*i^2 - a*b^2*c^2*d*g^2*i^2 - a^2*b*c*d^2*g^2*i^2)/(a^2*d^2*g^2*i^2 + b^2*c^2*g^2*i^2 - 2*a*b*c*d*g^2*i^2) + 2*b*d*x)*(a^2*d^2*g^2*i^2 + b^2*c^2*g^2*i^2 - 2*a*b*c*d*g^2*i^2)*2i)/(g^2*i^2*(a*d - b*c)^3*(2*A^2*b*d + 4*B^2*b*d)))*(A^2 + 2*B^2)*4i)/(g^2*i^2*(a*d - b*c)^3) - log((e*(a + b*x))/(c + d*x))^2*((B^2*(a*d + b*c))/(g^2*i^2*(a^2*b*d^3 + b^3*c^2*d - 2*a*b^2*c*d^2)) + (2*B^2*x)/(g^2*i^2*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)))/(x^2 + (x*(a*d + b*c))/(b*d) + (a*c)/(b*d)) - (2*A*B*b*d)/(g^2*i^2*(a*d - b*c)^3)

sympy [B] time = 9.76, size = 1404, normalized size = 3.85

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)**2/(d*i*x+c*i)**2,x)
[Out] 2*B**2*b*d*log(e*(a + b*x)/(c + d*x))**3/(3*a**3*d**3*g**2*i**2 - 9*a**2*b*
c*d**2*g**2*i**2 + 9*a*b**2*c**2*d*g**2*i**2 - 3*b**3*c**3*g**2*i**2) - 2*b
*d*(A**2 + 2*B**2)*log(x + (2*A**2*a*b*d**2 + 2*A**2*b**2*c*d + 4*B**2*a*b*
d**2 + 4*B**2*b**2*c*d - 2*a**4*b*d**5*(A**2 + 2*B**2)/(a*d - b*c)**3 + 8*a
**3*b**2*c*d**4*(A**2 + 2*B**2)/(a*d - b*c)**3 - 12*a**2*b**3*c**2*d**3*(A
**2 + 2*B**2)/(a*d - b*c)**3 + 8*a*b**4*c**3*d**2*(A**2 + 2*B**2)/(a*d - b*c
)**3 - 2*b**5*c**4*d*(A**2 + 2*B**2)/(a*d - b*c)**3)/(4*A**2*b**2*d**2 + 8*
B**2*b**2*d**2))/(g**2*i**2*(a*d - b*c)**3) + 2*b*d*(A**2 + 2*B**2)*log(x +
(2*A**2*a*b*d**2 + 2*A**2*b**2*c*d + 4*B**2*a*b*d**2 + 4*B**2*b**2*c*d + 2
*a**4*b*d**5*(A**2 + 2*B**2)/(a*d - b*c)**3 - 8*a**3*b**2*c*d**4*(A**2 + 2*
B**2)/(a*d - b*c)**3 + 12*a**2*b**3*c**2*d**3*(A**2 + 2*B**2)/(a*d - b*c)**
3 - 8*a*b**4*c**3*d**2*(A**2 + 2*B**2)/(a*d - b*c)**3 + 2*b**5*c**4*d*(A**2
+ 2*B**2)/(a*d - b*c)**3)/(4*A**2*b**2*d**2 + 8*B**2*b**2*d**2))/(g**2*i**
2*(a*d - b*c)**3) + (-2*A*B*a*d - 2*A*B*b*c - 4*A*B*b*d*x + 2*B**2*a*d - 2*
B**2*b*c)*log(e*(a + b*x)/(c + d*x))/(a**3*c*d**2*g**2*i**2 + a**3*d**3*g**
2*i**2*x - 2*a**2*b*c**2*d*g**2*i**2 - a**2*b*c*d**2*g**2*i**2*x + a**2*b*d
**3*g**2*i**2*x**2 + a*b**2*c**3*g**2*i**2 - a*b**2*c**2*d*g**2*i**2*x - 2*
a*b**2*c*d**2*g**2*i**2*x**2 + b**3*c**3*g**2*i**2*x + b**3*c**2*d*g**2*i**
2*x**2) + (2*A*B*a*b*c*d + 2*A*B*a*b*d**2*x + 2*A*B*b**2*c*d*x + 2*A*B*b**2
*d**2*x**2 - B**2*a**2*d**2 - 2*B**2*a*b*d**2*x + B**2*b**2*c**2 + 2*B**2*b
**2*c*d*x)*log(e*(a + b*x)/(c + d*x))**2/(a**4*c*d**3*g**2*i**2 + a**4*d**4
*g**2*i**2*x - 3*a**3*b*c**2*d**2*g**2*i**2 - 2*a**3*b*c*d**3*g**2*i**2*x +
a**3*b*d**4*g**2*i**2*x**2 + 3*a**2*b**2*c**3*d*g**2*i**2 - 3*a**2*b**2*c*
d**3*g**2*i**2*x**2 - a*b**3*c**4*g**2*i**2 + 2*a*b**3*c**3*d*g**2*i**2*x +
3*a*b**3*c**2*d**2*g**2*i**2*x**2 - b**4*c**4*g**2*i**2*x - b**4*c**3*d*g*
**2*i**2*x**2) - (A**2*a*d + A**2*b*c - 2*A*B*a*d + 2*A*B*b*c + 2*B**2*a*d +
2*B**2*b*c + x*(2*A**2*b*d + 4*B**2*b*d))/(a**3*c*d**2*g**2*i**2 - 2*a**2*
b*c**2*d*g**2*i**2 + a*b**2*c**3*g**2*i**2 + x**2*(a**2*b*d**3*g**2*i**2 -
2*a*b**2*c*d**2*g**2*i**2 + b**3*c**2*d*g**2*i**2) + x*(a**3*d**3*g**2*i**2
- a**2*b*c*d**2*g**2*i**2 - a*b**2*c**2*d*g**2*i**2 + b**3*c**3*g**2*i**2)
)
```

$$3.98 \quad \int \frac{\left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^3(ci+dx)^2} dx$$

Optimal. Leaf size=523

$$\frac{b^3(c+dx)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)^2}{2g^3i^2(a+bx)^2(bc-ad)^4} - \frac{b^3B(c+dx)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{2g^3i^2(a+bx)^2(bc-ad)^4} + \frac{3b^2d(c+dx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)^2}{g^3i^2(a+bx)(bc-ad)^4} + \dots$$

[Out] $2A^2B^2d^3(b^3x+a)/(-a^4d+b^4c)/g^3i^2/(d^3x+c) - 2B^2d^3(b^3x+a)/(-a^4d+b^4c)/g^3i^2/(d^3x+c) + 6b^2B^2d^3(d^3x+c)/(-a^4d+b^4c)/g^3i^2/(b^3x+a) - 1/4b^3B^2(d^3x+c)^2/(-a^4d+b^4c)/g^3i^2/(b^3x+a)^2 + 2B^2d^3(b^3x+a) \ln(e(b^3x+a)/(d^3x+c))/(-a^4d+b^4c)/g^3i^2/(d^3x+c) + 6b^2B^2d^3(d^3x+c) \ln(e(b^3x+a)/(d^3x+c))/(-a^4d+b^4c)/g^3i^2/(b^3x+a) - 1/2b^3B^2(d^3x+c)^2(A+B \ln(e(b^3x+a)/(d^3x+c)))/(-a^4d+b^4c)/g^3i^2/(b^3x+a) - d^3(b^3x+a) \ln(e(b^3x+a)/(d^3x+c))/(-a^4d+b^4c)/g^3i^2/(d^3x+c) + 3b^2d^3(d^3x+c) \ln(e(b^3x+a)/(d^3x+c))/(-a^4d+b^4c)/g^3i^2/(b^3x+a) - 1/2b^3(d^3x+c)^2(A+B \ln(e(b^3x+a)/(d^3x+c)))/(-a^4d+b^4c)/g^3i^2/(b^3x+a) + b^2d^2(A+B \ln(e(b^3x+a)/(d^3x+c)))/(-a^4d+b^4c)/g^3i^2$

Rubi [C] time = 8.46, antiderivative size = 2071, normalized size of antiderivative = 3.96, number of steps used = 143, number of rules used = 31, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}} = 0.738$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x)])^2/((a*g + b*g*x)^3*(c*i + d*i*x)^2), x]

[Out] $-(b^3B^2)/(4(b^3c - a^4d)^2g^3i^2(a + b^3x)^2) + (11b^3B^2d)/(2(b^3c - a^4d)^3g^3i^2(a + b^3x)) + (2B^2d^2)/((b^3c - a^4d)^3g^3i^2(c + d^3x)) + (15b^3B^2d^2 \text{Log}[a + b^3x])/((b^3c - a^4d)^4g^3i^2) - (3A^2b^3B^2d^2 \text{Log}[a + b^3x]^2)/((b^3c - a^4d)^4g^3i^2) - (3b^3B^2d^2 \text{Log}[a + b^3x] \text{Log}[(c + d^3x)^{-1}])^2/((b^3c - a^4d)^4g^3i^2) - (3b^3B^2d^2 \text{Log}[-((d^3(a + b^3x))/(b^3c - a^4d))] \text{Log}[(c + d^3x)^{-1}])^2/((b^3c - a^4d)^4g^3i^2) - (3b^3B^2d^2 \text{Log}[-((b^3c - a^4d)/(d^3(a + b^3x)))] \text{Log}[(e(a + b^3x))/(c + d^3x)])^2/((b^3c - a^4d)^4g^3i^2) - (3b^3B^2d^2 \text{Log}[a + b^3x] \text{Log}[(e(a + b^3x))/(c + d^3x)])^2/((b^3c - a^4d)^4g^3i^2) - (b^3B^2(A + B \text{Log}[(e(a + b^3x))/(c + d^3x)]))/((b^3c - a^4d)^2g^3i^2(a + b^3x)^2) + (5b^3B^2d(A + B \text{Log}[(e(a + b^3x))/(c + d^3x)]))/((b^3c - a^4d)^3g^3i^2(a + b^3x)) - (2B^2d^2(A + B \text{Log}[(e(a + b^3x))/(c + d^3x)]))/((b^3c - a^4d)^3g^3i^2(a + b^3x))$

$$\begin{aligned}
&)^3 g^{3i^2} (c + dx)) + (3bBd^2 \text{Log}[a + bx] * (A + B \text{Log}[(e*(a + bx))/(c + dx)])) / ((b^2 c - a^2 d)^4 g^{3i^2} - (b*(A + B \text{Log}[(e*(a + bx))/(c + dx)]))^2) / (2*(b^2 c - a^2 d)^2 g^{3i^2} (a + bx)^2 + (2*b*d*(A + B \text{Log}[(e*(a + bx))/(c + dx)]))^2) / ((b^2 c - a^2 d)^3 g^{3i^2} (a + bx)) + (d^2*(A + B \text{Log}[(e*(a + bx))/(c + dx)]))^2) / ((b^2 c - a^2 d)^3 g^{3i^2} (c + dx)) + (3b^2 d^2 \text{Log}[a + bx] * (A + B \text{Log}[(e*(a + bx))/(c + dx)]))^2) / ((b^2 c - a^2 d)^4 g^{3i^2} - (15*b*B^2*d^2*\text{Log}[c + dx]) / (2*(b^2 c - a^2 d)^4 g^{3i^2} + (3*b*B^2*d^2*\text{Log}[a + bx]^2*\text{Log}[c + dx]) / ((b^2 c - a^2 d)^4 g^{3i^2} + (6*A*b*B*d^2*\text{Log}[-((d*(a + b*x))/(b^2 c - a^2 d))] * \text{Log}[c + dx]) / ((b^2 c - a^2 d)^4 g^{3i^2} + (3*b*B^2*d^2*\text{Log}[-((d*(a + b*x))/(b^2 c - a^2 d))] * \text{Log}[c + dx]) / ((b^2 c - a^2 d)^4 g^{3i^2} + (6*b*B^2*d^2*\text{Log}[a + bx] * \text{Log}[(c + dx)^{-1}] * \text{Log}[c + dx]) / ((b^2 c - a^2 d)^4 g^{3i^2} - (6*b*B^2*d^2*\text{Log}[-((d*(a + b*x))/(b^2 c - a^2 d))] * (\text{Log}[a + bx] + \text{Log}[(c + dx)^{-1}] - \text{Log}[(e*(a + bx))/(c + dx])) * \text{Log}[c + dx]) / ((b^2 c - a^2 d)^4 g^{3i^2} - (3*b*B*d^2*(A + B \text{Log}[(e*(a + bx))/(c + dx)])) * \text{Log}[c + dx]) / ((b^2 c - a^2 d)^4 g^{3i^2} - (3*b^2 d^2*(A + B \text{Log}[(e*(a + bx))/(c + dx)]))^2 * \text{Log}[c + dx]) / ((b^2 c - a^2 d)^4 g^{3i^2} - (3*A*b*B*d^2*\text{Log}[c + dx]^2) / ((b^2 c - a^2 d)^4 g^{3i^2} - (3*b*B^2*d^2*\text{Log}[c + dx]^2) / (2*(b^2 c - a^2 d)^4 g^{3i^2} + (3*b*B^2*d^2*\text{Log}[a + bx] * \text{Log}[c + dx]^2) / ((b^2 c - a^2 d)^4 g^{3i^2} - (3*b*B^2*d^2*\text{Log}[(e*(a + bx))/(c + dx]) * \text{Log}[c + dx]^2) / ((b^2 c - a^2 d)^4 g^{3i^2} - (b*B^2*d^2*\text{Log}[c + dx]^3) / ((b^2 c - a^2 d)^4 g^{3i^2} + (6*A*b*B*d^2*\text{Log}[a + bx] * \text{Log}[(b*(c + dx))/(b^2 c - a^2 d])) / ((b^2 c - a^2 d)^4 g^{3i^2} + (3*b*B^2*d^2*\text{Log}[a + bx] * \text{Log}[(b*(c + dx))/(b^2 c - a^2 d])) / ((b^2 c - a^2 d)^4 g^{3i^2} - (3*b*B^2*d^2*\text{Log}[a + bx]^2*\text{Log}[(b*(c + dx))/(b^2 c - a^2 d])) / ((b^2 c - a^2 d)^4 g^{3i^2} + (6*A*b*B*d^2*\text{PolyLog}[2, -((d*(a + b*x))/(b^2 c - a^2 d))]) / ((b^2 c - a^2 d)^4 g^{3i^2} + (3*b*B^2*d^2*\text{PolyLog}[2, -((d*(a + b*x))/(b^2 c - a^2 d))]) / ((b^2 c - a^2 d)^4 g^{3i^2} - (6*b*B^2*d^2*\text{Log}[a + bx] * \text{PolyLog}[2, -((d*(a + b*x))/(b^2 c - a^2 d))]) / ((b^2 c - a^2 d)^4 g^{3i^2} + (6*A*b*B*d^2*\text{PolyLog}[2, (b*(c + dx))/(b^2 c - a^2 d)]) / ((b^2 c - a^2 d)^4 g^{3i^2} + (3*b*B^2*d^2*\text{PolyLog}[2, (b*(c + dx))/(b^2 c - a^2 d)]) / ((b^2 c - a^2 d)^4 g^{3i^2} + (6*b*B^2*d^2*\text{Log}[(c + dx)^{-1}] * \text{PolyLog}[2, (b*(c + dx))/(b^2 c - a^2 d)]) / ((b^2 c - a^2 d)^4 g^{3i^2} - (6*b*B^2*d^2*(\text{Log}[a + bx] + \text{Log}[(c + dx)^{-1}] - \text{Log}[(e*(a + bx))/(c + dx])) * \text{PolyLog}[2, (b*(c + dx))/(b^2 c - a^2 d)]) / ((b^2 c - a^2 d)^4 g^{3i^2} + (6*b*B^2*d^2*\text{Log}[(e*(a + bx))/(c + dx]) * \text{PolyLog}[2, 1 + (b^2 c - a^2 d)/(d*(a + b*x))]) / ((b^2 c - a^2 d)^4 g^{3i^2} + (6*b*B^2*d^2*\text{PolyLog}[3, -((d*(a + b*x))/(b^2 c - a^2 d))]) / ((b^2 c - a^2 d)^4 g^{3i^2} + (6*b*B^2*d^2*\text{PolyLog}[3, (b*(c + dx))/(b^2 c - a^2 d)]) / ((b^2 c - a^2 d)^4 g^{3i^2} + (6*b*B^2*d^2*\text{PolyLog}[3, 1 + (b^2 c - a^2 d)/(d*(a + b*x))]) / ((b^2 c - a^2 d)^4 g^{3i^2}
\end{aligned}$$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 30

Int[(x_)^(m_), x_Symbol] := Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N

eQ[m, -1]

Rule 44

Int[((a_) + (b_)*(x_)^(m_))*((c_) + (d_)*(x_)^(n_)), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])

Rule 2301

Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2302

Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)^(p_)/(x_), x_Symbol] := Dist[1/(b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p}, x]

Rule 2317

Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)^(p_)/((d_) + (e_)*(x_)), x_Symbol] := Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e, Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]

Rule 2344

Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)^(p_)/((x_)*((d_) + (e_)*(x_))), x_Symbol] := Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]

Rule 2374

Int[(Log[(d_)*((e_) + (f_)*(x_)^(m_))])*((a_) + Log[(c_)*(x_)^(n_)])*(b_)^(p_)/(x_), x_Symbol] := -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0] && EqQ[d*e, 1]

Rule 2375

Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.))/(x_), x_Symbol] := Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m - 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d, e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*((f_) + (g_.)*(x_)^(q_.)), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2396

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_)/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])^p/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]

Rule 2411

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*((f_.) + (g_.)*(x_)^(q_.))*((h_.) + (i_.)*(x_)^(r_.)), x_Symbol] := Dist[1/e, Subst[Int[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e

```
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n])]/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m))]/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] :>
Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] :> -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q]^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] := Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q]^r)/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] := Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2506

```
Int[Log[v]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] := With[{g = Simplify[(v - 1)*(c + d
*x)/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] := With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
h*x)^t]^u)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^(s + 1))/(p*r*(s + 1)*(b*c
- a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q]^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] := With[{w = DerivativeDivides[v, u*v, x]}, Simp[w*PolyLog[n + 1, v], x] /; !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] := With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; SimplifyIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] := With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]]
```

Rubi steps

$$\begin{aligned}
\int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(98c + 98dx)^2(ag + bgx)^3} dx &= \int \left(\frac{b^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9604(bc - ad)^2 g^3 (a + bx)^3} - \frac{b^2 d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{4802(bc - ad)^3 g^3 (a + bx)^2} + \frac{3b^2 d^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9604(bc - ad)^4 g^3} \right) dx \\
&= \frac{(3b^2 d^2) \int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{a+bx} dx}{9604(bc - ad)^4 g^3} - \frac{(3bd^3) \int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{c+dx} dx}{9604(bc - ad)^4 g^3} - \frac{(b^2 d) \int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{a+bx} dx}{4802(bc - ad)^3 g^3} \\
&= -\frac{b \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{19208(bc - ad)^2 g^3 (a + bx)^2} + \frac{bd \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{4802(bc - ad)^3 g^3 (a + bx)} + \frac{d^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9604(bc - ad)^4 g^3} \\
&= -\frac{b \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{19208(bc - ad)^2 g^3 (a + bx)^2} + \frac{bd \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{4802(bc - ad)^3 g^3 (a + bx)} + \frac{d^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9604(bc - ad)^4 g^3} \\
&= -\frac{b \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{19208(bc - ad)^2 g^3 (a + bx)^2} + \frac{bd \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{4802(bc - ad)^3 g^3 (a + bx)} + \frac{d^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9604(bc - ad)^4 g^3} \\
&= -\frac{b \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{19208(bc - ad)^2 g^3 (a + bx)^2} + \frac{bd \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{4802(bc - ad)^3 g^3 (a + bx)} + \frac{d^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9604(bc - ad)^4 g^3} \\
&= -\frac{bB \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{19208(bc - ad)^2 g^3 (a + bx)^2} + \frac{5bBd \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9604(bc - ad)^3 g^3 (a + bx)} - \frac{Bd^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{4802(bc - ad)^4 g^3} \\
&= -\frac{bB \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{19208(bc - ad)^2 g^3 (a + bx)^2} + \frac{5bBd \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9604(bc - ad)^3 g^3 (a + bx)} - \frac{Bd^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{4802(bc - ad)^4 g^3} \\
&= -\frac{3bB^2 d^2 \log(a + bx) \log^2\left(\frac{e(a+bx)}{c+dx}\right)}{9604(bc - ad)^4 g^3} - \frac{bB \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{19208(bc - ad)^2 g^3 (a + bx)^2} + \frac{5bBd \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9604(bc - ad)^3 g^3 (a + bx)} \\
&= -\frac{bB^2}{38416(bc - ad)^2 g^3 (a + bx)^2} + \frac{11bB^2 d}{19208(bc - ad)^3 g^3 (a + bx)} + \frac{B^2 d^2}{4802(bc - ad)^4 g^3} \\
&= -\frac{bB^2}{38416(bc - ad)^2 g^3 (a + bx)^2} + \frac{11bB^2 d}{19208(bc - ad)^3 g^3 (a + bx)} + \frac{B^2 d^2}{4802(bc - ad)^4 g^3} \\
&= -\frac{bB^2}{38416(bc - ad)^2 g^3 (a + bx)^2} + \frac{11bB^2 d}{19208(bc - ad)^3 g^3 (a + bx)} + \frac{B^2 d^2}{4802(bc - ad)^4 g^3}
\end{aligned}$$

Mathematica [A] time = 1.53, size = 466, normalized size = 0.89

$$-2B(2a^3Bd^3 - 6a^2bd^2(A(c + dx) - Bdx) - 6ab^2d(2Adx(c + dx) + Bc(c + 2dx)) + b^3(B(c^3 - 3c^2dx - 9cd^2x^2 - 3a$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x)])^2/((a*g + b*g*x)^3*(c*i + d*i*x)^2), x]

[Out] (4*(A^2 - 2*A*B + 2*B^2)*d^2*(b*c - a*d)*(a + b*x)^2 - b*(2*A^2 + 2*A*B + B^2)*(b*c - a*d)^2*(c + d*x) + 2*b*(4*A^2 + 10*A*B + 11*B^2)*d*(b*c - a*d)*(a + b*x)*(c + d*x) + 6*b*(2*A^2 + 2*A*B + 5*B^2)*d^2*(a + b*x)^2*(c + d*x)*Log[a + b*x] + 2*B*(b*c - a*d)*(4*(A - B)*d^2*(a + b*x)^2 - b*(2*A + B)*(b*c - a*d)*(c + d*x) + 2*b*(4*A + 5*B)*d*(a + b*x)*(c + d*x))*Log[(e*(a + b*x))/(c + d*x)] - 2*B*(2*a^3*B*d^3 - 6*a^2*b*d^2*(-(B*d*x) + A*(c + d*x)) - 6*a*b^2*d*(2*A*d*x*(c + d*x) + B*c*(c + 2*d*x)) + b^3*(-6*A*d^2*x^2*(c + d*x) + B*(c^3 - 3*c^2*d*x - 9*c*d^2*x^2 - 3*d^3*x^3)))*Log[(e*(a + b*x))/(c + d*x)]^2 + 4*b*B^2*d^2*(a + b*x)^2*(c + d*x)*Log[(e*(a + b*x))/(c + d*x)]^3 - 6*b*(2*A^2 + 2*A*B + 5*B^2)*d^2*(a + b*x)^2*(c + d*x)*Log[c + d*x]/(4*(b*c - a*d)^4*g^3*i^2*(a + b*x)^2*(c + d*x))

fricas [A] time = 1.32, size = 1005, normalized size = 1.92

$$(2A^2 + 2AB + B^2)b^3c^3 - 12(A^2 + 2AB + 2B^2)ab^2c^2d + 3(2A^2 + 10AB + 5B^2)a^2bcd^2 + 4(A^2 - 2AB + 2B$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^3/(d*i*x+c*i)^2,x, algorithm="fricas")

[Out] -1/4*((2*A^2 + 2*A*B + B^2)*b^3*c^3 - 12*(A^2 + 2*A*B + 2*B^2)*a*b^2*c^2*d + 3*(2*A^2 + 10*A*B + 5*B^2)*a^2*b*c*d^2 + 4*(A^2 - 2*A*B + 2*B^2)*a^3*d^3 - 4*(B^2*b^3*d^3*x^3 + B^2*a^2*b*c*d^2 + (B^2*b^3*c*d^2 + 2*B^2*a*b^2*d^3)*x^2 + (2*B^2*a*b^2*c*d^2 + B^2*a^2*b*d^3)*x)*log((b*e*x + a*e)/(d*x + c))^3 - 6*((2*A^2 + 2*A*B + 5*B^2)*b^3*c*d^2 - (2*A^2 + 2*A*B + 5*B^2)*a*b^2*d^3)*x^2 - 2*(3*(2*A*B + B^2)*b^3*d^3*x^3 - B^2*b^3*c^3 + 6*B^2*a*b^2*c^2*d + 6*A*B*a^2*b*c*d^2 - 2*B^2*a^3*d^3 + 3*(4*A*B*a*b^2*d^3 + (2*A*B + 3*B^2)*b^3*c*d^2)*x^2 + 3*(B^2*b^3*c^2*d + 4*(A*B + B^2)*a*b^2*c*d^2 + 2*(A*B - B^2)*a^2*b*d^3)*x)*log((b*e*x + a*e)/(d*x + c))^2 - 3*((2*A^2 + 6*A*B + 7*B^2)*b^3*c^2*d + 2*(2*A^2 - 2*A*B + 3*B^2)*a*b^2*c*d^2 - (6*A^2 + 2*A*B + 13*B^2)*a^2*b*d^3)*x - 2*(3*(2*A^2 + 2*A*B + 5*B^2)*b^3*d^3*x^3 + 6*A^2*a^2*b*c*d^2 - (2*A*B + B^2)*b^3*c^3 + 12*(A*B + B^2)*a*b^2*c^2*d - 4*(A*B - B^2)*a^3

$$\begin{aligned}
& *d^3 + 3*((2*A^2 + 6*A*B + 7*B^2)*b^3*c*d^2 + 4*(A^2 + 2*B^2)*a*b^2*d^3)*x^2 \\
& + 3*((2*A*B + 3*B^2)*b^3*c^2*d + 4*(A^2 + 2*A*B + 2*B^2)*a*b^2*c*d^2 + 2* \\
& (A^2 - 2*A*B + 2*B^2)*a^2*b*d^3)*x)*\log((b*e*x + a*e)/(d*x + c))/((b^6*c^4 \\
& *d - 4*a*b^5*c^3*d^2 + 6*a^2*b^4*c^2*d^3 - 4*a^3*b^3*c*d^4 + a^4*b^2*d^5)*g \\
& ^3*i^2*x^3 + (b^6*c^5 - 2*a*b^5*c^4*d - 2*a^2*b^4*c^3*d^2 + 8*a^3*b^3*c^2*d \\
& ^3 - 7*a^4*b^2*c*d^4 + 2*a^5*b*d^5)*g^3*i^2*x^2 + (2*a*b^5*c^5 - 7*a^2*b^4* \\
& c^4*d + 8*a^3*b^3*c^3*d^2 - 2*a^4*b^2*c^2*d^3 - 2*a^5*b*c*d^4 + a^6*d^5)*g^ \\
& 3*i^2*x + (a^2*b^4*c^5 - 4*a^3*b^3*c^4*d + 6*a^4*b^2*c^3*d^2 - 4*a^5*b*c^2* \\
& d^3 + a^6*c*d^4)*g^3*i^2)
\end{aligned}$$

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^3/(d*i*x+c*i)^2,x, algorithm="giac")

[Out] Timed out

maple [B] time = 0.05, size = 3538, normalized size = 6.76

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^3/(d*i*x+c*i)^2,x)

[Out]
$$\begin{aligned}
& 2*d^3/i^2/(a*d-b*c)^5/g^3*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d*x+c)*a*b \\
& *c-4*d^3/i^2/(a*d-b*c)^5/g^3*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*a \\
& *b*c+4*d^3/i^2/(a*d-b*c)^5/g^3*A*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*b \\
& *c*a+6*d^2*e/i^2/(a*d-b*c)^5/g^3*A*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b \\
& /d*e)*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-d^3/i^2/(a*d-b*c)^5/g^3*A^2*b*a+d^2 \\
& /i^2/(a*d-b*c)^5/g^3*A^2*b^2*c-2*d^3/i^2/(a*d-b*c)^5/g^3*B^2*b*a+2*d^2/i^2/ \\
& (a*d-b*c)^5/g^3*B^2*b^2*c+d^3/i^2/(a*d-b*c)^5/g^3*B^2*b*\ln(b/d*e+(a*d-b*c)/ \\
& (d*x+c)/d*e)^3*a-d^2/i^2/(a*d-b*c)^5/g^3*B^2*b^2*\ln(b/d*e+(a*d-b*c)/(d*x+c) \\
& /d*e)^3*c-d^3/i^2/(a*d-b*c)^5/g^3*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b*a \\
& +d^2/i^2/(a*d-b*c)^5/g^3*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b^2*c+3*d^3/ \\
& i^2/(a*d-b*c)^5/g^3*A^2*b*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-3*d^2/i^2/(a*d- \\
& b*c)^5/g^3*A^2*b^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-d^4/i^2/(a*d-b*c)^5/g^ \\
& 3*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d*x+c)*a^2+2*d^4/i^2/(a*d-b*c)^5/g \\
& ^3*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*a^2-d^4/i^2/(a*d-b*c)^5/g^3* \\
& A^2/(d*x+c)*a^2-2*d^4/i^2/(a*d-b*c)^5/g^3*B^2/(d*x+c)*a^2+1/4*e^2/i^2/(a*d- \\
& b*c)^5/g^3*B^2*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*c-2*d^2/i^2/(a \\
& *d-b*c)^5/g^3*B^2/(d*x+c)*b^2*c^2+2*d^4/i^2/(a*d-b*c)^5/g^3*A*B/(d*x+c)*a^2
\end{aligned}$$

$$\begin{aligned}
& -2*d^2/i^2/(a*d-b*c)^5/g^3*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2*c+1/2*e^2/i^2/(a*d-b*c)^5/g^3*A^2*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*c-d^2/i^2/(a*d-b*c)^5/g^3*A^2/(d*x+c)*b^2*c^2+2*d^3/i^2/(a*d-b*c)^5/g^3*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*a-4*d^3/i^2/(a*d-b*c)^5/g^3*A*B/(d*x+c)*b*c*a-2*d^2/i^2/(a*d-b*c)^5/g^3*A*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*b^2*c^2+3*d^2*e/i^2/(a*d-b*c)^5/g^3*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a-3*d*e/i^2/(a*d-b*c)^5/g^3*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c+6*d^2*e/i^2/(a*d-b*c)^5/g^3*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-1/2*d*e^2/i^2/(a*d-b*c)^5/g^3*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a-6*d*e/i^2/(a*d-b*c)^5/g^3*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-1/2*d*e^2/i^2/(a*d-b*c)^5/g^3*A*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a-6*d*e/i^2/(a*d-b*c)^5/g^3*A*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c+6*d^2*e/i^2/(a*d-b*c)^5/g^3*A*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a-6*d*e/i^2/(a*d-b*c)^5/g^3*A*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-d*e^2/i^2/(a*d-b*c)^5/g^3*A*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+e^2/i^2/(a*d-b*c)^5/g^3*A*B*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+2*d^3/i^2/(a*d-b*c)^5/g^3*A*B*b*a-2*d^2/i^2/(a*d-b*c)^5/g^3*A*B*b^2*c+2*d^2/i^2/(a*d-b*c)^5/g^3*A*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2*c+3*d^3/i^2/(a*d-b*c)^5/g^3*A*B*b*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a+2*d^3/i^2/(a*d-b*c)^5/g^3*A^2/(d*x+c)*a*b*c+2*d^2/i^2/(a*d-b*c)^5/g^3*A*B/(d*x+c)*b^2*c^2+4*d^3/i^2/(a*d-b*c)^5/g^3*B^2/(d*x+c)*a*b*c+1/2*e^2/i^2/(a*d-b*c)^5/g^3*A*B*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*c+2*d^2/i^2/(a*d-b*c)^5/g^3*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*b^2*c^2+1/2*e^2/i^2/(a*d-b*c)^5/g^3*B^2*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-3*d^2/i^2/(a*d-b*c)^5/g^3*A*B*b^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c-2*d^3/i^2/(a*d-b*c)^5/g^3*A*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*a-6*d*e/i^2/(a*d-b*c)^5/g^3*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c+3*d^2*e/i^2/(a*d-b*c)^5/g^3*A^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a-3*d*e/i^2/(a*d-b*c)^5/g^3*A^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c-1/2*d*e^2/i^2/(a*d-b*c)^5/g^3*A^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a+6*d^2*e/i^2/(a*d-b*c)^5/g^3*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a-1/4*d*e^2/i^2/(a*d-b*c)^5/g^3*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a+1/2*e^2/i^2/(a*d-b*c)^5/g^3*B^2*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c-2*d^4/i^2/(a*d-b*c)^5/g^3*A*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*a^2-d^2/i^2/(a*d-b*c)^5/g^3*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d*x+c)*b^2*c^2
\end{aligned}$$

maxima [B] time = 4.89, size = 4187, normalized size = 8.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^3/(d*i*x+c*i)^2,x, algorithm="maxima")

[Out] $\frac{1}{2}B^2 \left((6b^2d^2x^2 - b^2c^2 + 5ab^2cd + 2a^2d^2 + 3(b^2cd + 3abd^2)x) / ((b^5c^3d - 3ab^4c^2d^2 + 3a^2b^3c^2d^3 - a^3b^2d^4)g^3i^2x^3 + (b^5c^4 - ab^4c^3d - 3a^2b^3c^2d^2 + 5a^3b^2c^2d^3 - 2a^4b^2d^4)g^3i^2x^2 + (2ab^4c^4 - 5a^2b^3c^3d + 3a^3b^2c^2d^2 + a^4b^2cd^3 - a^5d^4)g^3i^2x + (a^2b^3c^4 - 3a^3b^2c^3d + 3a^4b^2c^2d^2 - a^5cd^3)g^3i^2 \right) + 6bd^2 \log(bx+a) / ((b^4c^4 - 4ab^3c^3d + 6a^2b^2c^2d^2 - 4a^3b^2cd^3 + a^4d^4)g^3i^2) - 6bd^2 \log(dx+c) / ((b^4c^4 - 4ab^3c^3d + 6a^2b^2c^2d^2 - 4a^3b^2cd^3 + a^4d^4)g^3i^2) * \log(bex/(dx+c) + ae/(dx+c))^2 + AB * \left((6b^2d^2x^2 - b^2c^2 + 5ab^2cd + 2a^2d^2 + 3(b^2cd + 3abd^2)x) / ((b^5c^3d - 3ab^4c^2d^2 + 3a^2b^3c^2d^3 - a^3b^2d^4)g^3i^2x^3 + (b^5c^4 - ab^4c^3d - 3a^2b^3c^2d^2 + 5a^3b^2c^2d^3 - 2a^4b^2d^4)g^3i^2x^2 + (2ab^4c^4 - 5a^2b^3c^3d + 3a^3b^2c^2d^2 + a^4b^2cd^3 - a^5d^4)g^3i^2x + (a^2b^3c^4 - 3a^3b^2c^3d + 3a^4b^2c^2d^2 - a^5cd^3)g^3i^2 \right) + 6bd^2 \log(bx+a) / ((b^4c^4 - 4ab^3c^3d + 6a^2b^2c^2d^2 - 4a^3b^2cd^3 + a^4d^4)g^3i^2) - 6bd^2 \log(dx+c) / ((b^4c^4 - 4ab^3c^3d + 6a^2b^2c^2d^2 - 4a^3b^2cd^3 + a^4d^4)g^3i^2) * \log(bex/(dx+c) + ae/(dx+c)) - \frac{1}{4}B^2 * (2(b^3c^3 - 12ab^2c^2d + 15a^2b^2cd^2 - 4a^3d^3 - 6(b^3cd^2 - ab^2d^3)x^2 + 6(b^3d^3x^3 + a^2b^2cd^2 + (b^3cd^2 + 2ab^2d^3)x^2 + (2ab^2cd^2 + a^2bd^3)x) * \log(bx+a)^2 + 6(b^3d^3x^3 + a^2b^2cd^2 + (b^3cd^2 + 2ab^2d^3)x^2 + (2ab^2cd^2 + a^2bd^3)x) * \log(dx+c)^2 - 3(3b^3c^2d - 2ab^2cd^2 - a^2bd^3)x - 6(b^3d^3x^3 + a^2b^2cd^2 + (b^3cd^2 + 2ab^2d^3)x^2 + (2ab^2cd^2 + a^2bd^3)x) * \log(bx+a) + 6(b^3d^3x^3 + a^2b^2cd^2 + (b^3cd^2 + 2ab^2d^3)x^2 + (2ab^2cd^2 + a^2bd^3)x - 2(b^3d^3x^3 + a^2b^2cd^2 + (b^3cd^2 + 2ab^2d^3)x^2 + (2ab^2cd^2 + a^2bd^3)x) * \log(bx+a)) * \log(dx+c) * \log(bex/(dx+c) + ae/(dx+c)) / (a^2b^4c^5g^3i^2 - 4a^3b^3c^4d^2g^3i^2 + 6a^4b^2c^3d^2g^3i^2 - 4a^5b^2c^2d^3g^3i^2 + a^6cd^4g^3i^2 + (b^6c^4d^2g^3i^2 - 4ab^5c^3d^2g^3i^2 + 6a^2b^4c^2d^3g^3i^2 - 4a^3b^3c^2d^4g^3i^2 + a^4b^2d^5g^3i^2)x^3 + (b^6c^5g^3i^2 - 2ab^5c^4d^2g^3i^2 - 2a^2b^4c^3d^2g^3i^2 + 8a^3b^3c^2d^3g^3i^2 - 7a^4b^2c^2d^4g^3i^2 + 2a^5b^2d^5g^3i^2)x^2 + (2ab^5c^5g^3i^2 - 7a^2b^4c^4d^2g^3i^2 + 8a^3b^3c^3d^2g^3i^2 - 2a^4b^2c^2d^3g^3i^2 - 2a^5b^2cd^4g^3i^2 + a^6d^5g^3i^2)x) + (b^3c^3 - 24ab^2c^2d + 15a^2b^2cd^2 + 8a^3d^3 - 4(b^3d^3x^3 + a^2b^2cd^2 + (b^3cd^2 + 2ab^2d^3)x^2 + (2ab^2cd^2 + a^2bd^3)x) * \log(bx+a)^3 + 4(b^3d^3x^3 + a^2b^2cd^2 + (b^3cd^2 + 2ab^2d^3)x^2 + (2ab^2cd^2 + a^2bd^3)x) * \log(dx+c)^3 - 30(b^3cd^2 - ab^2d^3)x^2 + 6(b^3d^3x^3 + a^2b^2cd^2 + (b^3cd^2 + 2ab^2d^3)x^2 + (2ab^2cd^2$

$$\begin{aligned}
& + a^2*b*d^3)*x)*\log(b*x + a)^2 + 6*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 \\
& + 2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x - 2*(b^3*d^3*x^3 + a^2* \\
& b*c*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x)*\log(b*x + a))^2 \\
& - 3*(7*b^3*c^2*d + 6*a*b^2*c*d^2 - 13*a^2*b*d^3)*x - 30*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a*b^2 \\
& *c*d^2 + a^2*b*d^3)*x)*\log(b*x + a) + 6*(5*b^3*d^3*x^3 + 5*a^2*b*c*d^2 + 5*(b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + 2*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 \\
& + 2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x)*\log(b*x + a)^2 + 5*(2*a*b^2*c*d^2 + a^2*b*d^3)*x - 2*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2* \\
& a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x)*\log(b*x + a))^2 \\
& /((a^2*b^4*c^5*g^3*i^2 - 4*a^3*b^3*c^4*d*g^3*i^2 + 6*a^4*b^2*c^3*d^2*g^3*i^2 - 4*a^5*b*c^2*d^3*g^3*i^2 + a^6*c*d^4*g^3*i^2 + (b^6*c^4*d*g^3*i^2 - 4*a*b^5*c^3*d^2*g^3*i^2 + 6*a^2*b^4*c^2*d^3*g^3*i^2 - 4*a^3*b^3*c*d^4*g^3*i^2 + a^4*b^2*d^5*g^3*i^2)*x^3 + (b^6*c^5*g^3*i^2 - 2*a*b^5*c^4*d*g^3*i^2 - 2*a^2*b^4*c^3*d^2*g^3*i^2 + 8*a^3*b^3*c^2*d^3*g^3*i^2 - 7*a^4*b^2*c*d^4*g^3*i^2 + 2*a^5*b*d^5*g^3*i^2)*x^2 + (2*a*b^5*c^5*g^3*i^2 - 7*a^2*b^4*c^4*d*g^3*i^2 + 8*a^3*b^3*c^3*d^2*g^3*i^2 - 2*a^4*b^2*c^2*d^3*g^3*i^2 - 2*a^5*b*c*d^4*g^3*i^2 + a^6*d^5*g^3*i^2)*x)) + 1/2*A^2*((6*b^2*d^2*x^2 - b^2*c^2 + 5*a*b*c*d + 2*a^2*d^2 + 3*(b^2*c*d + 3*a*b*d^2)*x)/((b^5*c^3*d - 3*a*b^4*c^2*d^2 + 3*a^2*b^3*c*d^3 - a^3*b^2*d^4)*g^3*i^2*x^3 + (b^5*c^4 - a*b^4*c^3*d - 3*a^2*b^3*c^2*d^2 + 5*a^3*b^2*c*d^3 - 2*a^4*b*d^4)*g^3*i^2*x^2 + (2*a*b^4*c^4 - 5*a^2*b^3*c^3*d + 3*a^3*b^2*c^2*d^2 + a^4*b*c*d^3 - a^5*d^4)*g^3*i^2*x + (a^2*b^3*c^4 - 3*a^3*b^2*c^3*d + 3*a^4*b*c^2*d^2 - a^5*c*d^3)*g^3*i^2) + 6*b*d^2*\log(b*x + a)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^3*i^2) - 6*b*d^2*\log(d*x + c)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^3*i^2)) - 1/2*(b^3*c^3 - 12*a*b^2*c^2*d + 15*a^2*b*c*d^2 - 4*a^3*d^3 - 6*(b^3*c*d^2 - a*b^2*d^3)*x^2 + 6*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x)*\log(b*x + a)^2 + 6*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x)*\log(d*x + c))^2 - 3*(3*b^3*c^2*d - 2*a*b^2*c*d^2 - a^2*b*d^3)*x - 6*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x)*\log(b*x + a) + 6*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x) - 2*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x)*\log(b*x + a))^2 + 5*(2*a*b^2*c*d^2 + a^2*b*d^3)*x - 2*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x)*\log(b*x + a))^2 \\
& /((a^2*b^4*c^5*g^3*i^2 - 4*a^3*b^3*c^4*d*g^3*i^2 + 6*a^4*b^2*c^3*d^2*g^3*i^2 - 4*a^5*b*c^2*d^3*g^3*i^2 + a^6*c*d^4*g^3*i^2 + (b^6*c^4*d*g^3*i^2 - 4*a*b^5*c^3*d^2*g^3*i^2 + 6*a^2*b^4*c^2*d^3*g^3*i^2 - 4*a^3*b^3*c*d^4*g^3*i^2 + a^4*b^2*d^5*g^3*i^2)*x^3 + (b^6*c^5*g^3*i^2 - 2*a*b^5*c^4*d*g^3*i^2 - 2*a^2*b^4*c^3*d^2*g^3*i^2 + 8*a^3*b^3*c^2*d^3*g^3*i^2 - 7*a^4*b^2*c*d^4*g^3*i^2 + 2*a^5*b*d^5*g^3*i^2)*x^2 + (2*a*b^5*c^5*g^3*i^2 - 7*a^2*b^4*c^4*d*g^3*i^2 + 8*a^3*b^3*c^3*d^2*g^3*i^2 - 2*a^4*b^2*c^2*d^3*g^3*i^2 - 2*a^5*b*c*d^4*g^3*i^2 + a^6*d^5*g^3*i^2)*x)
\end{aligned}$$

mupad [B] time = 11.47, size = 1497, normalized size = 2.86

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{int}((A + B \cdot \log((e \cdot (a + b \cdot x)) / (c + d \cdot x)))^2 / ((a \cdot g + b \cdot g \cdot x)^3 \cdot (c \cdot i + d \cdot i \cdot x)^2), x)$

[Out] $(B^2 \cdot b \cdot d^2 \cdot \log((e \cdot (a + b \cdot x)) / (c + d \cdot x))^3) / (g^3 \cdot i^2 \cdot (a \cdot d - b \cdot c)^2 \cdot (a^2 \cdot d^2 + b^2 \cdot c^2 - 2 \cdot a \cdot b \cdot c \cdot d)) - ((4 \cdot A^2 \cdot a^2 \cdot d^2 - 2 \cdot A^2 \cdot b^2 \cdot c^2 + 8 \cdot B^2 \cdot a^2 \cdot d^2 - B^2 \cdot b^2 \cdot c^2 - 8 \cdot A \cdot B \cdot a^2 \cdot d^2 - 2 \cdot A \cdot B \cdot b^2 \cdot c^2 + 10 \cdot A^2 \cdot a \cdot b \cdot c \cdot d + 23 \cdot B^2 \cdot a \cdot b \cdot c \cdot d + 22 \cdot A \cdot B \cdot a \cdot b \cdot c \cdot d) / (2 \cdot (a \cdot d - b \cdot c)) + (3 \cdot x^2 \cdot (2 \cdot A^2 \cdot b^2 \cdot d^2 + 5 \cdot B^2 \cdot b^2 \cdot d^2 + 2 \cdot A \cdot B \cdot b^2 \cdot d^2)) / (a \cdot d - b \cdot c) + (3 \cdot x \cdot (6 \cdot A^2 \cdot a \cdot b \cdot d^2 + 13 \cdot B^2 \cdot a \cdot b \cdot d^2 + 2 \cdot A^2 \cdot b^2 \cdot c \cdot d + 7 \cdot B^2 \cdot b^2 \cdot c \cdot d + 2 \cdot A \cdot B \cdot a \cdot b \cdot d^2 + 6 \cdot A \cdot B \cdot b^2 \cdot c \cdot d)) / (2 \cdot (a \cdot d - b \cdot c))) / (x \cdot (2 \cdot a^4 \cdot d^3 \cdot g^3 \cdot i^2 + 4 \cdot a \cdot b^3 \cdot c^3 \cdot g^3 \cdot i^2 - 6 \cdot a^2 \cdot b^2 \cdot c^2 \cdot d \cdot g^3 \cdot i^2) + x^2 \cdot (2 \cdot b^4 \cdot c^3 \cdot g^3 \cdot i^2 + 4 \cdot a^3 \cdot b \cdot d^3 \cdot g^3 \cdot i^2 - 6 \cdot a^2 \cdot b^2 \cdot c \cdot d^2 \cdot g^3 \cdot i^2) + x^3 \cdot (2 \cdot a^2 \cdot b^2 \cdot d^3 \cdot g^3 \cdot i^2 + 2 \cdot b^4 \cdot c^2 \cdot d \cdot g^3 \cdot i^2 - 4 \cdot a \cdot b^3 \cdot c \cdot d^2 \cdot g^3 \cdot i^2) + 2 \cdot a^2 \cdot b^2 \cdot c^3 \cdot g^3 \cdot i^2 + 2 \cdot a^4 \cdot c \cdot d^2 \cdot g^3 \cdot i^2 - 4 \cdot a^3 \cdot b \cdot c^2 \cdot d \cdot g^3 \cdot i^2) - (\log((e \cdot (a + b \cdot x)) / (c + d \cdot x)) \cdot ((B^2 \cdot b \cdot c - 4 \cdot B^2 \cdot a \cdot d + 4 \cdot A \cdot B \cdot a \cdot d + 2 \cdot A \cdot B \cdot b \cdot c) / (2 \cdot g^3 \cdot i^2 \cdot (a^2 \cdot b \cdot d^3 + b^3 \cdot c^2 \cdot d - 2 \cdot a \cdot b^2 \cdot c \cdot d^2)) - x \cdot ((3 \cdot (B^2 - 2 \cdot A \cdot B)) / (2 \cdot g^3 \cdot i^2 \cdot (a^2 \cdot d^2 + b^2 \cdot c^2 - 2 \cdot a \cdot b \cdot c \cdot d)) - (3 \cdot B \cdot (2 \cdot A + B) \cdot (a \cdot d + b \cdot c)) / (g^3 \cdot i^2 \cdot (a \cdot d - b \cdot c) \cdot (a^2 \cdot d^2 + b^2 \cdot c^2 - 2 \cdot a \cdot b \cdot c \cdot d))) + (3 \cdot B \cdot a \cdot c \cdot (2 \cdot A + B)) / (g^3 \cdot i^2 \cdot (a \cdot d - b \cdot c) \cdot (a^2 \cdot d^2 + b^2 \cdot c^2 - 2 \cdot a \cdot b \cdot c \cdot d))) / (b \cdot x^3 + (a^2 \cdot c) / (b \cdot d) + (x^2 \cdot (b^2 \cdot c + 2 \cdot a \cdot b \cdot d)) / (b \cdot d) + (x \cdot (a^2 \cdot d + 2 \cdot a \cdot b \cdot c)) / (b \cdot d)) - (b \cdot d^2 \cdot \text{atan}((b \cdot d^2 \cdot (2 \cdot A^2 + 5 \cdot B^2 + 2 \cdot A \cdot B) \cdot (2 \cdot a^4 \cdot d^4 \cdot g^3 \cdot i^2 - 2 \cdot b^4 \cdot c^4 \cdot g^3 \cdot i^2 + 4 \cdot a \cdot b^3 \cdot c^3 \cdot d \cdot g^3 \cdot i^2 - 4 \cdot a^3 \cdot b \cdot c \cdot d^3 \cdot g^3 \cdot i^2) \cdot 3i) / (2 \cdot g^3 \cdot i^2 \cdot (a \cdot d - b \cdot c)^4 \cdot (6 \cdot A^2 \cdot b \cdot d^2 + 15 \cdot B^2 \cdot b \cdot d^2 + 6 \cdot A \cdot B \cdot b \cdot d^2))) \cdot (2 \cdot A^2 + 5 \cdot B^2 + 2 \cdot A \cdot B) \cdot 3i) / (g^3 \cdot i^2 \cdot (a \cdot d - b \cdot c)^4) - \log((e \cdot (a + b \cdot x)) / (c + d \cdot x))^2 \cdot ((x \cdot ((3 \cdot B^2) / (2 \cdot g^3 \cdot i^2 \cdot (a^2 \cdot d^2 + b^2 \cdot c^2 - 2 \cdot a \cdot b \cdot c \cdot d)) + (3 \cdot B^2 \cdot (a \cdot d + b \cdot c)) / (g^3 \cdot i^2 \cdot (a \cdot d - b \cdot c) \cdot (a^2 \cdot d^2 + b^2 \cdot c^2 - 2 \cdot a \cdot b \cdot c \cdot d))) + (B^2 \cdot (2 \cdot a \cdot d + b \cdot c)) / (2 \cdot g^3 \cdot i^2 \cdot (a^2 \cdot b \cdot d^3 + b^3 \cdot c^2 \cdot d - 2 \cdot a \cdot b^2 \cdot c \cdot d^2)) + (3 \cdot B^2 \cdot a \cdot c) / (g^3 \cdot i^2 \cdot (a \cdot d - b \cdot c) \cdot (a^2 \cdot d^2 + b^2 \cdot c^2 - 2 \cdot a \cdot b \cdot c \cdot d)) + (3 \cdot B^2 \cdot b \cdot d \cdot x^2) / (g^3 \cdot i^2 \cdot (a \cdot d - b \cdot c) \cdot (a^2 \cdot d^2 + b^2 \cdot c^2 - 2 \cdot a \cdot b \cdot c \cdot d))) / (b \cdot x^3 + (a^2 \cdot c) / (b \cdot d) + (x^2 \cdot (b^2 \cdot c + 2 \cdot a \cdot b \cdot d)) / (b \cdot d) + (x \cdot (a^2 \cdot d + 2 \cdot a \cdot b \cdot c)) / (b \cdot d)) - (3 \cdot B \cdot b \cdot d^2 \cdot (2 \cdot A + B)) / (2 \cdot g^3 \cdot i^2 \cdot (a \cdot d - b \cdot c)^2 \cdot (a^2 \cdot d^2 + b^2 \cdot c^2 - 2 \cdot a \cdot b \cdot c \cdot d)))$

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)**3/(d*i*x+c*i)**2,x)
```

```
[Out] Timed out
```


$$3.99 \quad \int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^4(ci+dix)^2} dx$$

Optimal. Leaf size=682

$$\frac{b^4(c+dx)^3 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)^2}{3g^4i^2(a+bx)^3(bc-ad)^5} - \frac{2b^4B(c+dx)^3 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{9g^4i^2(a+bx)^3(bc-ad)^5} + \frac{2b^3d(c+dx)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)^2}{g^4i^2(a+bx)^2(bc-ad)^5}$$

[Out] $-2ABd^4(bx+a)/(-ad+bc)^5/g^4/i^2/(dx+c) + 2B^2d^4(bx+a)/(-ad+bc)^5/g^4/i^2/(dx+c) - 12b^2B^2d^2(dx+c)/(-ad+bc)^5/g^4/i^2/(bx+a) + b^3B^2d^2(dx+c)^2/(-ad+bc)^5/g^4/i^2/(bx+a)^2 - 2/27b^4B^2(dx+c)^3/(-ad+bc)^5/g^4/i^2/(bx+a)^3 - 2B^2d^4(bx+a) \ln(e(bx+a)/(dx+c))/(-ad+bc)^5/g^4/i^2/(dx+c) - 12b^2B^2d^2(dx+c)(A+B \ln(e(bx+a)/(dx+c)))/(-ad+bc)^5/g^4/i^2/(bx+a) + 2b^3B^2d^2(dx+c)^2(A+B \ln(e(bx+a)/(dx+c)))/(-ad+bc)^5/g^4/i^2/(bx+a)^2 - 2/9b^4B^2(dx+c)^3(A+B \ln(e(bx+a)/(dx+c)))/(-ad+bc)^5/g^4/i^2/(bx+a)^3 + d^4(bx+a)(A+B \ln(e(bx+a)/(dx+c)))^2/(-ad+bc)^5/g^4/i^2/(dx+c) - 6b^2d^2(dx+c)(A+B \ln(e(bx+a)/(dx+c)))^2/(-ad+bc)^5/g^4/i^2/(bx+a) + 2b^3d^2(dx+c)^2(A+B \ln(e(bx+a)/(dx+c)))^2/(-ad+bc)^5/g^4/i^2/(bx+a)^2 - 1/3b^4(dx+c)^3(A+B \ln(e(bx+a)/(dx+c)))^2/(-ad+bc)^5/g^4/i^2/(bx+a)^3 - 4/3b^2d^3(A+B \ln(e(bx+a)/(dx+c)))^3/B/(-ad+bc)^5/g^4/i^2$

Rubi [C] time = 9.48, antiderivative size = 2222, normalized size of antiderivative = 3.26, number of steps used = 177, number of rules used = 31, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}} = 0.738$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x]))^2/((a*g + b*g*x)^4*(c*i + d*i*x)^2), x]

[Out] $(-2bB^2)/(27(bc-ad)^2g^4i^2(a+bx)^3) + (7bB^2d)/(9(bc-ad)^3g^4i^2(a+bx)^2) - (92bB^2d^2)/(9(bc-ad)^4g^4i^2(a+bx)) - (2B^2d^3)/((bc-ad)^4g^4i^2(c+dx)) - (110bB^2d^3 \text{Log}[a+bx])/((bc-ad)^5g^4i^2) + (4A^2B^2d^3 \text{Log}[a+bx]^2)/((bc-ad)^5g^4i^2) + (10bB^2d^3 \text{Log}[a+bx]^2)/(3(bc-ad)^5g^4i^2) - (4bB^2d^3 \text{Log}[a+bx] \text{Log}[(c+dx)^{-1}])^2/((bc-ad)^5g^4i^2) + (4bB^2d^3 \text{Log}[-((d(a+bx))/(bc-ad))] \text{Log}[(c+dx)^{-1}])^2/((bc-ad)^5g^4i^2) + (4bB^2d^3 \text{Log}[-((bc-ad)/(d(a+bx))]) \text{Log}[(e(a+bx))/(c+dx)]^2)/((bc-ad)^5g^4i^2) + (4bB^2d^3 \text{Log}[a+bx]$

$$\begin{aligned}
&] * \text{Log}[(e*(a + b*x))/(c + d*x)]^2 / ((b*c - a*d)^5 * g^4 * i^2) - (2*b*B*(A + B * \text{Log}[(e*(a + b*x))/(c + d*x)])) / (9*(b*c - a*d)^2 * g^4 * i^2 * (a + b*x)^3) + (4*b*B*d*(A + B * \text{Log}[(e*(a + b*x))/(c + d*x)])) / (3*(b*c - a*d)^3 * g^4 * i^2 * (a + b*x)^2) - (26*b*B*d^2*(A + B * \text{Log}[(e*(a + b*x))/(c + d*x)])) / (3*(b*c - a*d)^4 * g^4 * i^2 * (a + b*x)) + (2*B*d^3*(A + B * \text{Log}[(e*(a + b*x))/(c + d*x)])) / ((b*c - a*d)^4 * g^4 * i^2 * (c + d*x)) - (20*b*B*d^3 * \text{Log}[a + b*x] * (A + B * \text{Log}[(e*(a + b*x))/(c + d*x)])) / (3*(b*c - a*d)^5 * g^4 * i^2) - (b*(A + B * \text{Log}[(e*(a + b*x))/(c + d*x)]))^2 / (3*(b*c - a*d)^2 * g^4 * i^2 * (a + b*x)^3) + (b*d*(A + B * \text{Log}[(e*(a + b*x))/(c + d*x)]))^2 / ((b*c - a*d)^3 * g^4 * i^2 * (a + b*x)^2) - (3*b*d^2*(A + B * \text{Log}[(e*(a + b*x))/(c + d*x)]))^2 / ((b*c - a*d)^4 * g^4 * i^2 * (a + b*x)) - (d^3*(A + B * \text{Log}[(e*(a + b*x))/(c + d*x)]))^2 / ((b*c - a*d)^4 * g^4 * i^2 * (c + d*x)) - (4*b*d^3 * \text{Log}[a + b*x] * (A + B * \text{Log}[(e*(a + b*x))/(c + d*x)]))^2 / ((b*c - a*d)^5 * g^4 * i^2) + (110*b*B^2*d^3 * \text{Log}[c + d*x]) / (9*(b*c - a*d)^5 * g^4 * i^2) - (4*b*B^2*d^3 * \text{Log}[a + b*x]^2 * \text{Log}[c + d*x]) / ((b*c - a*d)^5 * g^4 * i^2) - (8*A*b*B*d^3 * \text{Log}[-((d*(a + b*x))/(b*c - a*d))] * \text{Log}[c + d*x]) / ((b*c - a*d)^5 * g^4 * i^2) - (20*b*B^2*d^3 * \text{Log}[-((d*(a + b*x))/(b*c - a*d))] * \text{Log}[c + d*x]) / (3*(b*c - a*d)^5 * g^4 * i^2) - (8*b*B^2*d^3 * \text{Log}[a + b*x] * \text{Log}[(c + d*x)^{-1}] * \text{Log}[c + d*x]) / ((b*c - a*d)^5 * g^4 * i^2) + (8*b*B^2*d^3 * \text{Log}[-((d*(a + b*x))/(b*c - a*d))] * (\text{Log}[a + b*x] + \text{Log}[(c + d*x)^{-1}] - \text{Log}[(e*(a + b*x))/(c + d*x)]) * \text{Log}[c + d*x]) / ((b*c - a*d)^5 * g^4 * i^2) + (20*b*B*d^3*(A + B * \text{Log}[(e*(a + b*x))/(c + d*x)])) * \text{Log}[c + d*x] / (3*(b*c - a*d)^5 * g^4 * i^2) + (4*b*d^3*(A + B * \text{Log}[(e*(a + b*x))/(c + d*x)]))^2 * \text{Log}[c + d*x] / ((b*c - a*d)^5 * g^4 * i^2) + (4*A*b*B*d^3 * \text{Log}[c + d*x]^2) / ((b*c - a*d)^5 * g^4 * i^2) + (10*b*B^2*d^3 * \text{Log}[c + d*x]^2) / (3*(b*c - a*d)^5 * g^4 * i^2) - (4*b*B^2*d^3 * \text{Log}[a + b*x] * \text{Log}[c + d*x]^2) / ((b*c - a*d)^5 * g^4 * i^2) + (4*b*B^2*d^3 * \text{Log}[(e*(a + b*x))/(c + d*x]) * \text{Log}[c + d*x]^2) / ((b*c - a*d)^5 * g^4 * i^2) + (4*b*B^2*d^3 * \text{Log}[c + d*x]^3) / (3*(b*c - a*d)^5 * g^4 * i^2) - (8*A*b*B*d^3 * \text{Log}[a + b*x] * \text{Log}[(b*(c + d*x))/(b*c - a*d)]) / ((b*c - a*d)^5 * g^4 * i^2) - (20*b*B^2*d^3 * \text{Log}[a + b*x] * \text{Log}[(b*(c + d*x))/(b*c - a*d)]) / (3*(b*c - a*d)^5 * g^4 * i^2) + (4*b*B^2*d^3 * \text{Log}[a + b*x]^2 * \text{Log}[(b*(c + d*x))/(b*c - a*d)]) / ((b*c - a*d)^5 * g^4 * i^2) - (8*A*b*B*d^3 * \text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))]) / ((b*c - a*d)^5 * g^4 * i^2) - (20*b*B^2*d^3 * \text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))]) / (3*(b*c - a*d)^5 * g^4 * i^2) + (8*b*B^2*d^3 * \text{Log}[a + b*x] * \text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))]) / ((b*c - a*d)^5 * g^4 * i^2) - (8*A*b*B*d^3 * \text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]) / ((b*c - a*d)^5 * g^4 * i^2) - (20*b*B^2*d^3 * \text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]) / (3*(b*c - a*d)^5 * g^4 * i^2) - (8*b*B^2*d^3 * \text{Log}[(c + d*x)^{-1}] * \text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]) / ((b*c - a*d)^5 * g^4 * i^2) + (8*b*B^2*d^3 * (\text{Log}[a + b*x] + \text{Log}[(c + d*x)^{-1}] - \text{Log}[(e*(a + b*x))/(c + d*x)]) * \text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]) / ((b*c - a*d)^5 * g^4 * i^2) - (8*b*B^2*d^3 * \text{Log}[(e*(a + b*x))/(c + d*x]) * \text{PolyLog}[2, 1 + (b*c - a*d)/(d*(a + b*x))]) / ((b*c - a*d)^5 * g^4 * i^2) - (8*b*B^2*d^3 * \text{PolyLog}[3, -((d*(a + b*x))/(b*c - a*d))]) / ((b*c - a*d)^5 * g^4 * i^2) - (8*b*B^2*d^3 * \text{PolyLog}[3, (b*(c + d*x))/(b*c - a*d)]) / ((b*c - a*d)^5 * g^4 * i^2) - (8*b*B^2*d^3 * \text{PolyLog}[3, 1 + (b*c - a*d)/(d*(a + b*x))]) / ((b*c - a*d)^5 * g^4 * i^2)
\end{aligned}$$

Rule 12

$\text{Int}[(a_)(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \ \&\& \ !\text{MatchQ}[u, (b_)(v_)] /; \text{FreeQ}[b, x]$

Rule 30

$\text{Int}[(x_)^{(m_)}, x_Symbol] \rightarrow \text{Simp}[x^{(m+1)}/(m+1), x] /; \text{FreeQ}[m, x] \ \&\& \ \text{NeQ}[m, -1]$

Rule 44

$\text{Int}[(a_ + (b_)(x_))^{(m_)}((c_ + (d_)(x_))^{(n_)}), x_Symbol] \rightarrow \text{Int}[\text{ExpandIntegrand}[(a + b*x)^m*(c + d*x)^n, x], x] /; \text{FreeQ}[\{a, b, c, d\}, x] \ \&\& \ \text{NeQ}[b*c - a*d, 0] \ \&\& \ \text{ILtQ}[m, 0] \ \&\& \ \text{IntegerQ}[n] \ \&\& \ !(\text{IGtQ}[n, 0] \ \&\& \ \text{LtQ}[m + n + 2, 0])$

Rule 2301

$\text{Int}[(a_ + \text{Log}[(c_)(x_)^{(n_)}]*(b_)]/(x_), x_Symbol] \rightarrow \text{Simp}[(a + b*\text{Log}[c*x^n])^2/(2*b*n), x] /; \text{FreeQ}[\{a, b, c, n\}, x]$

Rule 2302

$\text{Int}[(a_ + \text{Log}[(c_)(x_)^{(n_)}]*(b_))^{(p_)}]/(x_), x_Symbol] \rightarrow \text{Dist}[1/(b*n), \text{Subst}[\text{Int}[x^p, x], x, a + b*\text{Log}[c*x^n]], x] /; \text{FreeQ}[\{a, b, c, n, p\}, x]$

Rule 2317

$\text{Int}[(a_ + \text{Log}[(c_)(x_)^{(n_)}]*(b_))^{(p_)}]/((d_ + (e_)(x_)), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[1 + (e*x)/d]*(a + b*\text{Log}[c*x^n])^p)/e, x] - \text{Dist}[(b*n*p)/e, \text{Int}[(\text{Log}[1 + (e*x)/d]*(a + b*\text{Log}[c*x^n])^{(p-1)})/x, x], x] /; \text{FreeQ}[\{a, b, c, d, e, n\}, x] \ \&\& \ \text{IGtQ}[p, 0]$

Rule 2344

$\text{Int}[(a_ + \text{Log}[(c_)(x_)^{(n_)}]*(b_))^{(p_)}]/((x_)*((d_ + (e_)(x_))), x_Symbol] \rightarrow \text{Dist}[1/d, \text{Int}[(a + b*\text{Log}[c*x^n])^p/x, x], x] - \text{Dist}[e/d, \text{Int}[(a + b*\text{Log}[c*x^n])^p/(d + e*x), x], x] /; \text{FreeQ}[\{a, b, c, d, e, n\}, x] \ \&\& \ \text{IGtQ}[p, 0]$

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.))/(x_), x_Symbol] := -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0] && EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.))/(x_), x_Symbol] := Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m - 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d, e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*((f_) + (g_.)*(x_)^(q_.)), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_)/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
```

$(a + b \cdot \text{Log}[c \cdot (d + e \cdot x)^n])^{(p-1)} / (d + e \cdot x), x, x] /;$ FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]

Rule 2411

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] := Dist[1/e, Subst[Int[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]

Rule 2418

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]

Rule 2433

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] := Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(e*i - d*j)/e + (j*x)/e]^m)], x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]

Rule 2434

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] := Simp[Log[x]*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Log[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x]*(f + g*Log[h*(i + j*x)^m))]/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]

Rule 2440

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] := Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f + g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]

Rule 2488

```

Int[Log[(e._)*((f._)*((a._) + (b._)*(x._))^(p._)*((c._) + (d._)*(x._))^(q._))
^(r._)]^(s._)/((g._) + (h._)*(x._)), x_Symbol] := -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q]^r]^s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]

```

Rule 2499

```

Int[(Log[(e._)*((f._)*((a._) + (b._)*(x._))^(p._)*((c._) + (d._)*(x._))^(q._)
)^(r._)]*(s._) + Log[(i._)*((g._) + (h._)*(x._))^(n._)]*(t._))^(m._)/((j._
) + (k._)*(x._)), x_Symbol] := Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q]^r])/((k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]

```

Rule 2500

```

Int[(Log[(e._)*((f._)*((a._) + (b._)*(x._))^(p._)*((c._) + (d._)*(x._))^(q._)
)^(r._)]*(s._) + Log[(i._)*((g._) + (h._)*(x._))^(n._)]*(t._)))/((j._) + (k
._)*(x._)), x_Symbol] := Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]

```

Rule 2506

```

Int[Log[v]*Log[(e._)*((f._)*((a._) + (b._)*(x._))^(p._)*((c._) + (d._)*(x._)
)^(q._))^(r._)]^(s._)*(u._), x_Symbol] := With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]

```

Rule 2507

```

Int[Log[(e._)*((f._)*((a._) + (b._)*(x._))^(p._)*((c._) + (d._)*(x._))^(q._)
)^(r._)]^(s._)*Log[(i._)*((j._)*((g._) + (h._)*(x._))^(t._))^(u._)]*(v._), x_S
ymbol] := With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +

```

```

h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1))/(p*r*(s + 1)*(b*c
- a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q)^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
EqQ[p + q, 0] && NeQ[s, -1]

```

Rule 2524

```

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]

```

Rule 2525

```

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]

```

Rule 2528

```

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunci
onQ[RGx, x] && IGtQ[n, 0]

```

Rule 6589

```

Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]

```

Rule 6610

```

Int[(u_)*PolyLog[n_, v_], x_Symbol] := With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /; !FalseQ[w]] /; FreeQ[n, x]

```

Rule 6688

```

Int[u_, x_Symbol] := With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]

```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]  
]
```

Rubi steps

$$\begin{aligned}
\int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(99c + 99dx)^2(ag + bgx)^4} dx &= \int \left(\frac{b^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9801(bc - ad)^2 g^4 (a + bx)^4} - \frac{2b^2 d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9801(bc - ad)^3 g^4 (a + bx)^3} + \frac{b^2 d^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{3267(bc - ad)^4 (a + bx)^2} \right. \\
&= -\frac{(4b^2 d^3) \int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{a+bx} dx}{9801(bc - ad)^5 g^4} + \frac{(4bd^4) \int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{c+dx} dx}{9801(bc - ad)^5 g^4} + \frac{(b^2 d^2) \int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{a+bx} dx}{3267(bc - ad)^4} \\
&= -\frac{b \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{29403(bc - ad)^2 g^4 (a + bx)^3} + \frac{bd \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9801(bc - ad)^3 g^4 (a + bx)^2} - \frac{bd^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{3267(bc - ad)^4 (a + bx)} \\
&= -\frac{b \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{29403(bc - ad)^2 g^4 (a + bx)^3} + \frac{bd \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9801(bc - ad)^3 g^4 (a + bx)^2} - \frac{bd^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{3267(bc - ad)^4 (a + bx)} \\
&= -\frac{b \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{29403(bc - ad)^2 g^4 (a + bx)^3} + \frac{bd \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9801(bc - ad)^3 g^4 (a + bx)^2} - \frac{bd^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{3267(bc - ad)^4 (a + bx)} \\
&= -\frac{b \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{29403(bc - ad)^2 g^4 (a + bx)^3} + \frac{bd \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9801(bc - ad)^3 g^4 (a + bx)^2} - \frac{bd^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{3267(bc - ad)^4 (a + bx)} \\
&= -\frac{2bB \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{88209(bc - ad)^2 g^4 (a + bx)^3} + \frac{4bBd \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{29403(bc - ad)^3 g^4 (a + bx)^2} - \frac{26bBd^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{29403(bc - ad)^4 (a + bx)} \\
&= -\frac{2bB \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{88209(bc - ad)^2 g^4 (a + bx)^3} + \frac{4bBd \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{29403(bc - ad)^3 g^4 (a + bx)^2} - \frac{26bBd^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{29403(bc - ad)^4 (a + bx)} \\
&= \frac{4bB^2 d^3 \log(a + bx) \log^2\left(\frac{e(a+bx)}{c+dx}\right)}{9801(bc - ad)^5 g^4} - \frac{2bB \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{88209(bc - ad)^2 g^4 (a + bx)^3} + \frac{4bBd \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{29403(bc - ad)^3 g^4 (a + bx)^2} \\
&= -\frac{2bB^2}{264627(bc - ad)^2 g^4 (a + bx)^3} + \frac{7bB^2 d}{88209(bc - ad)^3 g^4 (a + bx)^2} - \frac{92bB^2 d^2}{88209(bc - ad)^4 g^4 (a + bx)} \\
&= -\frac{2bB^2}{264627(bc - ad)^2 g^4 (a + bx)^3} + \frac{7bB^2 d}{88209(bc - ad)^3 g^4 (a + bx)^2} - \frac{92bB^2 d^2}{88209(bc - ad)^4 g^4 (a + bx)} \\
&= -\frac{2bB^2}{264627(bc - ad)^2 g^4 (a + bx)^3} + \frac{7bB^2 d}{88209(bc - ad)^3 g^4 (a + bx)^2} - \frac{92bB^2 d^2}{88209(bc - ad)^4 g^4 (a + bx)}
\end{aligned}$$

Mathematica [A] time = 2.25, size = 613, normalized size = 0.90

$$9B(-3a^4Bd^4 + 12a^3bd^3(A(c + dx) - Bdx) + 18a^2b^2d^2(2Adx(c + dx) + Bc(c + 2dx)) + 6ab^3d(6Ad^2x^2(c + dx) +$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x)])^2/((a*g + b*g*x)^4*(c*i + d*i*x)^2), x]

[Out]
$$\begin{aligned} & -1/27*(-27*(A^2 - 2*A*B + 2*B^2)*d^3*(-(b*c) + a*d)*(a + b*x)^3 + b*(9*A^2 \\ & + 6*A*B + 2*B^2)*(b*c - a*d)^3*(c + d*x) - 3*b*(9*A^2 + 12*A*B + 7*B^2)*d*(\\ & b*c - a*d)^2*(a + b*x)*(c + d*x) + 3*b*(27*A^2 + 78*A*B + 92*B^2)*d^2*(b*c \\ & - a*d)*(a + b*x)^2*(c + d*x) + 6*b*(18*A^2 + 30*A*B + 55*B^2)*d^3*(a + b*x) \\ & ^3*(c + d*x)*\text{Log}[a + b*x] + 6*B*(b*c - a*d)*(9*(A - B)*d^3*(a + b*x)^3 + b* \\ & (3*A + B)*(b*c - a*d)^2*(c + d*x) - 3*b*(3*A + 2*B)*d*(b*c - a*d)*(a + b*x) \\ & *(c + d*x) + 3*b*(9*A + 13*B)*d^2*(a + b*x)^2*(c + d*x))*\text{Log}[(e*(a + b*x))/ \\ & (c + d*x)] + 9*B*(-3*a^4*B*d^4 + 12*a^3*b*d^3*(-(B*d*x) + A*(c + d*x)) + 18 \\ & *a^2*b^2*d^2*(2*A*d*x*(c + d*x) + B*c*(c + 2*d*x)) + 6*a*b^3*d*(6*A*d^2*x^2 \\ & *(c + d*x) + B*(-c^3 + 3*c^2*d*x + 9*c*d^2*x^2 + 3*d^3*x^3)) + b^4*(12*A*d^ \\ & 3*x^3*(c + d*x) + B*(c^4 - 2*c^3*d*x + 6*c^2*d^2*x^2 + 22*c*d^3*x^3 + 10*d^ \\ & 4*x^4))*\text{Log}[(e*(a + b*x))/(c + d*x)]^2 + 36*b*B^2*d^3*(a + b*x)^3*(c + d*x) \\ &)*\text{Log}[(e*(a + b*x))/(c + d*x)]^3 - 6*b*(18*A^2 + 30*A*B + 55*B^2)*d^3*(a + \\ & b*x)^3*(c + d*x)*\text{Log}[c + d*x]/((b*c - a*d)^5*g^4*i^2*(a + b*x)^3*(c + d*x) \\ &) \end{aligned}$$

fricas [B] time = 1.00, size = 1534, normalized size = 2.25

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^4/(d*i*x+c*i)^2,x, algorithm="fricas")

[Out]
$$\begin{aligned} & -1/27*((9*A^2 + 6*A*B + 2*B^2)*b^4*c^4 - 27*(2*A^2 + 2*A*B + B^2)*a*b^3*c^3 \\ & *d + 162*(A^2 + 2*A*B + 2*B^2)*a^2*b^2*c^2*d^2 - 5*(18*A^2 + 66*A*B + 49*B^ \\ & 2)*a^3*b*c*d^3 - 27*(A^2 - 2*A*B + 2*B^2)*a^4*d^4 + 6*((18*A^2 + 30*A*B + 5 \\ & 5*B^2)*b^4*c*d^3 - (18*A^2 + 30*A*B + 55*B^2)*a*b^3*d^4)*x^3 + 36*(B^2*b^4* \\ & d^4*x^4 + B^2*a^3*b*c*d^3 + (B^2*b^4*c*d^3 + 3*B^2*a*b^3*d^4)*x^3 + 3*(B^2* \\ & a*b^3*c*d^3 + B^2*a^2*b^2*d^4)*x^2 + (3*B^2*a^2*b^2*c*d^3 + B^2*a^3*b*d^4)* \\ & x)*\text{log}((b*e*x + a*e)/(d*x + c))^3 + 3*((18*A^2 + 66*A*B + 85*B^2)*b^4*c^2*d \\ & ^2 + 8*(9*A^2 + 6*A*B + 20*B^2)*a*b^3*c*d^3 - (90*A^2 + 114*A*B + 245*B^2)* \\ & a^2*b^2*d^4)*x^2 + 9*(2*(6*A*B + 5*B^2)*b^4*d^4*x^4 + B^2*b^4*c^4 - 6*B^2*a \\ & *b^3*c^3*d + 18*B^2*a^2*b^2*c^2*d^2 + 12*A*B*a^3*b*c*d^3 - 3*B^2*a^4*d^4 + \end{aligned}$$

$$\begin{aligned}
& 2*((6*A*B + 11*B^2)*b^4*c*d^3 + 9*(2*A*B + B^2)*a*b^3*d^4)*x^3 + 6*(B^2*b^4 \\
& *c^2*d^2 + 6*A*B*a^2*b^2*d^4 + 3*(2*A*B + 3*B^2)*a*b^3*c*d^3)*x^2 - 2*(B^2* \\
& b^4*c^3*d - 9*B^2*a*b^3*c^2*d^2 - 18*(A*B + B^2)*a^2*b^2*c*d^3 - 6*(A*B - B \\
& ^2)*a^3*b*d^4)*x*\log((b*e*x + a*e)/(d*x + c))^2 - ((18*A^2 + 30*A*B + 19*B \\
& ^2)*b^4*c^3*d - 81*(2*A^2 + 6*A*B + 7*B^2)*a*b^3*c^2*d^2 - 3*(18*A^2 - 114* \\
& A*B - 29*B^2)*a^2*b^2*c*d^3 + (198*A^2 + 114*A*B + 461*B^2)*a^3*b*d^4)*x + \\
& 6*((18*A^2 + 30*A*B + 55*B^2)*b^4*d^4*x^4 + 18*A^2*a^3*b*c*d^3 + (3*A*B + B \\
& ^2)*b^4*c^4 - 9*(2*A*B + B^2)*a*b^3*c^3*d + 54*(A*B + B^2)*a^2*b^2*c^2*d^2 \\
& - 9*(A*B - B^2)*a^4*d^4 + ((18*A^2 + 66*A*B + 85*B^2)*b^4*c*d^3 + 27*(2*A^2 \\
& + 2*A*B + 5*B^2)*a*b^3*d^4)*x^3 + 3*((6*A*B + 11*B^2)*b^4*c^2*d^2 + 9*(2*A \\
& ^2 + 6*A*B + 7*B^2)*a*b^3*c*d^3 + 18*(A^2 + 2*B^2)*a^2*b^2*d^4)*x^2 - ((6*A \\
& *B + 5*B^2)*b^4*c^3*d - 27*(2*A*B + 3*B^2)*a*b^3*c^2*d^2 - 54*(A^2 + 2*A*B \\
& + 2*B^2)*a^2*b^2*c*d^3 - 18*(A^2 - 2*A*B + 2*B^2)*a^3*b*d^4)*x*\log((b*e*x \\
& + a*e)/(d*x + c)))/((b^8*c^5*d - 5*a*b^7*c^4*d^2 + 10*a^2*b^6*c^3*d^3 - 10* \\
& a^3*b^5*c^2*d^4 + 5*a^4*b^4*c*d^5 - a^5*b^3*d^6)*g^4*i^2*x^4 + (b^8*c^6 - 2 \\
& *a*b^7*c^5*d - 5*a^2*b^6*c^4*d^2 + 20*a^3*b^5*c^3*d^3 - 25*a^4*b^4*c^2*d^4 \\
& + 14*a^5*b^3*c*d^5 - 3*a^6*b^2*d^6)*g^4*i^2*x^3 + 3*(a*b^7*c^6 - 4*a^2*b^6* \\
& c^5*d + 5*a^3*b^5*c^4*d^2 - 5*a^5*b^3*c^2*d^4 + 4*a^6*b^2*c*d^5 - a^7*b*d^6 \\
&)*g^4*i^2*x^2 + (3*a^2*b^6*c^6 - 14*a^3*b^5*c^5*d + 25*a^4*b^4*c^4*d^2 - 20 \\
& *a^5*b^3*c^3*d^3 + 5*a^6*b^2*c^2*d^4 + 2*a^7*b*c*d^5 - a^8*d^6)*g^4*i^2*x + \\
& (a^3*b^5*c^6 - 5*a^4*b^4*c^5*d + 10*a^5*b^3*c^4*d^2 - 10*a^6*b^2*c^3*d^3 + \\
& 5*a^7*b*c^2*d^4 - a^8*c*d^5)*g^4*i^2)
\end{aligned}$$

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^4/(d*i*x+c*i)^2,x, algorithm="giac")

[Out] Timed out

maple [B] time = 0.06, size = 4487, normalized size = 6.58

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^4/(d*i*x+c*i)^2,x)

[Out] $-2*d^5/i^2/(a*d-b*c)^6/g^4*B^2/(d*x+c)*a^2-d^5/i^2/(a*d-b*c)^6/g^4*A^2/(d*x+c)*a^2+2*d^3/i^2/(a*d-b*c)^6/g^4*B^2*b^2*c-2*d^4/i^2/(a*d-b*c)^6/g^4*B^2*b*a+d^3/i^2/(a*d-b*c)^6/g^4*A^2*b^2*c-d^4/i^2/(a*d-b*c)^6/g^4*A^2*b*a-12*d^2*e/i^2/(a*d-b*c)^6/g^4*A*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b$

$$\begin{aligned}
& /d*e+(a*d-b*c)/(d*x+c)/d*e)*c+2/3*d*e^3/i^2/(a*d-b*c)^6/g^4*A*B*b^4/(1/(d*x \\
& +c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+4*d^4/ \\
& i^2/(a*d-b*c)^6/g^4*A*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*b*c*a-4*d^2 \\
& *e^2/i^2/(a*d-b*c)^6/g^4*A*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2* \\
& \ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+12*d^3*e/i^2/(a*d-b*c)^6/g^4*A*B*b^2/(1/(\\
& d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-4*d^4 \\
& /i^2/(a*d-b*c)^6/g^4*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*b*c*a-2*d^ \\
& 3/i^2/(a*d-b*c)^6/g^4*A*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*b^2*c^2+2 \\
& *d^4/i^2/(a*d-b*c)^6/g^4*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d*x+c)*b*c* \\
& a+2*d*e^2/i^2/(a*d-b*c)^6/g^4*B^2*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d* \\
& e)^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c+6*d^3*e/i^2/(a*d-b*c)^6/g^4*B^2*b^ \\
& 2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2 \\
& *a-6*d^2*e/i^2/(a*d-b*c)^6/g^4*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d \\
& *e)*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c+12*d^3*e/i^2/(a*d-b*c)^6/g^4*B^2*b^ \\
& 2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a \\
& -12*d^2*e/i^2/(a*d-b*c)^6/g^4*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d* \\
& e)*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-2/3*e^3/i^2/(a*d-b*c)^6/g^4*A*B*b^5/(1 \\
& /d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+1 \\
& /3*d*e^3/i^2/(a*d-b*c)^6/g^4*B^2*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e \\
&)^3*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a+2/9*d*e^3/i^2/(a*d-b*c)^6/g^4*B^2*b \\
& ^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e \\
&)*a-2*d^2*e^2/i^2/(a*d-b*c)^6/g^4*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+ \\
& b/d*e)^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a-2*d^2*e^2/i^2/(a*d-b*c)^6/g^4* \\
& B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*\ln(b/d*e+(a*d-b*c)/(d*x+c \\
&)/d*e)*a+2*d*e^2/i^2/(a*d-b*c)^6/g^4*B^2*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d \\
& *e+b/d*e)^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+4*d*e^2/i^2/(a*d-b*c)^6/g^4*A \\
& *B*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*\ln(b/d*e+(a*d-b*c)/(d*x+c \\
&)/d*e)*c+4/3*d^4/i^2/(a*d-b*c)^6/g^4*B^2*b*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^3 \\
& *a+2*d^5/i^2/(a*d-b*c)^6/g^4*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*a^ \\
& 2-4/3*d^3/i^2/(a*d-b*c)^6/g^4*B^2*b^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^3*c+d \\
& ^3/i^2/(a*d-b*c)^6/g^4*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b^2*c-1/3*e^3/ \\
& i^2/(a*d-b*c)^6/g^4*A^2*b^5/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*c-2*d \\
& ^3/i^2/(a*d-b*c)^6/g^4*B^2/(d*x+c)*b^2*c^2+2*d^5/i^2/(a*d-b*c)^6/g^4*A*B/(d \\
& *x+c)*a^2-d^3/i^2/(a*d-b*c)^6/g^4*A^2/(d*x+c)*b^2*c^2-2*d^3/i^2/(a*d-b*c)^6 \\
& /g^4*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2*c-4*d^3/i^2/(a*d-b*c)^6/g^4*A^ \\
& 2*b^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-d^4/i^2/(a*d-b*c)^6/g^4*B^2*\ln(b/d* \\
& e+(a*d-b*c)/(d*x+c)/d*e)^2*b*a+4*d^4/i^2/(a*d-b*c)^6/g^4*A^2*b*\ln(b/d*e+(a* \\
& d-b*c)/(d*x+c)/d*e)*a+2*d^4/i^2/(a*d-b*c)^6/g^4*B^2*\ln(b/d*e+(a*d-b*c)/(d*x \\
& +c)/d*e)*b*a-d^5/i^2/(a*d-b*c)^6/g^4*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/ \\
& (d*x+c)*a^2-2/27*e^3/i^2/(a*d-b*c)^6/g^4*B^2*b^5/(1/(d*x+c)*a*e-1/(d*x+c)*b \\
& *c/d*e+b/d*e)^3*c+2*d^4/i^2/(a*d-b*c)^6/g^4*A*B*b*a-2*d^3/i^2/(a*d-b*c)^6/g \\
& ^4*A*B*b^2*c-2*d^2*e^2/i^2/(a*d-b*c)^6/g^4*A^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c) \\
&)*b*c/d*e+b/d*e)^2*a-2*d^4/i^2/(a*d-b*c)^6/g^4*A*B*\ln(b/d*e+(a*d-b*c)/(d*x+c \\
&)/d*e)*b*a-1/3*e^3/i^2/(a*d-b*c)^6/g^4*B^2*b^5/(1/(d*x+c)*a*e-1/(d*x+c)*b*c \\
& /d*e+b/d*e)^3*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c-d^2*e^2/i^2/(a*d-b*c)^6/g
\end{aligned}$$

$$\begin{aligned} &^4*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a-4*d^3/i^2/(a*d-b*c)^6/g^4*A*B*b^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c-d^3/i^2/(a*d-b*c)^6/g^4*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d*x+c)*b^2*c^2+2*d^3/i^2/(a*d-b*c)^6/g^4*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*b^2*c^2+2*d^4/i^2/(a*d-b*c)^6/g^4*A^2/(d*x+c)*a*b*c+2/9*d*e^3/i^2/(a*d-b*c)^6/g^4*A*B*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*a-4*d^4/i^2/(a*d-b*c)^6/g^4*A*B/(d*x+c)*b*c*a-2*d^2*e^2/i^2/(a*d-b*c)^6/g^4*A*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a+2*d*e^2/i^2/(a*d-b*c)^6/g^4*A*B*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*c+12*d^3*e/i^2/(a*d-b*c)^6/g^4*A*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a-12*d^2*e/i^2/(a*d-b*c)^6/g^4*A*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c+2*d^3/i^2/(a*d-b*c)^6/g^4*A*B/(d*x+c)*b^2*c^2-2/9*e^3/i^2/(a*d-b*c)^6/g^4*B^2*b^5/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+d*e^2/i^2/(a*d-b*c)^6/g^4*B^2*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*c+12*d^3*e/i^2/(a*d-b*c)^6/g^4*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a+2/27*d*e^3/i^2/(a*d-b*c)^6/g^4*B^2*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*a+6*d^3*e/i^2/(a*d-b*c)^6/g^4*A^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a-6*d^2*e/i^2/(a*d-b*c)^6/g^4*A^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c-12*d^2*e/i^2/(a*d-b*c)^6/g^4*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c+4*d^4/i^2/(a*d-b*c)^6/g^4*A*B*b*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a-2*d^5/i^2/(a*d-b*c)^6/g^4*A*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*a^2+2*d^3/i^2/(a*d-b*c)^6/g^4*A*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2*c+1/3*d*e^3/i^2/(a*d-b*c)^6/g^4*A^2*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*a+2*d*e^2/i^2/(a*d-b*c)^6/g^4*A^2*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*c+4*d^4/i^2/(a*d-b*c)^6/g^4*B^2/(d*x+c)*a*b*c-2/9*e^3/i^2/(a*d-b*c)^6/g^4*A*B*b^5/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*c \end{aligned}$$

maxima [B] time = 7.92, size = 6160, normalized size = 9.03

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^4/(d*i*x+c*i)^2,x, algorithm="maxima")

[Out]
$$\begin{aligned} &-1/3*B^2*((12*b^3*d^3*x^3 + b^3*c^3 - 5*a*b^2*c^2*d + 13*a^2*b*c*d^2 + 3*a^3*d^3 + 6*(b^3*c*d^2 + 5*a*b^2*d^3)*x^2 - 2*(b^3*c^2*d - 8*a*b^2*c*d^2 - 11*a^2*b*d^3)*x)/((b^7*c^4*d - 4*a*b^6*c^3*d^2 + 6*a^2*b^5*c^2*d^3 - 4*a^3*b^4*c*d^4 + a^4*b^3*d^5)*g^4*i^2*x^4 + (b^7*c^5 - a*b^6*c^4*d - 6*a^2*b^5*c^3*d^2 + 14*a^3*b^4*c^2*d^3 - 11*a^4*b^3*c*d^4 + 3*a^5*b^2*d^5)*g^4*i^2*x^3 + 3*(a*b^6*c^5 - 3*a^2*b^5*c^4*d + 2*a^3*b^4*c^3*d^2 + 2*a^4*b^3*c^2*d^3 - 3*a^5*b^2*c*d^4 + a^6*b*d^5)*g^4*i^2*x^2 + (3*a^2*b^5*c^5 - 11*a^3*b^4*c^4*d + 14*a^4*b^3*c^3*d^2 - 6*a^5*b^2*c^2*d^3 - a^6*b*c*d^4 + a^7*d^5)*g^4*i^2*x + (a^3*b^4*c^5 - 4*a^4*b^3*c^4*d + 6*a^5*b^2*c^3*d^2 - 4*a^6*b*c^2*d^3 + a^7*c*d^4)*g^4*i^2) + 12*b*d^3*log(b*x + a)/((b^5*c^5 - 5*a*b^4*c^4*d + 10* \end{aligned}$$

$$\begin{aligned}
& a^2 b^3 c^3 d^2 - 10 a^3 b^2 c^2 d^3 + 5 a^4 b c d^4 - a^5 d^5) g^{4i^2} - \\
& 12 b d^3 \log(d x + c) / ((b^5 c^5 - 5 a b^4 c^4 d + 10 a^2 b^3 c^3 d^2 - 10 a^3 b^2 c^2 d^3 + 5 a^4 b c d^4 - a^5 d^5) g^{4i^2}) * \log(b e^{*x} / (d x + c) + a e / (d x + c))^2 - 2 / 3 A B * ((12 b^3 d^3 x^3 + b^3 c^3 - 5 a b^2 c^2 d + 13 a^2 b c d^2 + 3 a^3 d^3 + 6 (b^3 c d^2 + 5 a b^2 d^3) x^2 - 2 (b^3 c^2 d - 8 a b^2 c d^2 - 11 a^2 b d^3) x) / ((b^7 c^4 d - 4 a b^6 c^3 d^2 + 6 a^2 b^5 c^2 d^3 - 4 a^3 b^4 c d^4 + a^4 b^3 d^5) g^{4i^2} x^4 + (b^7 c^5 - a b^6 c^4 d - 6 a^2 b^5 c^3 d^2 + 14 a^3 b^4 c^2 d^3 - 11 a^4 b^3 c d^4 + 3 a^5 b^2 d^5) g^{4i^2} x^3 + 3 (a b^6 c^5 - 3 a^2 b^5 c^4 d + 2 a^3 b^4 c^3 d^2 + 2 a^4 b^3 c^2 d^3 - 3 a^5 b^2 c d^4 + a^6 b d^5) g^{4i^2} x^2 + (3 a^2 b^5 c^5 - 11 a^3 b^4 c^4 d + 14 a^4 b^3 c^3 d^2 - 6 a^5 b^2 c^2 d^3 - a^6 b c d^4 + a^7 d^5) g^{4i^2} x + (a^3 b^4 c^5 - 4 a^4 b^3 c^4 d + 6 a^5 b^2 c^3 d^2 - 4 a^6 b c^2 d^3 + a^7 c d^4) g^{4i^2}) + 12 b d^3 \log(b x + a) / ((b^5 c^5 - 5 a b^4 c^4 d + 10 a^2 b^3 c^3 d^2 - 10 a^3 b^2 c^2 d^3 + 5 a^4 b c d^4 - a^5 d^5) g^{4i^2}) - 12 b d^3 \log(d x + c) / ((b^5 c^5 - 5 a b^4 c^4 d + 10 a^2 b^3 c^3 d^2 - 10 a^3 b^2 c^2 d^3 + 5 a^4 b c d^4 - a^5 d^5) g^{4i^2}) * \log(b e^{*x} / (d x + c) + a e / (d x + c)) - 1 / 27 B^2 * (6 (b^4 c^4 - 9 a b^3 c^3 d + 54 a^2 b^2 c^2 d^2 - 55 a^3 b c d^3 + 9 a^4 d^4 + 30 (b^4 c d^3 - a b^3 d^4) x^3 + 3 (11 b^4 c^2 d^2 + 8 a b^3 c d^3 - 19 a^2 b^2 d^4) x^2 - 18 (b^4 d^4 x^4 + a^3 b c d^3 + (b^4 c d^3 + 3 a b^3 d^4) x^3 + 3 (a b^3 c d^3 + a^2 b^2 d^4) x^2 + (3 a^2 b^2 c d^3 + a^3 b d^4) x) * \log(b x + a)^2 - 18 (b^4 d^4 x^4 + a^3 b c d^3 + (b^4 c d^3 + 3 a b^3 d^4) x^3 + 3 (a b^3 c d^3 + a^2 b^2 d^4) x^2 + (3 a^2 b^2 c d^3 + a^3 b d^4) x) * \log(d x + c)^2 - (5 b^4 c^3 d - 81 a b^3 c^2 d^2 + 57 a^2 b^2 c d^3 + 19 a^3 b d^4) x + 30 (b^4 d^4 x^4 + a^3 b c d^3 + (b^4 c d^3 + 3 a b^3 d^4) x^3 + 3 (a b^3 c d^3 + a^2 b^2 d^4) x^2 + (3 a^2 b^2 c d^3 + a^3 b d^4) x) * \log(b x + a) - 6 (5 b^4 d^4 x^4 + 5 a^3 b c d^3 + 5 (b^4 c d^3 + 3 a b^3 d^4) x^3 + 15 (a b^3 c d^3 + a^2 b^2 d^4) x^2 + 5 (3 a^2 b^2 c d^3 + a^3 b d^4) x - 6 (b^4 d^4 x^4 + a^3 b c d^3 + (b^4 c d^3 + 3 a b^3 d^4) x^3 + 3 (a b^3 c d^3 + a^2 b^2 d^4) x^2 + (3 a^2 b^2 c d^3 + a^3 b d^4) x) * \log(b x + a)) * \log(d x + c)) * \log(b e^{*x} / (d x + c) + a e / (d x + c)) / (a^3 b^5 c^6 g^{4i^2} - 5 a^4 b^4 c^5 d g^{4i^2} + 10 a^5 b^3 c^4 d^2 g^{4i^2} - 10 a^6 b^2 c^3 d^3 g^{4i^2} + 5 a^7 b c^2 d^4 g^{4i^2} - a^8 c d^5 g^{4i^2} + (b^8 c^5 d g^{4i^2} - 5 a b^7 c^4 d^2 g^{4i^2} + 10 a^2 b^6 c^3 d^3 g^{4i^2} - 10 a^3 b^5 c^2 d^4 g^{4i^2} + 5 a^4 b^4 c d^5 g^{4i^2} - a^5 b^3 d^6 g^{4i^2}) x^4 + (b^8 c^6 g^{4i^2} - 2 a b^7 c^5 d g^{4i^2} - 5 a^2 b^6 c^4 d^2 g^{4i^2} + 20 a^3 b^5 c^3 d^3 g^{4i^2} - 25 a^4 b^4 c^2 d^4 g^{4i^2} + 14 a^5 b^3 c d^5 g^{4i^2} - 3 a^6 b^2 d^6 g^{4i^2}) x^3 + 3 (a b^7 c^6 g^{4i^2} - 4 a^2 b^6 c^5 d g^{4i^2} + 5 a^3 b^5 c^4 d^2 g^{4i^2} - 5 a^5 b^3 c^2 d^4 g^{4i^2} + 4 a^6 b^2 c d^5 g^{4i^2} - a^7 b d^6 g^{4i^2}) x^2 + (3 a^2 b^6 c^6 g^{4i^2} - 14 a^3 b^5 c^5 d g^{4i^2} + 25 a^4 b^4 c^4 d^2 g^{4i^2} - 20 a^5 b^3 c^3 d^3 g^{4i^2} + 5 a^6 b^2 c^2 d^4 g^{4i^2} + 2 a^7 b c d^5 g^{4i^2} - a^8 d^6 g^{4i^2}) x) + (2 b^4 c^4 - 27 a b^3 c^3 d + 324 a^2 b^2 c^2 d^2 - 245 a^3 b c d^3 - 54 a^4 d^4 + 330 (b^4 c d^3 - a b^3 d^4) x^3 + 36 (b^4 d^4 x^4 + a^3 b c d^3 + (b^4 c d^3 + 3 a b^3 d^4) x^3 + 3 (a b^3 c d^3 + a^2 b^2 d^4) x^2 + (3 a^2 b^2 c d^3 + a^3 b d^4) x) * \log(b x + a)^3 - 3
\end{aligned}$$

$$\begin{aligned}
& 6*(b^4*d^4*x^4 + a^3*b*c*d^3 + (b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 3*(a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + (3*a^2*b^2*c*d^3 + a^3*b*d^4)*x)*\log(dx + c)^3 + 1 \\
& 5*(17*b^4*c^2*d^2 + 32*a*b^3*c*d^3 - 49*a^2*b^2*d^4)*x^2 - 90*(b^4*d^4*x^4 + a^3*b*c*d^3 + (b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 3*(a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + (3*a^2*b^2*c*d^3 + a^3*b*d^4)*x)*\log(b*x + a)^2 - 18*(5*b^4*d^4*x^4 + 5*a^3*b*c*d^3 + 5*(b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 15*(a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 5*(3*a^2*b^2*c*d^3 + a^3*b*d^4)*x - 6*(b^4*d^4*x^4 + a^3*b*c*d^3 + (b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 3*(a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + (3*a^2*b^2*c*d^3 + a^3*b*d^4)*x)*\log(b*x + a))*\log(dx + c)^2 - (19*b^4*c^3*d - 567*a*b^3*c^2*d^2 + 87*a^2*b^2*c*d^3 + 461*a^3*b*d^4)*x + 330*(b^4*d^4*x^4 + a^3*b*c*d^3 + (b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 3*(a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + (3*a^2*b^2*c*d^3 + a^3*b*d^4)*x)*\log(b*x + a) - 6*(55*b^4*d^4*x^4 + 55*a^3*b*c*d^3 + 55*(b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 165*(a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 18*(b^4*d^4*x^4 + a^3*b*c*d^3 + (b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 3*(a*b^3*c*d^3 + a^2*b^2*d^4)*x)*\log(b*x + a)^2 + 55*(3*a^2*b^2*c*d^3 + a^3*b*d^4)*x - 30*(b^4*d^4*x^4 + a^3*b*c*d^3 + (b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 3*(a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + (3*a^2*b^2*c*d^3 + a^3*b*d^4)*x)*\log(b*x + a))*\log(dx + c))/(a^3*b^5*c^6*g^4*i^2 - 5*a^4*b^4*c^5*d*g^4*i^2 + 10*a^5*b^3*c^4*d^2*g^4*i^2 - 10*a^6*b^2*c^3*d^3*g^4*i^2 + 5*a^7*b*c^2*d^4*g^4*i^2 - a^8*c*d^5*g^4*i^2 + (b^8*c^5*d*g^4*i^2 - 5*a*b^7*c^4*d^2*g^4*i^2 + 10*a^2*b^6*c^3*d^3*g^4*i^2 - 10*a^3*b^5*c^2*d^4*g^4*i^2 + 5*a^4*b^4*c*d^5*g^4*i^2 - a^5*b^3*d^6*g^4*i^2)*x^4 + (b^8*c^6*g^4*i^2 - 2*a*b^7*c^5*d*g^4*i^2 - 5*a^2*b^6*c^4*d^2*g^4*i^2 + 20*a^3*b^5*c^3*d^3*g^4*i^2 - 25*a^4*b^4*c^2*d^4*g^4*i^2 + 14*a^5*b^3*c*d^5*g^4*i^2 - 3*a^6*b^2*d^6*g^4*i^2)*x^3 + 3*(a*b^7*c^6*g^4*i^2 - 4*a^2*b^6*c^5*d*g^4*i^2 + 5*a^3*b^5*c^4*d^2*g^4*i^2 - 5*a^5*b^3*c^2*d^4*g^4*i^2 + 4*a^6*b^2*c*d^5*g^4*i^2 - a^7*b*d^6*g^4*i^2)*x^2 + (3*a^2*b^6*c^6*g^4*i^2 - 14*a^3*b^5*c^5*d*g^4*i^2 + 25*a^4*b^4*c^4*d^2*g^4*i^2 - 20*a^5*b^3*c^3*d^3*g^4*i^2 + 5*a^6*b^2*c^2*d^4*g^4*i^2 + 2*a^7*b*c*d^5*g^4*i^2 - a^8*d^6*g^4*i^2)*x)) - 1/3*A^2*((12*b^3*d^3*x^3 + b^3*c^3 - 5*a*b^2*c^2*d + 13*a^2*b*c*d^2 + 3*a^3*d^3 + 6*(b^3*c*d^2 + 5*a*b^2*d^3)*x^2 - 2*(b^3*c^2*d - 8*a*b^2*c*d^2 - 11*a^2*b*d^3)*x)/((b^7*c^4*d - 4*a*b^6*c^3*d^2 + 6*a^2*b^5*c^2*d^3 - 4*a^3*b^4*c*d^4 + a^4*b^3*d^5)*g^4*i^2*x^4 + (b^7*c^5 - a*b^6*c^4*d - 6*a^2*b^5*c^3*d^2 + 14*a^3*b^4*c^2*d^3 - 11*a^4*b^3*c*d^4 + 3*a^5*b^2*d^5)*g^4*i^2*x^3 + 3*(a*b^6*c^5 - 3*a^2*b^5*c^4*d + 2*a^3*b^4*c^3*d^2 + 2*a^4*b^3*c^2*d^3 - 3*a^5*b^2*c*d^4 + a^6*b*d^5)*g^4*i^2*x^2 + (3*a^2*b^5*c^5 - 11*a^3*b^4*c^4*d + 14*a^4*b^3*c^3*d^2 - 6*a^5*b^2*c^2*d^3 - a^6*b*c*d^4 + a^7*d^5)*g^4*i^2*x + (a^3*b^4*c^5 - 4*a^4*b^3*c^4*d + 6*a^5*b^2*c^3*d^2 - 4*a^6*b*c^2*d^3 + a^7*c*d^4)*g^4*i^2) + 12*b*d^3*log(b*x + a)/((b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a^3*b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5)*g^4*i^2) - 12*b*d^3*log(dx + c)/((b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a^3*b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5)*g^4*i^2) - 2/9*(b^4*c^4 - 9*a*b^3*c^3*d + 54*a^2*b^2*c^2*d^2 - 55*a^3*b*c*d^3 + 9*a^4*d^4 + 30*(b^4*c*d^3 - a*b^3*d^4)*x^3 + 3*(11*b^4*c^2*d^2 + 8*a*b^3*c*d^3 - 19*a^2*b^2*d^4)*x^2 - 18*(b^4*d^4*x^4 + a^3*b*c*d^3 + (b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 3*(
\end{aligned}$$

$$\begin{aligned}
& a^2 b^3 c^3 d^3 + a^2 b^2 d^4) x^2 + (3 a^2 b^2 c^3 d^3 + a^3 b^3 d^4) x) \log(b x + a)^2 - 18 (b^4 d^4 x^4 + a^3 b^3 c^3 d^3 + (b^4 c^3 d^3 + 3 a b^3 d^4) x^3 + 3 (a b^3 c^3 d^3 + a^2 b^2 d^4) x^2 + (3 a^2 b^2 c^3 d^3 + a^3 b^3 d^4) x) \log(d x + c)^2 - (5 b^4 c^3 d - 81 a b^3 c^2 d^2 + 57 a^2 b^2 c^3 d^3 + 19 a^3 b^3 d^4) x + 30 (b^4 d^4 x^4 + a^3 b^3 c^3 d^3 + (b^4 c^3 d^3 + 3 a b^3 d^4) x^3 + 3 (a b^3 c^3 d^3 + a^2 b^2 d^4) x^2 + (3 a^2 b^2 c^3 d^3 + a^3 b^3 d^4) x) \log(b x + a) - 6 (5 b^4 d^4 x^4 + 5 a^3 b^3 c^3 d^3 + 5 (b^4 c^3 d^3 + 3 a b^3 d^4) x^3 + 15 (a b^3 c^3 d^3 + a^2 b^2 d^4) x^2 + 5 (3 a^2 b^2 c^3 d^3 + a^3 b^3 d^4) x - 6 (b^4 d^4 x^4 + a^3 b^3 c^3 d^3 + (b^4 c^3 d^3 + 3 a b^3 d^4) x^3 + 3 (a b^3 c^3 d^3 + a^2 b^2 d^4) x^2 + (3 a^2 b^2 c^3 d^3 + a^3 b^3 d^4) x) \log(b x + a)) \log(d x + c)) * A * B / (a^3 b^5 c^6 g^4 i^2 - 5 a^4 b^4 c^5 d g^4 i^2 + 10 a^5 b^3 c^4 d^2 g^4 i^2 - 10 a^6 b^2 c^3 d^3 g^4 i^2 + 5 a^7 b^2 c^2 d^4 g^4 i^2 - a^8 c^5 d^5 g^4 i^2 + (b^8 c^5 d g^4 i^2 - 5 a b^7 c^4 d^2 g^4 i^2 + 10 a^2 b^6 c^3 d^3 g^4 i^2 - 10 a^3 b^5 c^2 d^4 g^4 i^2 + 5 a^4 b^4 c^5 d g^4 i^2 - a^5 b^3 d^6 g^4 i^2) x^4 + (b^8 c^6 g^4 i^2 - 2 a b^7 c^5 d g^4 i^2 - 5 a^2 b^6 c^4 d^2 g^4 i^2 + 20 a^3 b^5 c^3 d^3 g^4 i^2 - 25 a^4 b^4 c^2 d^4 g^4 i^2 + 14 a^5 b^3 c^5 d g^4 i^2 - 3 a^6 b^2 d^6 g^4 i^2) x^3 + 3 (a b^7 c^6 g^4 i^2 - 4 a^2 b^6 c^5 d g^4 i^2 + 5 a^3 b^5 c^4 d^2 g^4 i^2 - 5 a^5 b^3 c^2 d^4 g^4 i^2 + 4 a^6 b^2 c^5 d g^4 i^2 - a^7 b^2 d^6 g^4 i^2) x^2 + (3 a^2 b^6 c^6 g^4 i^2 - 14 a^3 b^5 c^5 d g^4 i^2 + 25 a^4 b^4 c^4 d^2 g^4 i^2 - 20 a^5 b^3 c^3 d^3 g^4 i^2 + 5 a^6 b^2 c^2 d^4 g^4 i^2 + 2 a^7 b^2 c^5 d g^4 i^2 - a^8 d^6 g^4 i^2) x)
\end{aligned}$$

mupad [B] time = 13.57, size = 2701, normalized size = 3.96

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{int}((A + B \log((e*(a + b*x))/(c + d*x)))^2 / ((a*g + b*g*x)^4 * (c*i + d*i*x)^2), x)$

[Out] $(\log((e*(a + b*x))/(c + d*x)) * (x^2 * ((4*B^2*b*d)/(g^4*i^2*(a*d - b*c)^3) - (4*b*d^3*(b*d*((2*a^2*d^2 + b^2*c^2 - 3*a*b*c*d)/(2*b*d^3) + (a*(a*d - b*c))/(2*b*d^2)) + ((a*d + b*c)*(a*d - b*c))/d^2) * (5*B^2 + 6*A*B)) / (3*g^4*i^2*(a*d - b*c)^2 * (a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2))) + x * ((8*(2*B^2 - 3*A*B)) / (9*g^4*i^2*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d) + (4*B^2*(a*d + b*c)) / (g^4*i^2*(a*d - b*c)^3) - (4*b*d^3 * ((2*a^2*d^2 + b^2*c^2 - 3*a*b*c*d)/(2*b*d^3) + (a*(a*d - b*c))/(2*b*d^2)) * (a*d + b*c) + (a*c*(a*d - b*c))/d^2) * (5*B^2 + 6*A*B)) / (3*g^4*i^2*(a*d - b*c)^2 * (a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2))) - (2*(B^2*b*c - 9*B^2*a*d + 9*A*B*a*d + 3*A*B*b*c) / (9*g^4*i^2*(a^2*b*d^3 + b^3*c^2*d - 2*a*b^2*c*d^2)) + (4*B^2*a*c) / (g^4*i^2*(a*d - b*c)^3) - (4*b^2*d^2*x^3*(5*B^2 + 6*A*B)) / (3*g^4*i^2*(a*d - b*c)*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2)) - (4*a*b*c*d^3 * ((2*a^2*d^2 + b^2*c^2 - 3*a*b*c*d)/(2*b*d^3) + (a*(a*d - b*c))/(2*b*d^2)) * (5*B^2 + 6*A*B)) / (3*g^4*i^2*(a*d - b*c)^2 * (a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2)))$

$$\begin{aligned}
& *b*c*d^2)))/((b^2*x^4 + (a^3*c)/(b*d) + (x*(a^3*d + 3*a^2*b*c))/(b*d) + (x^3*(b^3*c + 3*a*b^2*d))/(b*d) + (x^2*(3*a*b^2*c + 3*a^2*b*d))/(b*d)) - ((27*A^2*a^3*d^3 + 9*A^2*b^3*c^3 + 54*B^2*a^3*d^3 + 2*B^2*b^3*c^3 - 54*A*B*a^3*d^3 + 6*A*B*b^3*c^3 - 45*A^2*a*b^2*c^2*d + 117*A^2*a^2*b*c*d^2 - 25*B^2*a*b^2*c^2*d + 299*B^2*a^2*b*c*d^2 - 48*A*B*a*b^2*c^2*d + 276*A*B*a^2*b*c*d^2)/(3*(a*d - b*c)) + (2*x^3*(18*A^2*b^3*d^3 + 55*B^2*b^3*d^3 + 30*A*B*b^3*d^3))/(a*d - b*c) + (x*(198*A^2*a^2*b*d^3 + 461*B^2*a^2*b*d^3 - 18*A^2*b^3*c^2*d - 19*B^2*b^3*c^2*d + 144*A^2*a*b^2*c*d^2 + 548*B^2*a*b^2*c*d^2 + 114*A*B*a^2*b*d^3 - 30*A*B*b^3*c^2*d + 456*A*B*a*b^2*c*d^2))/(3*(a*d - b*c)) + (x^2*(90*A^2*a*b^2*d^3 + 245*B^2*a*b^2*d^3 + 18*A^2*b^3*c*d^2 + 85*B^2*b^3*c*d^2 + 114*A*B*a*b^2*d^3 + 66*A*B*b^3*c*d^2))/(a*d - b*c))/(x*(9*a^6*d^4*g^4*i^2 - 27*a^2*b^4*c^4*g^4*i^2 + 72*a^3*b^3*c^3*d*g^4*i^2 - 54*a^4*b^2*c^2*d^2*g^4*i^2) - x^2*(27*a*b^5*c^4*g^4*i^2 - 27*a^5*b*d^4*g^4*i^2 - 54*a^2*b^4*c^3*d*g^4*i^2 + 54*a^4*b^2*c*d^3*g^4*i^2) - x^3*(9*b^6*c^4*g^4*i^2 - 27*a^4*b^2*d^4*g^4*i^2 + 72*a^3*b^3*c*d^3*g^4*i^2 - 54*a^2*b^4*c^2*d^2*g^4*i^2) + x^4*(9*a^3*b^3*d^4*g^4*i^2 - 9*b^6*c^3*d*g^4*i^2 + 27*a*b^5*c^2*d^2*g^4*i^2 - 27*a^2*b^4*c*d^3*g^4*i^2) - 9*a^3*b^3*c^4*g^4*i^2 + 9*a^6*c*d^3*g^4*i^2 + 27*a^4*b^2*c^3*d*g^4*i^2 - 27*a^5*b*c^2*d^2*g^4*i^2) - \log((e*(a + b*x))/(c + d*x))^2*((x*((4*B^2)/(3*g^4*i^2*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (4*B^2*b*d^3*((2*a^2*d^2 + b^2*c^2 - 3*a*b*c*d)/(2*b*d^3) + (a*(a*d - b*c))/(2*b*d^2)))*(a*d + b*c) + (a*c*(a*d - b*c))/d^2))/(g^4*i^2*(a*d - b*c)^2*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2))) + (B^2*(3*a*d + b*c))/(3*g^4*i^2*(a^2*b*d^3 + b^3*c^2*d - 2*a*b^2*c*d^2)) + (4*B^2*b^2*d^2*x^3)/(g^4*i^2*(a*d - b*c)*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2)) + (4*B^2*b*d^3*x^2*(b*d*((2*a^2*d^2 + b^2*c^2 - 3*a*b*c*d)/(2*b*d^3) + (a*(a*d - b*c))/(2*b*d^2)) + ((a*d + b*c)*(a*d - b*c))/d^2))/(g^4*i^2*(a*d - b*c)^2*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2)) + (4*B^2*a*b*c*d^3*((2*a^2*d^2 + b^2*c^2 - 3*a*b*c*d)/(2*b*d^3) + (a*(a*d - b*c))/(2*b*d^2)))/(g^4*i^2*(a*d - b*c)^2*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2))/(b^2*x^4 + (a^3*c)/(b*d) + (x*(a^3*d + 3*a^2*b*c))/(b*d) + (x^3*(b^3*c + 3*a*b^2*d))/(b*d) + (x^2*(3*a*b^2*c + 3*a^2*b*d))/(b*d)) - (2*b*d^3*(5*B^2 + 6*A*B))/(3*g^4*i^2*(a*d - b*c)^2*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2))) - (b*d^3*atan((b*d^3*(18*A^2 + 55*B^2 + 30*A*B)*(9*a^5*d^5*g^4*i^2 + 9*b^5*c^5*g^4*i^2 - 27*a*b^4*c^4*d*g^4*i^2 - 27*a^4*b*c*d^4*g^4*i^2 + 18*a^2*b^3*c^3*d^2*g^4*i^2 + 18*a^3*b^2*c^2*d^3*g^4*i^2)*2i)/(9*g^4*i^2*(a*d - b*c)^5*(36*A^2*b*d^3 + 110*B^2*b*d^3 + 60*A*B*b*d^3)) + (b^2*d^4*x*(18*A^2 + 55*B^2 + 30*A*B)*(a^4*d^4*g^4*i^2 + b^4*c^4*g^4*i^2 - 4*a*b^3*c^3*d*g^4*i^2 - 4*a^3*b*c*d^3*g^4*i^2 + 6*a^2*b^2*c^2*d^2*g^4*i^2)*4i)/(g^4*i^2*(a*d - b*c)^5*(36*A^2*b*d^3 + 110*B^2*b*d^3 + 60*A*B*b*d^3)))*(18*A^2 + 55*B^2 + 30*A*B)*4i)/(9*g^4*i^2*(a*d - b*c)^5) + (4*B^2*b*d^3*log((e*(a + b*x))/(c + d*x))^3)/(3*g^4*i^2*(a*d - b*c)^2*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2))
\end{aligned}$$

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)**4/(d*i*x+c*i)**2,x)
```

```
[Out] Timed out
```

$$3.100 \quad \int \frac{(ag+bgx)^3 \left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)^2}{(ci+dix)^3} dx$$

Optimal. Leaf size=635

$$\frac{6b^2Bg^3(bc-ad)\text{Li}_2\left(\frac{d(a+bx)}{b(c+dx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{d^4i^3} + \frac{3b^2g^3(bc-ad)\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{d^4i^3} + \frac{2b^2Bg^3}{d^4i^3}$$

[Out] $\frac{1}{4}B^2(-ad+bc)g^3(bx+a)^2/d^2/i^3/(dx+c)^{-2-4A*B*B(-ad+bc)g^3(bx+a)/d^3/i^3/(dx+c)+4*b*B^2(-ad+bc)g^3(bx+a)/d^3/i^3/(dx+c)-4*b*B^2(-ad+bc)g^3(bx+a)*\ln(e*(bx+a)/(dx+c))/d^3/i^3/(dx+c)-1/2*B*(-ad+bc)g^3(bx+a)^2*(A+B*\ln(e*(bx+a)/(dx+c)))/d^2/i^3/(dx+c)^{-2+2*b^2*B*(-ad+bc)g^3*\ln((-ad+bc)/b/(dx+c))*(A+B*\ln(e*(bx+a)/(dx+c)))/d^4/i^3+ b^2*g^3(bx+a)*(A+B*\ln(e*(bx+a)/(dx+c)))^2/d^3/i^3+1/2*(-ad+bc)g^3(bx+a)^2*(A+B*\ln(e*(bx+a)/(dx+c)))^2/d^2/i^3/(dx+c)^{-2+2*b*(-ad+bc)g^3(bx+a)*(A+B*\ln(e*(bx+a)/(dx+c)))^2/d^3/i^3/(dx+c)+3*b^2*(-ad+bc)g^3*\ln((-ad+bc)/b/(dx+c))*(A+B*\ln(e*(bx+a)/(dx+c)))^2/d^4/i^3+2*b^2*B^2(-ad+bc)g^3*polylog(2,d*(bx+a)/b/(dx+c))/d^4/i^3+6*b^2*B*(-ad+bc)g^3*(A+B*\ln(e*(bx+a)/(dx+c)))*polylog(2,d*(bx+a)/b/(dx+c))/d^4/i^3-6*b^2*B^2*(-ad+bc)g^3*polylog(3,d*(bx+a)/b/(dx+c))/d^4/i^3$

Rubi [B] time = 6.24, antiderivative size = 1890, normalized size of antiderivative = 2.98, number of steps used = 124, number of rules used = 26, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}} = 0.619$, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 44, 6688, 6742, 2500, 2433, 2375, 2317, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

[In] Int[((a*g + b*g*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2)/(c*i + d*i*x)^3, x]

[Out] $(B^2*(b*c - a*d)^3*g^3)/(4*d^4*i^3*(c + d*x)^2) - (9*b*B^2*(b*c - a*d)^2*g^3)/(2*d^4*i^3*(c + d*x)) - (9*b^2*B^2*(b*c - a*d)*g^3*\text{Log}[a + b*x])/(2*d^4*i^3) - (a*b^2*B^2*g^3*\text{Log}[a + b*x]^2)/(d^3*i^3) - (5*b^2*B^2*(b*c - a*d)*g^3*\text{Log}[a + b*x]^2)/(2*d^4*i^3) + (3*b^2*B^2*(b*c - a*d)*g^3*\text{Log}[a + b*x]*\text{Log}[(c + d*x)^{-1}])^2/(d^4*i^3) - (3*b^2*B^2*(b*c - a*d)*g^3*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[(c + d*x)^{-1}])^2/(d^4*i^3) - (B*(b*c - a*d)^3*g^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]))/(2*d^4*i^3*(c + d*x)^2) + (5*b*B*(b*c - a*d)^2*g^3*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]))/(d^4*i^3*(c + d*x)) + (2*a*b^2*B*g^3*\text{Log}[a + b*x]*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]))/(d^3*i^3) + (5*b^2*B*(b*c - a*d)*g^3*\text{Log}[a + b*x]*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]))$

$$\begin{aligned}
&)/(d^4i^3) + (b^3g^3x*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2)/(d^3i^3) \\
&+ ((b*c - a*d)^3g^3*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2)/(2*d^4i^3*(c \\
&+ d*x)^2) - (3*b*(b*c - a*d)^2g^3*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2)/ \\
&(d^4i^3*(c + d*x)) + (9*b^2*B^2*(b*c - a*d)*g^3*Log[c + d*x])/(2*d^4i^3) \\
&+ (3*b^2*B^2*(b*c - a*d)*g^3*Log[a + b*x]^2*Log[c + d*x])/(d^4i^3) + (2*b^ \\
&3*B^2*c*g^3*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(d^4i^3) + (6* \\
&A*b^2*B*(b*c - a*d)*g^3*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(d^ \\
&4i^3) + (5*b^2*B^2*(b*c - a*d)*g^3*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c \\
&+ d*x])/(d^4i^3) + (6*b^2*B^2*(b*c - a*d)*g^3*Log[a + b*x]*Log[(c + d*x)^ \\
&(-1)]*Log[c + d*x])/(d^4i^3) - (6*b^2*B^2*(b*c - a*d)*g^3*Log[-((d*(a + b* \\
&x))/(b*c - a*d))]*(Log[a + b*x] + Log[(c + d*x)^(-1)] - Log[(e*(a + b*x))/(\\
&c + d*x)])*Log[c + d*x])/(d^4i^3) - (2*b^3*B*c*g^3*(A + B*Log[(e*(a + b*x) \\
&)/(c + d*x)])*Log[c + d*x])/(d^4i^3) - (5*b^2*B*(b*c - a*d)*g^3*(A + B*Log \\
&[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/(d^4i^3) - (3*b^2*(b*c - a*d)*g^3 \\
&*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2*Log[c + d*x])/(d^4i^3) - (b^3*B^2* \\
&c*g^3*Log[c + d*x]^2)/(d^4i^3) - (3*A*b^2*B*(b*c - a*d)*g^3*Log[c + d*x]^2 \\
&)/(d^4i^3) - (5*b^2*B^2*(b*c - a*d)*g^3*Log[c + d*x]^2)/(2*d^4i^3) + (3*b \\
&^2*B^2*(b*c - a*d)*g^3*Log[a + b*x]*Log[c + d*x]^2)/(d^4i^3) - (3*b^2*B^2* \\
&(b*c - a*d)*g^3*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x]^2)/(d^4i^3) - (b \\
&^2*B^2*(b*c - a*d)*g^3*Log[c + d*x]^3)/(d^4i^3) + (2*a*b^2*B^2*g^3*Log[a + \\
&b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(d^3i^3) + (5*b^2*B^2*(b*c - a*d)*g^ \\
&3*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(d^4i^3) - (3*b^2*B^2*(b*c \\
&- a*d)*g^3*Log[a + b*x]^2*Log[(b*(c + d*x))/(b*c - a*d)])/(d^4i^3) + (2*a* \\
&b^2*B^2*g^3*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(d^3i^3) + (5*b^2*B^ \\
&2*(b*c - a*d)*g^3*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(d^4i^3) - (6* \\
&b^2*B^2*(b*c - a*d)*g^3*Log[a + b*x]*PolyLog[2, -((d*(a + b*x))/(b*c - a*d) \\
&)])/(d^4i^3) + (2*b^3*B^2*c*g^3*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(d^ \\
&4i^3) + (6*A*b^2*B*(b*c - a*d)*g^3*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/ \\
&(d^4i^3) + (5*b^2*B^2*(b*c - a*d)*g^3*PolyLog[2, (b*(c + d*x))/(b*c - a*d) \\
&)])/(d^4i^3) + (6*b^2*B^2*(b*c - a*d)*g^3*Log[(c + d*x)^(-1)]*PolyLog[2, (b \\
&*(c + d*x))/(b*c - a*d)])/(d^4i^3) - (6*b^2*B^2*(b*c - a*d)*g^3*(Log[a + b \\
&*x] + Log[(c + d*x)^(-1)] - Log[(e*(a + b*x))/(c + d*x)])*PolyLog[2, (b*(c \\
&+ d*x))/(b*c - a*d)])/(d^4i^3) + (6*b^2*B^2*(b*c - a*d)*g^3*PolyLog[3, -((\\
&d*(a + b*x))/(b*c - a*d))])/(d^4i^3) + (6*b^2*B^2*(b*c - a*d)*g^3*PolyLog[\\
&3, (b*(c + d*x))/(b*c - a*d)])/(d^4i^3)
\end{aligned}$$

Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] := Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 44

```
Int[((a_) + (b_)*(x_)^(m_))*((c_) + (d_)*(x_)^(n_)), x_Symbol] := Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)/(x_), x_Symbol] := Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)^(p_)/(x_), x_Symbol] := Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
x]
```

Rule 2317

```
Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)^(p_)/((d_) + (e_)*(x_)), x_Symb
ol] := Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_)*((e_) + (f_)*(x_)^(m_))])*((a_) + Log[(c_)*(x_)^(n_)])*(b
_)^(p_)/(x_), x_Symbol] := -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_)*((e_) + (f_)*(x_)^(m_))^(r_))]*((a_) + Log[(c_)*(x_)^(n_
)])*(b_)^(p_)/(x_), x_Symbol] := Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_)^(n_))])*(b_)^(p_)*((f_) + (g_
)*(x_)^(q_)), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
```

$n)^p, x], x, d + e*x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g, n, p, q\}, x] \&\& \text{EqQ}[e*f - d*g, 0]$

Rule 2391

$\text{Int}[\text{Log}[(c_.)*((d_) + (e_.)*(x_)^{(n_.)})]/(x_), x_Symbol] := -\text{Simp}[\text{PolyLog}[2, -(c*e*x^n)]/n, x] /; \text{FreeQ}[\{c, d, e, n\}, x] \&\& \text{EqQ}[c*d, 1]$

Rule 2393

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_) + (e_.)*(x_))]*(b_.)]/((f_.) + (g_.)*(x_)), x_Symbol] := \text{Dist}[1/g, \text{Subst}[\text{Int}[(a + b*\text{Log}[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g\}, x] \&\& \text{NeQ}[e*f - d*g, 0] \&\& \text{EqQ}[g + c*(e*f - d*g), 0]$

Rule 2394

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_) + (e_.)*(x_)^{(n_.)})]*(b_.)]/((f_.) + (g_.)*(x_)), x_Symbol] := \text{Simp}[(\text{Log}[(e*(f + g*x))/(e*f - d*g)]*(a + b*\text{Log}[c*(d + e*x)^n]))/g, x] - \text{Dist}[(b*e^n)/g, \text{Int}[\text{Log}[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g, n\}, x] \&\& \text{NeQ}[e*f - d*g, 0]$

Rule 2396

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_) + (e_.)*(x_)^{(n_.)})]*(b_.)]^{(p_.)}/((f_.) + (g_.)*(x_)), x_Symbol] := \text{Simp}[(\text{Log}[(e*(f + g*x))/(e*f - d*g)]*(a + b*\text{Log}[c*(d + e*x)^n]))^p/g, x] - \text{Dist}[(b*e^n*p)/g, \text{Int}[(\text{Log}[(e*(f + g*x))/(e*f - d*g)]*(a + b*\text{Log}[c*(d + e*x)^n]))^{(p-1)}/(d + e*x), x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g, n, p\}, x] \&\& \text{NeQ}[e*f - d*g, 0] \&\& \text{IGtQ}[p, 1]$

Rule 2418

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_) + (e_.)*(x_)^{(n_.)})]*(b_.)]^{(p_.)}*(\text{RFx}_), x_Symbol] := \text{With}[\{u = \text{ExpandIntegrand}[(a + b*\text{Log}[c*(d + e*x)^n])^p, \text{RFx}, x]\}, \text{Int}[u, x] /; \text{SumQ}[u]] /; \text{FreeQ}[\{a, b, c, d, e, n\}, x] \&\& \text{RationalFunctionQ}[\text{RFx}, x] \&\& \text{IntegerQ}[p]$

Rule 2433

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_) + (e_.)*(x_)^{(n_.)})]*(b_.)]^{(p_.)}*((f_.) + \text{Log}[(h_.)*((i_.) + (j_.)*(x_)^{(m_.)})*(g_.)]*(k_.) + (l_.)*(x_)^{(r_.)}), x_Symbol] := \text{Dist}[1/e, \text{Subst}[\text{Int}[(k*x)/d]^r*(a + b*\text{Log}[c*x^n])^p*(f + g*\text{Log}[h*(e*i - d*j)/e + (j*x)/e]^m), x], x, d + e*x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g, h, i, j, k, l, n, p, r\}, x] \&\& \text{EqQ}[e*k - d*1, 0]$

Rule 2434

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] := Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n]*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m))]/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :=
Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n]*(f +
g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/(j_.
) + (k_.)*(x_)), x_Symbol] := Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q]^r)/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))/(j_.) + (k
_.)*(x_)), x_Symbol] := Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2523

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] := Simp[x*(a +
b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*
RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, p}, x] && Rat
ionalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^ (n_.)/((d_.) + (e_.)*(x_)), x_Symbol]
:> Simp[(Log[d + e*x]*(a + b*Log[c*RFX^p])^n)/e, x] - Dist[(b*n*p)/e,
Int[(Log[d + e*x]*(a + b*Log[c*RFX^p])^(n - 1)*D[RFX, x])/RFX, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFX, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^ (n_.)*((d_.) + (e_.)*(x_))^(m_.),
x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFX^p])^n)/(e*(m + 1)),
x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*
(a + b*Log[c*RFX^p])^(n - 1)*D[RFX, x])/RFX, x], x], x] /; FreeQ[{a, b, c, d,
e, m, p}, x] && RationalFunctionQ[RFX, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^ (n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFX^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /;
FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFX, x] && RationalFunctionQ[RGx, x]
&& IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_Symbol]
:> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d,
e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; SimplifyIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]]
```

Rubi steps

$$\begin{aligned}
\int \frac{(ag + bgx)^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{(100c + 100dx)^3} dx &= \int \left(\frac{b^3 g^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{1000000d^3} + \frac{(-bc + ad)^3 g^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{1000000d^3(c + dx)^3} \right) dx \\
&= \frac{(b^3 g^3) \int \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2 dx}{1000000d^3} - \frac{(3b^2(bc - ad)g^3) \int \frac{\left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{c+dx} dx}{1000000d^3} \\
&= \frac{b^3 g^3 x \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{1000000d^3} + \frac{(bc - ad)^3 g^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{2000000d^4(c + dx)^2} \\
&= \frac{b^3 g^3 x \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{1000000d^3} + \frac{(bc - ad)^3 g^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{2000000d^4(c + dx)^2} \\
&= \frac{b^3 g^3 x \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{1000000d^3} + \frac{(bc - ad)^3 g^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{2000000d^4(c + dx)^2} \\
&= \frac{b^3 g^3 x \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{1000000d^3} + \frac{(bc - ad)^3 g^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{2000000d^4(c + dx)^2} \\
&= -\frac{B(bc - ad)^3 g^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{2000000d^4(c + dx)^2} + \frac{bB(bc - ad)^2 g^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{200000d^4(c + dx)} \\
&= -\frac{B(bc - ad)^3 g^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{2000000d^4(c + dx)^2} + \frac{bB(bc - ad)^2 g^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{200000d^4(c + dx)} \\
&= -\frac{B(bc - ad)^3 g^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{2000000d^4(c + dx)^2} + \frac{bB(bc - ad)^2 g^3 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{200000d^4(c + dx)} \\
&= \frac{B^2(bc - ad)^3 g^3}{4000000d^4(c + dx)^2} - \frac{9bB^2(bc - ad)^2 g^3}{2000000d^4(c + dx)} - \frac{9b^2 B^2(bc - ad) g^3 \log(a)}{2000000d^4} \\
&= \frac{B^2(bc - ad)^3 g^3}{4000000d^4(c + dx)^2} - \frac{9bB^2(bc - ad)^2 g^3}{2000000d^4(c + dx)} - \frac{9b^2 B^2(bc - ad) g^3 \log(a)}{2000000d^4} \\
&= \frac{B^2(bc - ad)^3 g^3}{4000000d^4(c + dx)^2} - \frac{9bB^2(bc - ad)^2 g^3}{2000000d^4(c + dx)} - \frac{9b^2 B^2(bc - ad) g^3 \log(a)}{2000000d^4}
\end{aligned}$$

Mathematica [B] time = 7.86, size = 6052, normalized size = 9.53

Result too large to show

Antiderivative was successfully verified.

[In] Integrate[((a*g + b*g*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(c*i + d*i*x)^3,x]

[Out] Result too large to show

fricas [F] time = 0.88, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{A^2 b^3 g^3 x^3 + 3 A^2 a b^2 g^3 x^2 + 3 A^2 a^2 b g^3 x + A^2 a^3 g^3 + (B^2 b^3 g^3 x^3 + 3 B^2 a b^2 g^3 x^2 + 3 B^2 a^2 b g^3 x + B^2 a^3 g^3)}{d^3 i^3 x^3 + 3 c d^2 i^3 x^2 + 3 c^2 d i^3 x + c^3 i^3}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^3,x, algorithm="fricas")

[Out] integral((A^2*b^3*g^3*x^3 + 3*A^2*a*b^2*g^3*x^2 + 3*A^2*a^2*b*g^3*x + A^2*a^3*g^3 + (B^2*b^3*g^3*x^3 + 3*B^2*a*b^2*g^3*x^2 + 3*B^2*a^2*b*g^3*x + B^2*a^3*g^3)*log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*B*b^3*g^3*x^3 + 3*A*B*a*b^2*g^3*x^2 + 3*A*B*a^2*b*g^3*x + A*B*a^3*g^3)*log((b*e*x + a*e)/(d*x + c)))/(d^3*i^3*x^3 + 3*c*d^2*i^3*x^2 + 3*c^2*d*i^3*x + c^3*i^3), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^3,x, algorithm="giac")

[Out] Timed out

maple [F] time = 2.15, size = 0, normalized size = 0.00

$$\int \frac{(bgx + ag)^3 \left(B \ln \left(\frac{(bx+a)e}{dx+c} \right) + A \right)^2}{(dix + ci)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] $\int ((b*g*x+a*g)^3*(B*\ln((b*x+a)/(d*x+c)*e)+A)^2/(d*i*x+c*i)^3,x)$

[Out] $\int ((b*g*x+a*g)^3*(B*\ln((b*x+a)/(d*x+c)*e)+A)^2/(d*i*x+c*i)^3,x)$

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{integrate}((b*g*x+a*g)^3*(A+B*\log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^3,x, \text{algorithm}="maxima")$

[Out]
$$\begin{aligned} & -3/2*A*B*a^2*b*g^3*(2*(2*d*x + c)*\log(b*e*x/(d*x + c) + a*e/(d*x + c)))/(d^4 \\ & *i^3*x^2 + 2*c*d^3*i^3*x + c^2*d^2*i^3) - (b*c^2 - 3*a*c*d + 2*(b*c*d - 2*a \\ & *d^2)*x)/((b*c*d^4 - a*d^5)*i^3*x^2 + 2*(b*c^2*d^3 - a*c*d^4)*i^3*x + (b*c^ \\ & 3*d^2 - a*c^2*d^3)*i^3) - 2*(b^2*c - 2*a*b*d)*\log(b*x + a)/((b^2*c^2*d^2 - \\ & 2*a*b*c*d^3 + a^2*d^4)*i^3) + 2*(b^2*c - 2*a*b*d)*\log(d*x + c)/((b^2*c^2*d^ \\ & 2 - 2*a*b*c*d^3 + a^2*d^4)*i^3) - 1/2*A^2*b^3*g^3*((6*c^2*d*x + 5*c^3)/(d^ \\ & 6*i^3*x^2 + 2*c*d^5*i^3*x + c^2*d^4*i^3) - 2*x/(d^3*i^3) + 6*c*\log(d*x + c) \\ & / (d^4*i^3)) + 1/2*A*B*a^3*g^3*((2*b*d*x + 3*b*c - a*d)/((b*c*d^3 - a*d^4)*i \\ & ^3*x^2 + 2*(b*c^2*d^2 - a*c*d^3)*i^3*x + (b*c^3*d - a*c^2*d^2)*i^3) - 2*\log \\ & (b*e*x/(d*x + c) + a*e/(d*x + c))/(d^3*i^3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3) \\ & + 2*b^2*\log(b*x + a)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3) - 2*b^2*\log \\ & (d*x + c)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3) + 3/2*A^2*a*b^2*g^3*((\\ & 4*c*d*x + 3*c^2)/(d^5*i^3*x^2 + 2*c*d^4*i^3*x + c^2*d^3*i^3) + 2*\log(d*x + \\ & c)/(d^3*i^3) - 3/2*(2*d*x + c)*A^2*a^2*b*g^3/(d^4*i^3*x^2 + 2*c*d^3*i^3*x \\ & + c^2*d^2*i^3) - 1/2*A^2*a^3*g^3/(d^3*i^3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3) \\ & - 1/2*(2*((b^3*c*d^2*g^3 - a*b^2*d^3*g^3)*B^2*x^2 + 2*(b^3*c^2*d*g^3 - a*b^ \\ & 2*c*d^2*g^3)*B^2*x + (b^3*c^3*g^3 - a*b^2*c^2*d*g^3)*B^2)*\log(d*x + c)^3 - \\ & (2*B^2*b^3*d^3*g^3*x^3 + 4*B^2*b^3*c*d^2*g^3*x^2 - 2*(2*b^3*c^2*d*g^3 - 6*a \\ & *b^2*c*d^2*g^3 + 3*a^2*b*d^3*g^3)*B^2*x - (5*b^3*c^3*g^3 - 9*a*b^2*c^2*d*g^ \\ & 3 + 3*a^2*b*c*d^2*g^3 + a^3*d^3*g^3)*B^2)*\log(d*x + c)^2)/(d^6*i^3*x^2 + 2* \\ & c*d^5*i^3*x + c^2*d^4*i^3) - \text{integrate}(-(3*B^2*a^2*b*d^3*g^3*x*\log(e)^2 + B \\ & ^2*a^3*d^3*g^3*\log(e)^2 + (B^2*b^3*d^3*g^3*\log(e)^2 + 2*A*B*b^3*d^3*g^3*\log \\ & (e))*x^3 + 3*(B^2*a*b^2*d^3*g^3*\log(e)^2 + 2*A*B*a*b^2*d^3*g^3*\log(e))*x^2 \\ & + (B^2*b^3*d^3*g^3*x^3 + 3*B^2*a*b^2*d^3*g^3*x^2 + 3*B^2*a^2*b*d^3*g^3*x + \\ & B^2*a^3*d^3*g^3)*\log(b*x + a)^2 + 2*(3*B^2*a^2*b*d^3*g^3*x*\log(e) + B^2*a^3 \\ & *d^3*g^3*\log(e) + (B^2*b^3*d^3*g^3*\log(e) + A*B*b^3*d^3*g^3)*x^3 + 3*(B^2*a \\ & *b^2*d^3*g^3*\log(e) + A*B*a*b^2*d^3*g^3)*x^2)*\log(b*x + a) + (2*(2*b^3*c^2* \\ & d*g^3 - 6*a*b^2*c*d^2*g^3 - 3*(g^3*\log(e) - g^3)*a^2*b*d^3)*B^2*x - 2*(A*B* \\ & b^3*d^3*g^3 + (g^3*\log(e) + g^3)*B^2*b^3*d^3)*x^3 + (5*b^3*c^3*g^3 - 9*a*b^ \\ & 2*c^2*d*g^3 + 3*a^2*b*c*d^2*g^3 - (2*g^3*\log(e) - g^3)*a^3*d^3)*B^2 - 2*(3* \\ & A*B*a*b^2*d^3*g^3 + (3*a*b^2*d^3*g^3*\log(e) + 2*b^3*c*d^2*g^3)*B^2)*x^2 - 2 \\ & *(B^2*b^3*d^3*g^3*x^3 + 3*B^2*a*b^2*d^3*g^3*x^2 + 3*B^2*a^2*b*d^3*g^3*x + B \\ & ^2*a^3*d^3*g^3)*\log(b*x + a))*\log(d*x + c))/(d^6*i^3*x^3 + 3*c*d^5*i^3*x^2 \\ & + 3*c^2*d^4*i^3*x + c^3*d^3*i^3), x) \end{aligned}$$

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ag + bgx)^3 \left(A + B \ln \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{(ci + dix)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((a*g + b*g*x)^3*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(c*i + d*i*x)^3,x)

[Out] int(((a*g + b*g*x)^3*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(c*i + d*i*x)^3, x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)**3*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(d*i*x+c*i)**3,x)

[Out] Timed out

$$3.101 \quad \int \frac{(ag+bgx)^2 \left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right) \right)^2}{(ci+dix)^3} dx$$

Optimal. Leaf size=410

$$\frac{2b^2Bg^2\text{Li}_2\left(\frac{d(a+bx)}{b(c+dx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{d^3i^3} - \frac{b^2g^2\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{d^3i^3} - \frac{bg^2(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{d^2i^3(c+dx)}$$

[Out] $-1/4*B^2*g^2*(b*x+a)^2/d/i^3/(d*x+c)^2+2*A*b*B*g^2*(b*x+a)/d^2/i^3/(d*x+c)-2*b*B^2*g^2*(b*x+a)/d^2/i^3/(d*x+c)+2*b*B^2*g^2*(b*x+a)*\ln(e*(b*x+a)/(d*x+c))/d^2/i^3/(d*x+c)+1/2*B*g^2*(b*x+a)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/d/i^3/(d*x+c)^2-1/2*g^2*(b*x+a)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/d/i^3/(d*x+c)^2-b*g^2*(b*x+a)*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/d^2/i^3/(d*x+c)-b^2*g^2*\ln((-a*d+b*c)/b/(d*x+c))*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/d^3/i^3-2*b^2*B*g^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))*\text{polylog}(2,d*(b*x+a)/b/(d*x+c))/d^3/i^3+2*b^2*B^2*g^2*\text{polylog}(3,d*(b*x+a)/b/(d*x+c))/d^3/i^3$

Rubi [B] time = 5.27, antiderivative size = 1328, normalized size of antiderivative = 3.24, number of steps used = 102, number of rules used = 25, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}} = 0.595$, Rules used = {2528, 2525, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 44, 6688, 6742, 2500, 2433, 2375, 2317, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

$$\frac{b^2B^2g^2\log^3(c+dx)}{3d^3i^3} - \frac{b^2B^2g^2\log(a+bx)\log^2(c+dx)}{d^3i^3} + \frac{b^2B^2g^2\log\left(\frac{e(a+bx)}{c+dx}\right)\log^2(c+dx)}{d^3i^3} + \frac{3b^2B^2g^2\log^2(c+dx)}{2d^3i^3}$$

Antiderivative was successfully verified.

[In] $\text{Int}[(a*g + b*g*x)^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]])^2)/(c*i + d*i*x)^3, x]$

[Out] $-(B^2*(b*c - a*d)^2*g^2)/(4*d^3*i^3*(c + d*x)^2) + (5*b*B^2*(b*c - a*d)*g^2)/(2*d^3*i^3*(c + d*x)) + (5*b^2*B^2*g^2*\text{Log}[a + b*x])/(2*d^3*i^3) + (3*b^2*B^2*g^2*\text{Log}[a + b*x]^2)/(2*d^3*i^3) - (b^2*B^2*g^2*\text{Log}[a + b*x]*\text{Log}[(c + d*x)^{-1}])^2/(d^3*i^3) + (b^2*B^2*g^2*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[(c + d*x)^{-1}])^2/(d^3*i^3) + (B*(b*c - a*d)^2*g^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]))/(2*d^3*i^3*(c + d*x)^2) - (3*b*B*(b*c - a*d)*g^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]))/(d^3*i^3*(c + d*x)) - (3*b^2*B*g^2*\text{Log}[a + b*x]*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]))/(d^3*i^3) - ((b*c - a*d)^2*g^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]])^2)/(2*d^3*i^3*(c + d*x)^2) + (2*b*(b*c - a*d)*g^2*(A + B*\text{Log}[(e*(a + b*x))/(c + d*x]])^2)/(d^3*i^3*(c + d*x)) - (5*b^2*B^2*g^2*\text{Log}[c + d*x])/(2*d^3*i^3) - (b^2*B^2*g^2*\text{Log}[a + b*x]^2*\text{Log}[c + d*x])/(d^3*i^3) - (2*A*b^2*B*g^2*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c + d*x])$

$$\begin{aligned} & x]/(d^3 i^3) - (3 b^2 B^2 g^2 \text{Log}[-((d(a + b x))/(b c - a d))] * \text{Log}[c + d x] \\ & x]/(d^3 i^3) - (2 b^2 B^2 g^2 \text{Log}[a + b x] * \text{Log}[(c + d x)^{-1}] * \text{Log}[c + d x] \\ &])/(d^3 i^3) + (2 b^2 B^2 g^2 \text{Log}[-((d(a + b x))/(b c - a d))] * (\text{Log}[a + b x] \\ & + \text{Log}[(c + d x)^{-1}] - \text{Log}[(e(a + b x))/(c + d x)]) * \text{Log}[c + d x])/(d^3 \\ & i^3) + (3 b^2 B^2 g^2 (A + B \text{Log}[(e(a + b x))/(c + d x)]) * \text{Log}[c + d x])/(d^3 \\ & i^3) + (b^2 g^2 (A + B \text{Log}[(e(a + b x))/(c + d x)])^2 * \text{Log}[c + d x])/(d^3 \\ & i^3) + (A b^2 B g^2 \text{Log}[c + d x]^2)/(d^3 i^3) + (3 b^2 B^2 g^2 \text{Log}[c + d x] \\ &]^2)/(2 d^3 i^3) - (b^2 B^2 g^2 \text{Log}[a + b x] * \text{Log}[c + d x]^2)/(d^3 i^3) + (b \\ & ^2 B^2 g^2 \text{Log}[(e(a + b x))/(c + d x)] * \text{Log}[c + d x]^2)/(d^3 i^3) + (b^2 B^2 \\ & g^2 \text{Log}[c + d x]^3)/(3 d^3 i^3) - (3 b^2 B^2 g^2 \text{Log}[a + b x] * \text{Log}[(b(c + d \\ & x))/(b c - a d)])/(d^3 i^3) + (b^2 B^2 g^2 \text{Log}[a + b x]^2 * \text{Log}[(b(c + d \\ & x))/(b c - a d)])/(d^3 i^3) - (3 b^2 B^2 g^2 \text{PolyLog}[2, -((d(a + b x))/(b c \\ & - a d))])/(d^3 i^3) + (2 b^2 B^2 g^2 \text{Log}[a + b x] * \text{PolyLog}[2, -((d(a + b x) \\ & x))/(b c - a d))])/(d^3 i^3) - (2 A b^2 B g^2 \text{PolyLog}[2, (b(c + d x))/(b c \\ & - a d)])/(d^3 i^3) - (3 b^2 B^2 g^2 \text{PolyLog}[2, (b(c + d x))/(b c - a d)]) \\ & / (d^3 i^3) - (2 b^2 B^2 g^2 \text{Log}[(c + d x)^{-1}] * \text{PolyLog}[2, (b(c + d x))/(b \\ & c - a d)])/(d^3 i^3) + (2 b^2 B^2 g^2 (\text{Log}[a + b x] + \text{Log}[(c + d x)^{-1}] \\ & - \text{Log}[(e(a + b x))/(c + d x)]) * \text{PolyLog}[2, (b(c + d x))/(b c - a d)])/(d^3 \\ & i^3) - (2 b^2 B^2 g^2 \text{PolyLog}[3, -((d(a + b x))/(b c - a d))])/(d^3 i^3) \\ & - (2 b^2 B^2 g^2 \text{PolyLog}[3, (b(c + d x))/(b c - a d)])/(d^3 i^3) \end{aligned}$$

Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 30

```
Int[(x_)^(m_), x_Symbol] := Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] := Dist[1/(
```

b^n), Subst[Int[x^p, x], x, a + b*Log[c*xⁿ], x] /; FreeQ[{a, b, c, n, p}, x]

Rule 2317

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*xⁿ])^p]/e, x] - Dist[(b*n*p)/e, Int[(Log[1 + (e*x)/d]*(a + b*Log[c*xⁿ])^(p - 1)]/x, x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]

Rule 2374

Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*(a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.))/(x_), x_Symbol] := -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*xⁿ])^p]/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*xⁿ])^(p - 1)]/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0] && EqQ[d*e, 1]

Rule 2375

Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]^(r_.))*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.))/(x_), x_Symbol] := Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[c*xⁿ])^(p + 1)]/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m - 1)*(a + b*Log[c*xⁿ])^(p + 1)]/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d, e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.)]*(b_.))^(p_.))*((f_.) + (g_.)*(x_)^(q_.)), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*xⁿ])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*xⁿ)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] := Dist[1/e, Subst[Int[(k*x)/d]^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(e*i - d*j)/e + (j*x)/e]^m), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] := Simp[Log[x]*(a + b*Log[c*(d + e*x)^n]*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Log[x]*(a + b*Log[c*(d + e*x)^n])]/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x]*(f + g*Log[h*(i + j*x)^m))]/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] := Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-(e*k - d*l)/l) + (e*x)/l]^n]*(f + g*Log[h*(-(j*k - i*l)/l) + (j*x)/l]^m), x], x, k + l*x], x] /; FreeQ[{a,
```


b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]

Rule 2499

Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]*(s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r)/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dist[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x), x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r}, x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]

Rule 2500

Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]*(s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))/((j_.) + (k_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r] - Log[(a + b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x), x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ[b*c - a*d, 0]

Rule 2524

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.))/((d_.) + (e_.)*(x_)), x_Symbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]

Rule 2525

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.))*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]

Rule 2528

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x]

onQ[RGx, x] && IGtQ[n, 0]

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_Symbol]
:> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d, e, n, p}, x]
&& EqQ[b*d, a*e]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; SimplifyIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]]
```

Rubi steps

$$\begin{aligned}
\int \frac{(ag + bgx)^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{(101c + 101dx)^3} dx &= \int \left(\frac{(-bc + ad)^2 g^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{1030301d^2(c + dx)^3} - \frac{2b(bc - ad)g^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{1030301d^2(c + dx)} \right) dx \\
&= \frac{(b^2 g^2) \int \frac{\left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{c+dx} dx}{1030301d^2} - \frac{(2b(bc - ad)g^2) \int \frac{\left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{(c+dx)^2} dx}{1030301d^2} \\
&= -\frac{(bc - ad)^2 g^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{2060602d^3(c + dx)^2} + \frac{2b(bc - ad)g^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{1030301d^3(c + dx)} \\
&= -\frac{(bc - ad)^2 g^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{2060602d^3(c + dx)^2} + \frac{2b(bc - ad)g^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{1030301d^3(c + dx)} \\
&= -\frac{(bc - ad)^2 g^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{2060602d^3(c + dx)^2} + \frac{2b(bc - ad)g^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{1030301d^3(c + dx)} \\
&= -\frac{(bc - ad)^2 g^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{2060602d^3(c + dx)^2} + \frac{2b(bc - ad)g^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{1030301d^3(c + dx)} \\
&= \frac{B(bc - ad)^2 g^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{2060602d^3(c + dx)^2} - \frac{3bB(bc - ad)g^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{1030301d^3(c + dx)} \\
&= \frac{B(bc - ad)^2 g^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{2060602d^3(c + dx)^2} - \frac{3bB(bc - ad)g^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{1030301d^3(c + dx)} \\
&= \frac{B(bc - ad)^2 g^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{2060602d^3(c + dx)^2} - \frac{3bB(bc - ad)g^2 \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{1030301d^3(c + dx)} \\
&= -\frac{B^2(bc - ad)^2 g^2}{4121204d^3(c + dx)^2} + \frac{5bB^2(bc - ad)g^2}{2060602d^3(c + dx)} + \frac{5b^2 B^2 g^2 \log(a + bx)}{2060602d^3} \\
&= -\frac{B^2(bc - ad)^2 g^2}{4121204d^3(c + dx)^2} + \frac{5bB^2(bc - ad)g^2}{2060602d^3(c + dx)} + \frac{5b^2 B^2 g^2 \log(a + bx)}{2060602d^3} \\
&= -\frac{B^2(bc - ad)^2 g^2}{4121204d^3(c + dx)^2} + \frac{5bB^2(bc - ad)g^2}{2060602d^3(c + dx)} + \frac{5b^2 B^2 g^2 \log(a + bx)}{2060602d^3}
\end{aligned}$$

Mathematica [B] time = 5.11, size = 2950, normalized size = 7.20

Result too large to show

Antiderivative was successfully verified.

[In] Integrate[((a*g + b*g*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(c*i + d*i*x)^3,x]

[Out] (g^2*((-2*A^2*(b*c - a*d)^2)/(c + d*x)^2 + (8*A^2*b*(b*c - a*d))/(c + d*x) + 4*A^2*b^2*Log[c + d*x] - (4*a*A*b*B*d*(-(b^2*c^3) + 4*a*b*c^2*d - 3*a^2*c*d^2 - 2*b^2*c^2*d*x + 6*a*b*c*d^2*x - 4*a^2*d^3*x - 2*b*(b*c - 2*a*d)*(c + d*x)^2*Log[a + b*x] + 2*(b*c - a*d)^2*(c + 2*d*x)*Log[(e*(a + b*x))/(c + d*x)] + 2*b^2*c^3*Log[c + d*x] - 4*a*b*c^2*d*Log[c + d*x] + 4*b^2*c^2*d*x*Log[c + d*x] - 8*a*b*c*d^2*x*Log[c + d*x] + 2*b^2*c*d^2*x^2*Log[c + d*x] - 4*a*b*d^3*x^2*Log[c + d*x]))/((b*c - a*d)^2*(c + d*x)^2 - (2*a^2*A*B*d^2*(-(b^2*c^2) + 4*a*b*c*d - a^2*d^2 + 2*b^2*c*d*x + 2*a*b*d^2*x + 2*b^2*d^2*x^2 - 2*b^2*(c + d*x)^2*Log[a/b + x] + 2*(b*c - a*d)^2*Log[(e*(a + b*x))/(c + d*x)] + 2*b^2*c^2*Log[(b*(c + d*x))/(b*c - a*d)] + 4*b^2*c*d*x*Log[(b*(c + d*x))/(b*c - a*d)] + 2*b^2*d^2*x^2*Log[(b*(c + d*x))/(b*c - a*d)]))/((b*c - a*d)^2*(c + d*x)^2 + 2*A*b^2*B*(-2*Log[c/d + x]^2 - (8*c*(1 + Log[c/d + x]))/(c + d*x) + (c^2*(1 + 2*Log[c/d + x]))/(c + d*x)^2 + 8*c*(Log[a/b + x]/(c + d*x) + (b*(Log[a + b*x] - Log[c + d*x]))/(-(b*c) + a*d)) + 2*(-Log[a/b + x] + Log[c/d + x] + Log[(e*(a + b*x))/(c + d*x)])*(c*(3*c + 4*d*x))/(c + d*x)^2 + 2*Log[c + d*x]) + (2*c^2*(-Log[a/b + x] + (b*(c + d*x)*(b*c - a*d + b*(c + d*x)*Log[a + b*x] - b*(c + d*x)*Log[c + d*x]))/(b*c - a*d)^2)/(c + d*x)^2 + 4*(Log[a/b + x]*Log[(b*(c + d*x))/(b*c - a*d)] + PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)])) + (2*a*b*B^2*d*(2*c*Log[(e*(a + b*x))/(c + d*x)]^2 - 4*(c + d*x)*Log[(e*(a + b*x))/(c + d*x)]^2 - (4*(c + d*x)*(2*b*c - 2*a*d + 2*b*(c + d*x)*Log[a + b*x] - 2*(b*c - a*d)*Log[(e*(a + b*x))/(c + d*x)] - 2*b*(c + d*x)*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)] - 2*b*(c + d*x)*Log[c + d*x] - 2*b*(c + d*x)*Log[(e*(a + b*x))/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] + b*(c + d*x)*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)] + b*(c + d*x)*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b*c) + a*d)] + Log[(b*c - a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(b*c - a*d) + (c*((b*c - a*d)^2 + 2*b*(b*c - a*d)*(c + d*x) + 2*b^2*(c + d*x)^2*Log[a + b*x] - 2*(b*c - a*d)^2*Log[(e*(a + b*x))/(c + d*x)] - 4*b*(b*c - a*d)*(c + d*x)*Log[(e*(a + b*x))/(c + d*x)] - 4*b^2*(c + d*x)^2*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)] - 2*b^2*(c + d*x)^2*Log[c + d*x] + 4*b*(c + d*x)*(b*c - a*d + b*(c + d*x)*Log[a + b*x] - b*(c + d*x)*Log[c + d*x]) - 4*b^2*(c + d*x)^2*Log[(e*(a + b*x))/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] + 2*b^2*(c + d*x)^2*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)] + 2*b^2*(c + d*x)^2*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b*c) + a*d)]

+ Log[(b*c - a*d)/(b*c + b*d*x))] - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(b*c - a*d)^2))/(c + d*x)^2 - (a^2*B^2*d^2*((b*c - a*d)^2 + 2*b*(b*c - a*d)*(c + d*x) + 2*b^2*(c + d*x)^2*Log[a + b*x] - 2*(b*c - a*d)^2*Log[(e*(a + b*x))/(c + d*x)] - 4*b*(b*c - a*d)*(c + d*x)*Log[(e*(a + b*x))/(c + d*x)] - 4*b^2*(c + d*x)^2*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)] + 2*(b*c - a*d)^2*Log[(e*(a + b*x))/(c + d*x)]^2 - 2*b^2*(c + d*x)^2*Log[c + d*x] + 4*b*(c + d*x)*(b*c - a*d + b*(c + d*x)*Log[a + b*x] - b*(c + d*x)*Log[c + d*x]) - 4*b^2*(c + d*x)^2*Log[(e*(a + b*x))/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] + 2*b^2*(c + d*x)^2*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)])) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)] + 2*b^2*(c + d*x)^2*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b*c) + a*d)] + Log[(b*c - a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/((b*c - a*d)^2*(c + d*x)^2 - 2*b^2*B^2*((c^2*Log[(e*(a + b*x))/(c + d*x)]^2)/(c + d*x) + 2*Log[(e*(a + b*x))/(c + d*x)]^2*Log[(b*c - a*d)/(b*c + b*d*x)] + 4*Log[(e*(a + b*x))/(c + d*x)]*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))]) - (4*c*(2*b*c - 2*a*d + 2*b*(c + d*x)*Log[a + b*x] - 2*(b*c - a*d)*Log[(e*(a + b*x))/(c + d*x)] - 2*b*(c + d*x)*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)] - 2*b*(c + d*x)*Log[c + d*x] - 2*b*(c + d*x)*Log[(e*(a + b*x))/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] + b*(c + d*x)*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)])) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)] + b*(c + d*x)*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b*c) + a*d)] + Log[(b*c - a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/((b*c - a*d)*(c + d*x)) + (c^2*((b*c - a*d)^2 + 2*b*(b*c - a*d)*(c + d*x) + 2*b^2*(c + d*x)^2*Log[a + b*x] - 2*(b*c - a*d)^2*Log[(e*(a + b*x))/(c + d*x)] - 4*b*(b*c - a*d)*(c + d*x)*Log[(e*(a + b*x))/(c + d*x)] - 4*b^2*(c + d*x)^2*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)] - 2*b^2*(c + d*x)^2*Log[c + d*x] + 4*b*(c + d*x)*(b*c - a*d + b*(c + d*x)*Log[a + b*x] - b*(c + d*x)*Log[c + d*x]) - 4*b^2*(c + d*x)^2*Log[(e*(a + b*x))/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] + 2*b^2*(c + d*x)^2*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)])) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)] + 2*b^2*(c + d*x)^2*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b*c) + a*d)] + Log[(b*c - a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(2*(b*c - a*d)^2*(c + d*x)^2 - 4*PolyLog[3, (d*(a + b*x))/(b*(c + d*x))])))/(4*d^3*i^3)

fricas [F] time = 1.26, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{A^2 b^2 g^2 x^2 + 2 A^2 a b g^2 x + A^2 a^2 g^2 + (B^2 b^2 g^2 x^2 + 2 B^2 a b g^2 x + B^2 a^2 g^2) \log\left(\frac{bex+ae}{dx+c}\right)^2 + 2 (A B b^2 g^2 x^2 + \dots)}{d^3 i^3 x^3 + 3 c d^2 i^3 x^2 + 3 c^2 d i^3 x + c^3 i^3} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^3,x, alg

orithm="fricas")

[Out] integral((A^2*b^2*g^2*x^2 + 2*A^2*a*b*g^2*x + A^2*a^2*g^2 + (B^2*b^2*g^2*x^2 + 2*B^2*a*b*g^2*x + B^2*a^2*g^2)*log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*B*b^2*g^2*x^2 + 2*A*B*a*b*g^2*x + A*B*a^2*g^2)*log((b*e*x + a*e)/(d*x + c)))/(d^3*i^3*x^3 + 3*c*d^2*i^3*x^2 + 3*c^2*d*i^3*x + c^3*i^3), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^3,x, algorithm="giac")

[Out] Timed out

maple [F] time = 1.88, size = 0, normalized size = 0.00

$$\int \frac{(bgx + ag)^2 \left(B \ln \left(\frac{bx+a}{dx+c} \right) + A \right)^2}{(dix + ci)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(d*i*x+c*i)^3,x)

[Out] int((b*g*x+a*g)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(d*i*x+c*i)^3,x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^3,x, algorithm="maxima")

[Out] -A*B*a*b*g^2*(2*(2*d*x + c)*log(b*e*x/(d*x + c) + a*e/(d*x + c)))/(d^4*i^3*x^2 + 2*c*d^3*i^3*x + c^2*d^2*i^3) - (b*c^2 - 3*a*c*d + 2*(b*c*d - 2*a*d^2)*x)/((b*c*d^4 - a*d^5)*i^3*x^2 + 2*(b*c^2*d^3 - a*c*d^4)*i^3*x + (b*c^3*d^2 - a*c^2*d^3)*i^3) - 2*(b^2*c - 2*a*b*d)*log(b*x + a)/((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)*i^3) + 2*(b^2*c - 2*a*b*d)*log(d*x + c)/((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)*i^3) + 1/2*A*B*a^2*g^2*((2*b*d*x + 3*b*c - a*d)/((b*c*d^3 - a*d^4)*i^3*x^2 + 2*(b*c^2*d^2 - a*c*d^3)*i^3*x + (b*c^3*d - a*c^2*d^2)*i^3) - 2*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(d^3*i^3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3) + 2*b^2*log(b*x + a)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3)

$$\begin{aligned}
 &^3) - 2*b^2*log(d*x + c)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3)) + 1/2*A \\
 &^2*b^2*g^2*((4*c*d*x + 3*c^2)/(d^5*i^3*x^2 + 2*c*d^4*i^3*x + c^2*d^3*i^3) + \\
 &2*log(d*x + c)/(d^3*i^3)) - (2*d*x + c)*A^2*a*b*g^2/(d^4*i^3*x^2 + 2*c*d^3 \\
 &*i^3*x + c^2*d^2*i^3) - 1/2*A^2*a^2*g^2/(d^3*i^3*x^2 + 2*c*d^2*i^3*x + c^2* \\
 &d*i^3) + 1/6*(2*(B^2*b^2*d^2*g^2*x^2 + 2*B^2*b^2*c*d*g^2*x + B^2*b^2*c^2*g^ \\
 &2)*log(d*x + c)^3 + 3*(4*(b^2*c*d*g^2 - a*b*d^2*g^2)*B^2*x + (3*b^2*c^2*g^2 \\
 &- 2*a*b*c*d*g^2 - a^2*d^2*g^2)*B^2)*log(d*x + c)^2)/(d^5*i^3*x^2 + 2*c*d^4 \\
 &*i^3*x + c^2*d^3*i^3) - integrate(-(2*B^2*a*b*d^2*g^2*x*log(e)^2 + B^2*a^2*d^ \\
 &2*g^2*log(e)^2 + (B^2*b^2*d^2*g^2*log(e)^2 + 2*A*B*b^2*d^2*g^2*log(e))*x^ \\
 &2 + (B^2*b^2*d^2*g^2*x^2 + 2*B^2*a*b*d^2*g^2*x + B^2*a^2*d^2*g^2)*log(b*x + \\
 &a)^2 + 2*(2*B^2*a*b*d^2*g^2*x*log(e) + B^2*a^2*d^2*g^2*log(e) + (B^2*b^2*d \\
 &^2*g^2*log(e) + A*B*b^2*d^2*g^2)*x^2)*log(b*x + a) - (4*(b^2*c*d*g^2 + (g^2 \\
 &*log(e) - g^2)*a*b*d^2)*B^2*x + (3*b^2*c^2*g^2 - 2*a*b*c*d*g^2 + (2*g^2*log \\
 &(e) - g^2)*a^2*d^2)*B^2 + 2*(B^2*b^2*d^2*g^2*log(e) + A*B*b^2*d^2*g^2)*x^2 \\
 &+ 2*(B^2*b^2*d^2*g^2*x^2 + 2*B^2*a*b*d^2*g^2*x + B^2*a^2*d^2*g^2)*log(b*x + \\
 &a))*log(d*x + c))/(d^5*i^3*x^3 + 3*c*d^4*i^3*x^2 + 3*c^2*d^3*i^3*x + c^3*d \\
 &^2*i^3), x)
 \end{aligned}$$

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ag + bgx)^2 \left(A + B \ln \left(\frac{e^{(a+bx)}}{c+dx} \right) \right)^2}{(ci + dix)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((a*g + b*g*x)^2*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(c*i + d*i*x)^3, x)

[Out] int(((a*g + b*g*x)^2*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(c*i + d*i*x)^3, x)

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$g^2 \left(\int \frac{A^2 a^2}{c^3 + 3c^2 dx + 3cd^2 x^2 + d^3 x^3} dx + \int \frac{A^2 b^2 x^2}{c^3 + 3c^2 dx + 3cd^2 x^2 + d^3 x^3} dx + \int \frac{B^2 a^2 \log \left(\frac{ae}{c+dx} + \frac{bex}{c+dx} \right)^2}{c^3 + 3c^2 dx + 3cd^2 x^2 + d^3 x^3} dx + \int \frac{2ABa^2 \log \left(\frac{ae}{c+dx} + \frac{bex}{c+dx} \right)}{c^3 + 3c^2 dx + 3cd^2 x^2 + d^3 x^3} dx + \int \right.$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)**2*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(d*i*x+c*i)**3, x)

[Out] g**2*(Integral(A**2*a**2/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x) + Integral(A**2*b**2*x**2/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x) + Integral(B**2*a**2*log(a*e/(c + d*x) + b*e*x/(c + d*x))**2/(c**3 + 3

```

*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x) + Integral(2*A*B*a**2*log(a*e/(c
+ d*x) + b*e*x/(c + d*x))/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3),
x) + Integral(2*A**2*a*b*x/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3)
, x) + Integral(B**2*b**2*x**2*log(a*e/(c + d*x) + b*e*x/(c + d*x))**2/(c**
3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x) + Integral(2*A*B*b**2*x**2*
log(a*e/(c + d*x) + b*e*x/(c + d*x))/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d
**3*x**3), x) + Integral(2*B**2*a*b*x*log(a*e/(c + d*x) + b*e*x/(c + d*x))*
**2/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x) + Integral(4*A*B*a*b
*x*log(a*e/(c + d*x) + b*e*x/(c + d*x))/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2
+ d**3*x**3), x))/i**3

```


$$3.102 \quad \int \frac{(ag+bgx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ci+dx)^3} dx$$

Optimal. Leaf size=141

$$\frac{g(a+bx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{2i^3(c+dx)^2(bc-ad)} - \frac{Bg(a+bx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2i^3(c+dx)^2(bc-ad)} + \frac{B^2g(a+bx)^2}{4i^3(c+dx)^2(bc-ad)}$$

[Out] $1/4*B^2*g*(b*x+a)^2/(-a*d+b*c)/i^3/(d*x+c)^2-1/2*B*g*(b*x+a)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)/i^3/(d*x+c)^2+1/2*g*(b*x+a)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/(-a*d+b*c)/i^3/(d*x+c)^2$

Rubi [C] time = 1.96, antiderivative size = 634, normalized size of antiderivative = 4.50, number of steps used = 58, number of rules used = 11, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.275$, Rules used = {2528, 2525, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 44}

$$\frac{b^2B^2g\text{PolyLog}\left(2, -\frac{d(a+bx)}{bc-ad}\right)}{d^2i^3(bc-ad)} + \frac{b^2B^2g\text{PolyLog}\left(2, \frac{b(c+dx)}{bc-ad}\right)}{d^2i^3(bc-ad)} + \frac{b^2Bg\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{d^2i^3(bc-ad)} - \frac{b^2Bg\log(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{d^2i^3(bc-ad)}$$

Antiderivative was successfully verified.

[In] Int[((a*g + b*g*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(c*i + d*i*x)^3, x]

[Out] $(B^2*(b*c - a*d)*g)/(4*d^2*i^3*(c + d*x)^2) - (b*B^2*g)/(2*d^2*i^3*(c + d*x)) - (b^2*B^2*g*Log[a + b*x])/(2*d^2*(b*c - a*d)*i^3) - (b^2*B^2*g*Log[a + b*x]^2)/(2*d^2*(b*c - a*d)*i^3) - (B*(b*c - a*d)*g*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(2*d^2*i^3*(c + d*x)^2) + (b*B*g*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(d^2*i^3*(c + d*x)) + (b^2*B*g*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(d^2*(b*c - a*d)*i^3) + ((b*c - a*d)*g*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(2*d^2*i^3*(c + d*x)^2) - (b*g*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(d^2*i^3*(c + d*x)) + (b^2*B^2*g*Log[c + d*x])/(2*d^2*(b*c - a*d)*i^3) + (b^2*B^2*g*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(d^2*(b*c - a*d)*i^3) - (b^2*B*g*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/(d^2*(b*c - a*d)*i^3) - (b^2*B^2*g*Log[c + d*x]^2)/(2*d^2*(b*c - a*d)*i^3) + (b^2*B^2*g*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)]/(d^2*(b*c - a*d)*i^3) + (b^2*B^2*g*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(d^2*(b*c - a*d)*i^3) + (b^2*B^2*g*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]/(d^2*(b*c - a*d)*i^3)$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 44

Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])

Rule 2301

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2418

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},

```
Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFX, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFX^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFX^p])^(n - 1)*D[RFX, x])/RFX, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFX, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFX^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFX^p])^(n - 1)*D[RFX, x])/RFX, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFX, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*RFX^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFX, x] && RationalFunci
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(ag + bgx) \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{(102c + 102dx)^3} dx &= \int \left(\frac{(-bc + ad)g \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{1061208d(c + dx)^3} + \frac{bg \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{1061208d(c + dx)^2} \right) dx \\
&= \frac{(bg) \int \frac{\left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{(c+dx)^2} dx}{1061208d} - \frac{((bc - ad)g) \int \frac{\left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{(c+dx)^3} dx}{1061208d} \\
&= \frac{(bc - ad)g \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{2122416d^2(c + dx)^2} - \frac{bg \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{1061208d^2(c + dx)} + \frac{(bBg)}{2122416d^2(c + dx)^2} \\
&= \frac{(bc - ad)g \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{2122416d^2(c + dx)^2} - \frac{bg \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{1061208d^2(c + dx)} + \frac{(bB(bc - ad)g)}{2122416d^2(c + dx)^2} \\
&= \frac{(bc - ad)g \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{2122416d^2(c + dx)^2} - \frac{bg \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{1061208d^2(c + dx)} + \frac{(bB(bc - ad)g)}{2122416d^2(c + dx)^2} \\
&= \frac{(bc - ad)g \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{2122416d^2(c + dx)^2} - \frac{bg \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)^2}{1061208d^2(c + dx)} + \frac{(bBg)}{2122416d^2(c + dx)^2} \\
&= -\frac{B(bc - ad)g \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{2122416d^2(c + dx)^2} + \frac{bBg \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{1061208d^2(c + dx)} + \frac{b^2B}{2122416d^2(c + dx)^2} \\
&= -\frac{B(bc - ad)g \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{2122416d^2(c + dx)^2} + \frac{bBg \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{1061208d^2(c + dx)} + \frac{b^2B}{2122416d^2(c + dx)^2} \\
&= -\frac{B(bc - ad)g \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{2122416d^2(c + dx)^2} + \frac{bBg \left(A + B \log \left(\frac{e(a+bx)}{c+dx} \right) \right)}{1061208d^2(c + dx)} + \frac{b^2B}{2122416d^2(c + dx)^2} \\
&= \frac{B^2(bc - ad)g}{4244832d^2(c + dx)^2} - \frac{bB^2g}{2122416d^2(c + dx)} - \frac{b^2B^2g \log(a + bx)}{2122416d^2(bc - ad)} - \frac{B^2}{2122416d^2(c + dx)^2} \\
&= \frac{B^2(bc - ad)g}{4244832d^2(c + dx)^2} - \frac{bB^2g}{2122416d^2(c + dx)} - \frac{b^2B^2g \log(a + bx)}{2122416d^2(bc - ad)} - \frac{B^2}{2122416d^2(c + dx)^2} \\
&= \frac{B^2(bc - ad)g}{4244832d^2(c + dx)^2} - \frac{bB^2g}{2122416d^2(c + dx)} - \frac{b^2B^2g \log(a + bx)}{2122416d^2(bc - ad)} - \frac{b^2}{2122416d^2(c + dx)^2} \\
&= \frac{B^2(bc - ad)g}{4244832d^2(c + dx)^2} - \frac{bB^2g}{2122416d^2(c + dx)} - \frac{b^2B^2g \log(a + bx)}{2122416d^2(bc - ad)} - \frac{b^2}{2122416d^2(c + dx)^2}
\end{aligned}$$

Mathematica [C] time = 0.91, size = 767, normalized size = 5.44

$$g \left(-B \left(4b^2(c + dx)^2 \log(a + bx) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right) - 4b^2(c + dx)^2 \log(c + dx) \left(B \log \left(\frac{e(a+bx)}{c+dx} \right) + A \right) + 2(bc - \right.$$

Antiderivative was successfully verified.

[In] Integrate[((a*g + b*g*x)*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2)/(c*i + d*i*x)^3, x]

[Out] (g*(2*(b*c - a*d)^2*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2 - 4*b*(b*c - a*d)*(c + d*x)*(A + B*Log[(e*(a + b*x))/(c + d*x]))^2 + 4*b*B*(c + d*x)*(2*(b*c - a*d)*(A + B*Log[(e*(a + b*x))/(c + d*x])) + 2*b*(c + d*x)*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x])) - 2*b*(c + d*x)*(A + B*Log[(e*(a + b*x))/(c + d*x]))*Log[c + d*x] - 2*B*(b*c - a*d + b*(c + d*x))*Log[a + b*x] - b*(c + d*x)*Log[c + d*x] - b*B*(c + d*x)*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + b*B*(c + d*x)*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]) - B*(2*(b*c - a*d)^2*(A + B*Log[(e*(a + b*x))/(c + d*x])) + 4*b*(b*c - a*d)*(c + d*x)*(A + B*Log[(e*(a + b*x))/(c + d*x])) + 4*b^2*(c + d*x)^2*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x])) - 4*b^2*(c + d*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x]))*Log[c + d*x] - 4*b*B*(c + d*x)*(b*c - a*d + b*(c + d*x))*Log[a + b*x] - b*(c + d*x)*Log[c + d*x] - B*((b*c - a*d)^2 + 2*b*(b*c - a*d)*(c + d*x) + 2*b^2*(c + d*x)^2*Log[a + b*x] - 2*b^2*(c + d*x)^2*Log[c + d*x] - 2*b^2*B*(c + d*x)^2*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + 2*b^2*B*(c + d*x)^2*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(4*d^2*(b*c - a*d)*i^3*(c + d*x)^2)

fricas [B] time = 0.89, size = 295, normalized size = 2.09

$$\frac{2 \left((2A^2 - 2AB + B^2)b^2cd - (2A^2 - 2AB + B^2)abd^2 \right) gx - 2 \left(B^2b^2d^2gx^2 + 2B^2abd^2gx + B^2a^2d^2g \right) \log \left(\frac{bex+ae}{dx+c} \right)}{4 \left((bcd^4 - ad^5) \right)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^3, x, algorithm="fricas")

[Out] -1/4*(2*((2*A^2 - 2*A*B + B^2)*b^2*c*d - (2*A^2 - 2*A*B + B^2)*a*b*d^2)*g*x - 2*(B^2*b^2*d^2*g*x^2 + 2*B^2*a*b*d^2*g*x + B^2*a^2*d^2*g)*log((b*e*x + a*e)/(d*x + c))^2 + ((2*A^2 - 2*A*B + B^2)*b^2*c^2 - (2*A^2 - 2*A*B + B^2)*a^2*d^2)*g - 2*((2*A*B - B^2)*b^2*d^2*g*x^2 + 2*(2*A*B - B^2)*a*b*d^2*g*x +

$(2AB - B^2)a^2d^2g \log((bex + ae)/(dx + c)) / ((b^3cd^4 - a^5d^5)ix^3 + 2(b^2cd^3 - a^4cd^4)ix^2 + (b^3cd^2 - a^3cd^3)ix)$

giac [B] time = 1.50, size = 273, normalized size = 1.94

$$\frac{1}{4} \left(\frac{2(bxe + ae)^2 B^2 g i \log\left(\frac{bxe+ae}{dx+c}\right)^2}{(dx+c)^2} + \frac{4(bxe + ae)^2 AB g i \log\left(\frac{bxe+ae}{dx+c}\right)}{(dx+c)^2} - \frac{2(bxe + ae)^2 B^2 g i \log\left(\frac{bxe+ae}{dx+c}\right)}{(dx+c)^2} + \frac{2(bxe + ae)}{(dx+c)} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^3,x, algorith="giac")

[Out] $\frac{1}{4} * (2 * (b*x*e + a*e)^2 * B^2 * g * i * \log((b*x*e + a*e)/(d*x + c))^2 / (d*x + c)^2 + 4 * (b*x*e + a*e)^2 * A * B * g * i * \log((b*x*e + a*e)/(d*x + c)) / (d*x + c)^2 - 2 * (b*x*e + a*e)^2 * B^2 * g * i * \log((b*x*e + a*e)/(d*x + c)) / (d*x + c)^2 + 2 * (b*x*e + a*e)^2 * A^2 * g * i / (d*x + c)^2 - 2 * (b*x*e + a*e)^2 * A * B * g * i / (d*x + c)^2 + (b*x*e + a*e)^2 * B^2 * g * i / (d*x + c)^2 * (b*c / ((b*c*e - a*d*e) * (b*c - a*d)) - a*d / ((b*c*e - a*d*e) * (b*c - a*d))) * e^{-1}$

maple [B] time = 0.05, size = 2449, normalized size = 17.37

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(d*i*x+c*i)^3,x)

[Out] $-1/4/d*g/(a*d-b*c)^2/i^3*B^2*b^2*a-1/2/d*g/(a*d-b*c)^2/i^3*A^2*b^2*a+1/2/d^2*g/(a*d-b*c)^2/i^3*A^2*b^3*c+1/2/d^2*g/(a*d-b*c)^2/i^3*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b^3*c+1/2/d*g/(a*d-b*c)^2/i^3*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2*a-1/2/d^2*g/(a*d-b*c)^2/i^3*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^3*c-1/2*d*g/(a*d-b*c)^2/i^3*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d*x+c)^2*a^3-1/4*d*g/(a*d-b*c)^2/i^3*B^2/(d*x+c)^2*a^3-1/2*d*g/(a*d-b*c)^2/i^3*A^2/(d*x+c)^2*a^3+1/4/d^2*g/(a*d-b*c)^2/i^3*B^2*b^3*c+g/(a*d-b*c)^2/i^3*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b/(d*x+c)*a^2-g/(a*d-b*c)^2/i^3*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b/(d*x+c)*a^2+1/4/d^2*g/(a*d-b*c)^2/i^3*B^2/(d*x+c)^2*b^3*c^3+1/2*d*g/(a*d-b*c)^2/i^3*A*B/(d*x+c)^2*a^3-3/2/d*g/(a*d-b*c)^2/i^3*A^2/(d*x+c)^2*a*b^2*c^2+2/d*g/(a*d-b*c)^2/i^3*A^2*b^2/(d*x+c)*c*a+1/d*g/(a*d-b*c)^2/i^3*B^2*b^2/(d*x+c)*c*a-3/4/d*g/(a*d-b*c)^2/i^3*B^2/(d*x+c)^2*b^2*c^2*a-3/2*d*g/(a*d-b*c)^2/i^3*A*B/(d*x+c)^2*a^2*b*c-1/d^2*g/(a*d-b*c)^2/i^3*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b^3/(d*x+c)*c^2-d*g/(a*d-b*c)^2/i^3*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a^3+1/2/d^2*g/(a*d-b*c)^2/i^3*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d*x+c)^2*b^3*c^3+1/d^2*g/(a*d-$

$$\begin{aligned}
& b^2c^2/i^3AB^3/(dx+c)^2-1/2/d^2g/(ad-bc)^2/i^3AB^3c-1/d^2g/ \\
& (ad-bc)^2/i^3A^2b^3/(dx+c)^2-g/(ad-bc)^2/i^3A^2b/(dx+c)^2-1/2 \\
& *g/(ad-bc)^2/i^3B^2b/(dx+c)^2-1/2/d^2g/(ad-bc)^2/i^3B^2*ln(b/de+(\\
& ad-bc)/(dx+c)/de)^2*b^2a-1/2/d^2g/(ad-bc)^2/i^3B^2b^3/(dx+c)^2 \\
& +3/4*g/(ad-bc)^2/i^3B^2/(dx+c)^2*a^2b*c+3/2*g/(ad-bc)^2/i^3A^2/(dx \\
& +c)^2*a^2b*c+1/2/d^2g/(ad-bc)^2/i^3A^2/(dx+c)^2*b^3c^3+g/(ad-bc)^2 \\
& /i^3AB*b/(dx+c)^2+1/2*d^2g/(ad-bc)^2/i^3B^2*ln(b/de+(ad-bc)/(dx+c) \\
& /de)/(dx+c)^2*a^3+1/2/d^2g/(ad-bc)^2/i^3AB*b^2a+4/d^2g/(ad-bc)^2/i \\
& ^3AB*ln(b/de+(ad-bc)/(dx+c)/de)*b^2/(dx+c)^2*a-3/d^2g/(ad-bc)^2/i \\
& ^3AB*ln(b/de+(ad-bc)/(dx+c)/de)/(dx+c)^2*a*b^2c^2+1/d^2g/(ad-bc) \\
& ^2/i^3B^2*ln(b/de+(ad-bc)/(dx+c)/de)*b^3/(dx+c)^2-2*g/(ad-bc)^2/ \\
& i^3AB*ln(b/de+(ad-bc)/(dx+c)/de)*b/(dx+c)^2+3/2*g/(ad-bc)^2/i^3 \\
& *B^2*ln(b/de+(ad-bc)/(dx+c)/de)^2/(dx+c)^2*a^2b*c-3/2*g/(ad-bc)^2/ \\
& i^3B^2*ln(b/de+(ad-bc)/(dx+c)/de)/(dx+c)^2*a^2b*c+1/d^2g/(ad-bc) \\
& ^2/i^3AB*ln(b/de+(ad-bc)/(dx+c)/de)*b^3c-1/2/d^2g/(ad-bc)^2/i^3* \\
& AB/(dx+c)^2*b^3c^3-1/2/d^2g/(ad-bc)^2/i^3B^2*ln(b/de+(ad-bc)/(dx \\
& +c)/de)/(dx+c)^2*b^3c^3-1/d^2g/(ad-bc)^2/i^3AB*ln(b/de+(ad-bc)/(dx \\
& +c)/de)*b^2a+2/d^2g/(ad-bc)^2/i^3B^2*ln(b/de+(ad-bc)/(dx+c)/de)^2 \\
& *b^2/(dx+c)^2*a-2/d^2g/(ad-bc)^2/i^3B^2*ln(b/de+(ad-bc)/(dx+c)/de)* \\
& b^2/(dx+c)^2*a*c+1/d^2g/(ad-bc)^2/i^3AB*ln(b/de+(ad-bc)/(dx+c)/de) \\
& /dx+c)^2*b^3c^3-2/d^2g/(ad-bc)^2/i^3AB*b^2/(dx+c)^2*a+3/2/d^2g/(ad-b \\
& *c)^2/i^3AB/(dx+c)^2*a*b^2c^2+3/2/d^2g/(ad-bc)^2/i^3B^2*ln(b/de+(ad \\
& -bc)/(dx+c)/de)/(dx+c)^2*a*b^2c^2+3*g/(ad-bc)^2/i^3AB*ln(b/de+(a \\
& d-bc)/(dx+c)/de)/(dx+c)^2*a^2b*c-3/2/d^2g/(ad-bc)^2/i^3B^2*ln(b/de+ \\
& (ad-bc)/(dx+c)/de)^2/(dx+c)^2*a*b^2c^2-2/d^2g/(ad-bc)^2/i^3AB*ln \\
& (b/de+(ad-bc)/(dx+c)/de)*b^3/(dx+c)^2
\end{aligned}$$

maxima [B] time = 2.52, size = 1966, normalized size = 13.94

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^3,x, algorithm="maxima")

[Out]
$$\begin{aligned}
& -1/2*(2*d*x + c)*B^2*b*g*log(b*e*x/(d*x + c) + a*e/(d*x + c))^2/(d^4*i^3*x^ \\
& 2 + 2*c*d^3*i^3*x + c^2*d^2*i^3) + 1/4*(2*((2*b*d*x + 3*b*c - a*d)/((b*c*d^ \\
& 3 - a*d^4)*i^3*x^2 + 2*(b*c^2*d^2 - a*c*d^3)*i^3*x + (b*c^3*d - a*c^2*d^2)* \\
& i^3) + 2*b^2*log(b*x + a)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3) - 2*b^2 \\
& *log(d*x + c)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3))*log(b*e*x/(d*x + c \\
&) + a*e/(d*x + c)) - (7*b^2*c^2 - 8*a*b*c*d + a^2*d^2 + 2*(b^2*d^2*x^2 + 2* \\
& b^2*c*d*x + b^2*c^2)*log(b*x + a)^2 + 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^ \\
& 2)*log(d*x + c)^2 + 6*(b^2*c*d - a*b*d^2)*x + 6*(b^2*d^2*x^2 + 2*b^2*c*d*x \\
& + b^2*c^2)*log(b*x + a) - 2*(3*b^2*d^2*x^2 + 6*b^2*c*d*x + 3*b^2*c^2 + 2*(b \\
& ^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a))*log(d*x + c))/(b^2*c^4*d*
\end{aligned}$$

```

i^3 - 2*a*b*c^3*d^2*i^3 + a^2*c^2*d^3*i^3 + (b^2*c^2*d^3*i^3 - 2*a*b*c*d^4*
i^3 + a^2*d^5*i^3)*x^2 + 2*(b^2*c^3*d^2*i^3 - 2*a*b*c^2*d^3*i^3 + a^2*c*d^4
*i^3)*x))*B^2*a*g + 1/4*(2*((b*c^2 - 3*a*c*d + 2*(b*c*d - 2*a*d^2)*x)/((b*c
*d^4 - a*d^5)*i^3*x^2 + 2*(b*c^2*d^3 - a*c*d^4)*i^3*x + (b*c^3*d^2 - a*c^2*
d^3)*i^3) + 2*(b^2*c - 2*a*b*d)*log(b*x + a)/((b^2*c^2*d^2 - 2*a*b*c*d^3 +
a^2*d^4)*i^3) - 2*(b^2*c - 2*a*b*d)*log(d*x + c)/((b^2*c^2*d^2 - 2*a*b*c*d^
3 + a^2*d^4)*i^3))*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - (b^2*c^3 - 8*a*b*
c^2*d + 7*a^2*c*d^2 + 2*(b^2*c^3 - 2*a*b*c^2*d + (b^2*c*d^2 - 2*a*b*d^3)*x^
2 + 2*(b^2*c^2*d - 2*a*b*c*d^2)*x)*log(b*x + a)^2 + 2*(b^2*c^3 - 2*a*b*c^2*
d + (b^2*c*d^2 - 2*a*b*d^3)*x^2 + 2*(b^2*c^2*d - 2*a*b*c*d^2)*x)*log(d*x +
c)^2 + 2*(b^2*c^2*d - 5*a*b*c*d^2 + 4*a^2*d^3)*x + 2*(b^2*c^3 - 4*a*b*c^2*d
+ (b^2*c*d^2 - 4*a*b*d^3)*x^2 + 2*(b^2*c^2*d - 4*a*b*c*d^2)*x)*log(b*x + a
) - 2*(b^2*c^3 - 4*a*b*c^2*d + (b^2*c*d^2 - 4*a*b*d^3)*x^2 + 2*(b^2*c^2*d -
4*a*b*c*d^2)*x + 2*(b^2*c^3 - 2*a*b*c^2*d + (b^2*c*d^2 - 2*a*b*d^3)*x^2 +
2*(b^2*c^2*d - 2*a*b*c*d^2)*x)*log(b*x + a))*log(d*x + c)/(b^2*c^4*d^2*i^3
- 2*a*b*c^3*d^3*i^3 + a^2*c^2*d^4*i^3 + (b^2*c^2*d^4*i^3 - 2*a*b*c*d^5*i^3
+ a^2*d^6*i^3)*x^2 + 2*(b^2*c^3*d^3*i^3 - 2*a*b*c^2*d^4*i^3 + a^2*c*d^5*i^
3)*x))*B^2*b*g - 1/2*A*B*b*g*(2*(2*d*x + c)*log(b*e*x/(d*x + c) + a*e/(d*x
+ c))/(d^4*i^3*x^2 + 2*c*d^3*i^3*x + c^2*d^2*i^3) - (b*c^2 - 3*a*c*d + 2*(b
*c*d - 2*a*d^2)*x)/((b*c*d^4 - a*d^5)*i^3*x^2 + 2*(b*c^2*d^3 - a*c*d^4)*i^3
*x + (b*c^3*d^2 - a*c^2*d^3)*i^3) - 2*(b^2*c - 2*a*b*d)*log(b*x + a)/((b^2*
c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)*i^3) + 2*(b^2*c - 2*a*b*d)*log(d*x + c)/((
b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)*i^3)) + 1/2*A*B*a*g*((2*b*d*x + 3*b*c
- a*d)/((b*c*d^3 - a*d^4)*i^3*x^2 + 2*(b*c^2*d^2 - a*c*d^3)*i^3*x + (b*c^3*
d - a*c^2*d^2)*i^3) - 2*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(d^3*i^3*x^2 +
2*c*d^2*i^3*x + c^2*d*i^3) + 2*b^2*log(b*x + a)/((b^2*c^2*d - 2*a*b*c*d^2
+ a^2*d^3)*i^3) - 2*b^2*log(d*x + c)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i
^3)) - 1/2*B^2*a*g*log(b*e*x/(d*x + c) + a*e/(d*x + c))^2/(d^3*i^3*x^2 + 2*
c*d^2*i^3*x + c^2*d*i^3) - 1/2*(2*d*x + c)*A^2*b*g/(d^4*i^3*x^2 + 2*c*d^3*i
^3*x + c^2*d^2*i^3) - 1/2*A^2*a*g/(d^3*i^3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3)

```

mpad [B] time = 6.40, size = 474, normalized size = 3.36

$$\frac{x(2bdgA^2 - 2bdgAB + bdgB^2) + A^2adg + A^2bcg + \frac{B^2adg}{2} + \frac{B^2bcg}{2} - ABadg - ABbcg}{2c^2d^2i^3 + 4cd^3i^3x + 2d^4i^3x^2} \ln\left(\frac{e(a+bx)}{c+dx}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(c*i + d*i*x)^3,
x)
```

```
[Out] (B*b^2*g*atan((((2*a*d^3*i^3 + 2*b*c*d^2*i^3)/(2*d^2*i^3) + 2*b*d*x)*1i)/(a
*d - b*c))*(2*A - B)*1i)/(d^2*i^3*(a*d - b*c)) - log((e*(a + b*x))/(c + d*x
```


$$\left. \right)^2 \left(\left(\frac{B^2 a g}{2 d^2 i^3} + \frac{B^2 b c g}{2 d^3 i^3} + \frac{B^2 b g x}{d^2 i^3} \right) / (2 c x + d x^2 + c^2 / d) + \frac{B^2 b^2 g}{2 d^2 i^3 (a d - b c)} \right) - \left(\log \left(\frac{e (a + b x)}{c + d x} \right) \left(\frac{A B c g}{d^3 i^3} - x \left(\frac{B^2 g}{d^2 i^3} - \frac{2 A B g}{d^2 i^3} \right) + \frac{B g (A a d - B a d + B b c)}{b d^3 i^3} + \frac{B^2 b^2 g (a^2 d^2 + 2 b^2 c^2 - 3 a b c d)}{2 b^3 d} - \frac{c (a d - b c)}{2 b^2 d} \right) \right) / \left(\frac{d^2 i^3 (a d - b c)}{(d x^2) / b + c^2 / (b d) + (2 c x) / b} - \frac{x (2 A^2 b d g + B^2 b d g - 2 A B b d g) + A^2 a d g + A^2 b c g + (B^2 a d g) / 2 + (B^2 b c g) / 2 - A B a d g - A B b c g}{2 c^2 d^2 i^3 + 2 d^4 i^3 x^2 + 4 c d^3 i^3 x} \right)$$

sympy [B] time = 13.80, size = 712, normalized size = 5.05

$$\frac{B b^2 g (2 A - B) \log \left(x + \frac{2 A B a b^2 d g + 2 A B b^3 c g - B^2 a b^2 d g - B^2 b^3 c g - \frac{B a^2 b^2 d^2 g (2 A - B)}{a d - b c} + \frac{2 B a b^3 c d g (2 A - B)}{a d - b c} - \frac{B b^4 c^2 g (2 A - B)}{a d - b c}}{4 A B b^3 d g - 2 B^2 b^3 d g} \right) B b^2 g (2 A - B) \log \left(x + \frac{2 A B a b^2 d g + 2 A B b^3 c g - B^2 a b^2 d g - B^2 b^3 c g - \frac{B a^2 b^2 d^2 g (2 A - B)}{a d - b c} + \frac{2 B a b^3 c d g (2 A - B)}{a d - b c} - \frac{B b^4 c^2 g (2 A - B)}{a d - b c}}{4 A B b^3 d g - 2 B^2 b^3 d g} \right)}{2 d^2 i^3 (a d - b c)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(A+B*ln(e*(b*x+a)/(d*x+c)))*2/(d*i*x+c*i)**3,x)

[Out] B*b**2*g*(2*A - B)*log(x + (2*A*B*a*b**2*d*g + 2*A*B*b**3*c*g - B**2*a*b**2*d*g - B**2*b**3*c*g - B*a**2*b**2*d**2*g*(2*A - B)/(a*d - b*c) + 2*B*a*b**3*c*d*g*(2*A - B)/(a*d - b*c) - B*b**4*c**2*g*(2*A - B)/(a*d - b*c))/(4*A*B*b**3*d*g - 2*B**2*b**3*d*g)/(2*d**2*i**3*(a*d - b*c)) - B*b**2*g*(2*A - B)*log(x + (2*A*B*a*b**2*d*g + 2*A*B*b**3*c*g - B**2*a*b**2*d*g - B**2*b**3*c*g + B*a**2*b**2*d**2*g*(2*A - B)/(a*d - b*c) - 2*B*a*b**3*c*d*g*(2*A - B)/(a*d - b*c) + B*b**4*c**2*g*(2*A - B)/(a*d - b*c))/(4*A*B*b**3*d*g - 2*B**2*b**3*d*g)/(2*d**2*i**3*(a*d - b*c)) + (-B**2*a**2*g - 2*B**2*a*b*g*x - B**2*b**2*g*x**2)*log(e*(a + b*x)/(c + d*x))**2/(2*a*c**2*d*i**3 + 4*a*c*d**2*i**3*x + 2*a*d**3*i**3*x**2 - 2*b*c**3*i**3 - 4*b*c**2*d*i**3*x - 2*b*c*d**2*i**3*x**2) + (-2*A**2*a*d*g - 2*A**2*b*c*g + 2*A*B*a*d*g + 2*A*B*b*c*g - B**2*a*d*g - B**2*b*c*g + x*(-4*A**2*b*d*g + 4*A*B*b*d*g - 2*B**2*b*d*g))/(4*c**2*d**2*i**3 + 8*c*d**3*i**3*x + 4*d**4*i**3*x**2) + (-2*A*B*a*d*g - 2*A*B*b*c*g - 4*A*B*b*d*g*x + B**2*a*d*g + B**2*b*c*g + 2*B**2*b*d*g*x)*log(e*(a + b*x)/(c + d*x))/(2*c**2*d**2*i**3 + 4*c*d**3*i**3*x + 2*d**4*i**3*x**2)

$$3.103 \quad \int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ci+dx)^3} dx$$

Optimal. Leaf size=296

$$\frac{Bd(a+bx)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{2i^3(c+dx)^2(bc-ad)^2} + \frac{b(a+bx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)^2}{i^3(c+dx)(bc-ad)^2} - \frac{d(a+bx)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)^2}{2i^3(c+dx)^2(bc-ad)^2} - \frac{2AbB}{i^3(c+dx)}$$

[Out] $-1/4*B^2*d*(b*x+a)^2/(-a*d+b*c)^2/i^3/(d*x+c)^2 - 2*A*b*B*(b*x+a)/(-a*d+b*c)^2/i^3/(d*x+c) + 2*b*B^2*(b*x+a)/(-a*d+b*c)^2/i^3/(d*x+c) - 2*b*B^2*(b*x+a)*\ln(e*(b*x+a)/(d*x+c))/(-a*d+b*c)^2/i^3/(d*x+c) + 1/2*B*d*(b*x+a)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^2/i^3/(d*x+c) - 1/2*d*(b*x+a)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^2/i^3/(d*x+c) + 2*b*(b*x+a)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^2/i^3/(d*x+c)$

Rubi [C] time = 0.91, antiderivative size = 577, normalized size of antiderivative = 1.95, number of steps used = 30, number of rules used = 11, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}} = 0.344$, Rules used = {2525, 12, 2528, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 44}

$$\frac{b^2 B^2 \text{PolyLog}\left(2, -\frac{d(a+bx)}{bc-ad}\right)}{di^3(bc-ad)^2} + \frac{b^2 B^2 \text{PolyLog}\left(2, \frac{b(c+dx)}{bc-ad}\right)}{di^3(bc-ad)^2} + \frac{b^2 B \log(a+bx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{di^3(bc-ad)^2} - \frac{b^2 B \log(c+dx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{di^3(bc-ad)^2}$$

Antiderivative was successfully verified.

[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x]))^2/(c*i + d*i*x)^3,x]

[Out] $-B^2/(4*d*i^3*(c+d*x)^2) - (3*b*B^2)/(2*d*(b*c-a*d)*i^3*(c+d*x)) - (3*b^2*B^2*Log[a+b*x])/(2*d*(b*c-a*d)^2*i^3) - (b^2*B^2*Log[a+b*x]^2)/(2*d*(b*c-a*d)^2*i^3) + (B*(A+B*Log[(e*(a+b*x))/(c+d*x])))/(2*d*i^3*(c+d*x)^2) + (b*B*(A+B*Log[(e*(a+b*x))/(c+d*x])))/(d*(b*c-a*d)*i^3*(c+d*x)) + (b^2*B*Log[a+b*x]*(A+B*Log[(e*(a+b*x))/(c+d*x])))/(d*(b*c-a*d)^2*i^3) - (A+B*Log[(e*(a+b*x))/(c+d*x]))^2/(2*d*i^3*(c+d*x)^2) + (3*b^2*B^2*Log[c+d*x])/(2*d*(b*c-a*d)^2*i^3) + (b^2*B^2*Log[-((d*(a+b*x))/(b*c-a*d))]*Log[c+d*x])/(d*(b*c-a*d)^2*i^3) - (b^2*B*(A+B*Log[(e*(a+b*x))/(c+d*x)])*Log[c+d*x])/(d*(b*c-a*d)^2*i^3) - (b^2*B^2*Log[c+d*x]^2)/(2*d*(b*c-a*d)^2*i^3) + (b^2*B^2*Log[a+b*x]*Log[(b*(c+d*x))/(b*c-a*d)])/(d*(b*c-a*d)^2*i^3) + (b^2*B^2*PolyLog[2, -(d*(a+b*x))/(b*c-a*d)])/(d*(b*c-a*d)^2*i^3) + (b^2*B^2*PolyLog[2, (b*(c+d*x))/(b*c-a*d)])/(d*(b*c-a*d)^2*i^3)$

Rule 12

$\text{Int}[(a_*)(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \ \&\& \ !\text{MatchQ}[u, (b_*)(v_)] /; \text{FreeQ}[b, x]$

Rule 44

$\text{Int}[(a_*) + (b_*)(x_)]^{(m_*)} * ((c_*) + (d_*)(x_)]^{(n_*)}, x_Symbol] \rightarrow \text{Int}[\text{ExpandIntegrand}[(a + b*x)^m * (c + d*x)^n, x], x] /; \text{FreeQ}[\{a, b, c, d\}, x] \ \&\& \ \text{NeQ}[b*c - a*d, 0] \ \&\& \ \text{ILtQ}[m, 0] \ \&\& \ \text{IntegerQ}[n] \ \&\& \ !(\text{IGtQ}[n, 0] \ \&\& \ \text{LtQ}[m + n + 2, 0])$

Rule 2301

$\text{Int}[(a_*) + \text{Log}[(c_*)(x_)]^{(n_*)} * (b_*)] / (x_), x_Symbol] \rightarrow \text{Simp}[(a + b * \text{Log}[c*x^n])^2 / (2*b*n), x] /; \text{FreeQ}[\{a, b, c, n\}, x]$

Rule 2390

$\text{Int}[(a_*) + \text{Log}[(c_*) * ((d_*) + (e_*)(x_)]^{(n_*)} * (b_*)]^{(p_*)} * ((f_*) + (g_*)(x_)]^{(q_*)}, x_Symbol] \rightarrow \text{Dist}[1/e, \text{Subst}[\text{Int}[(f*x)/d]^q * (a + b * \text{Log}[c*x^n])^p, x], x, d + e*x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g, n, p, q\}, x] \ \&\& \ \text{EqQ}[e*f - d*g, 0]$

Rule 2391

$\text{Int}[\text{Log}[(c_*) * ((d_*) + (e_*)(x_)]^{(n_*)})] / (x_), x_Symbol] \rightarrow -\text{Simp}[\text{PolyLog}[2, -(c*e*x^n)]/n, x] /; \text{FreeQ}[\{c, d, e, n\}, x] \ \&\& \ \text{EqQ}[c*d, 1]$

Rule 2393

$\text{Int}[(a_*) + \text{Log}[(c_*) * ((d_*) + (e_*)(x_))] * (b_*)] / ((f_*) + (g_*)(x_)), x_Symbol] \rightarrow \text{Dist}[1/g, \text{Subst}[\text{Int}[(a + b * \text{Log}[1 + (c*e*x)/g]]/x, x], x, f + g*x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g\}, x] \ \&\& \ \text{NeQ}[e*f - d*g, 0] \ \&\& \ \text{EqQ}[g + c*(e*f - d*g), 0]$

Rule 2394

$\text{Int}[(a_*) + \text{Log}[(c_*) * ((d_*) + (e_*)(x_)]^{(n_*)} * (b_*)] / ((f_*) + (g_*)(x_)), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[(e*(f + g*x)) / (e*f - d*g)] * (a + b * \text{Log}[c*(d + e*x)^n]) / g, x] - \text{Dist}[(b*e^n)/g, \text{Int}[\text{Log}[(e*(f + g*x)) / (e*f - d*g)] / (d + e*x), x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g, n\}, x] \ \&\& \ \text{NeQ}[e*f - d*g, 0]$

Rule 2418

$\text{Int}[(a_*) + \text{Log}[(c_*) * ((d_*) + (e_*)(x_)]^{(n_*)} * (b_*)]^{(p_*)} * (\text{RFx}_), x_Symbol] \rightarrow \text{With}[\{u = \text{ExpandIntegrand}[(a + b * \text{Log}[c*(d + e*x)^n])^p, \text{RFx}, x]\},$

```
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFX, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFX^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFX^p])^(n - 1)*D[RFX, x])/RFX, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFX, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFX^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFX^p])^(n - 1)*D[RFX, x])/RFX, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFX, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFX^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFX, x] && RationalFunci
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(103c + 103dx)^3} dx &= -\frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{2185454d(c + dx)^2} + \frac{B \int \frac{(bc-ad)\left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{10609(a+bx)(c+dx)^3} dx}{103d} \\
&= -\frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{2185454d(c + dx)^2} + \frac{(B(bc - ad)) \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{(a+bx)(c+dx)^3} dx}{1092727d} \\
&= -\frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{2185454d(c + dx)^2} + \frac{(B(bc - ad)) \int \left(\frac{b^3\left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(bc-ad)^3(a+bx)} - \frac{d\left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(bc-ad)(c+dx)^3}\right) dx}{1092727d} \\
&= -\frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{2185454d(c + dx)^2} - \frac{B \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{(c+dx)^3} dx}{1092727} - \frac{(b^2B) \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{c+dx} dx}{1092727(bc - ad)^2} + \frac{B \int \frac{A+B \log\left(\frac{e(a+bx)}{c+dx}\right)}{c+dx} dx}{1092727} \\
&= \frac{B\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2185454d(c + dx)^2} + \frac{bB\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1092727d(bc - ad)(c + dx)} + \frac{b^2B \log(a + bx)\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1092727d(bc - ad)^2} \\
&= \frac{B\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2185454d(c + dx)^2} + \frac{bB\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1092727d(bc - ad)(c + dx)} + \frac{b^2B \log(a + bx)\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1092727d(bc - ad)^2} \\
&= \frac{B\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2185454d(c + dx)^2} + \frac{bB\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1092727d(bc - ad)(c + dx)} + \frac{b^2B \log(a + bx)\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1092727d(bc - ad)^2} \\
&= -\frac{B^2}{4370908d(c + dx)^2} - \frac{3bB^2}{2185454d(bc - ad)(c + dx)} - \frac{3b^2B^2 \log(a + bx)}{2185454d(bc - ad)^2} + \frac{B\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2185454d} \\
&= -\frac{B^2}{4370908d(c + dx)^2} - \frac{3bB^2}{2185454d(bc - ad)(c + dx)} - \frac{3b^2B^2 \log(a + bx)}{2185454d(bc - ad)^2} + \frac{B\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2185454d} \\
&= -\frac{B^2}{4370908d(c + dx)^2} - \frac{3bB^2}{2185454d(bc - ad)(c + dx)} - \frac{3b^2B^2 \log(a + bx)}{2185454d(bc - ad)^2} - \frac{b^2}{2185454d} \\
&= -\frac{B^2}{4370908d(c + dx)^2} - \frac{3bB^2}{2185454d(bc - ad)(c + dx)} - \frac{3b^2B^2 \log(a + bx)}{2185454d(bc - ad)^2} - \frac{b^2}{2185454d}
\end{aligned}$$

Mathematica [C] time = 0.43, size = 444, normalized size = 1.50

$$\frac{B(4b^2(c+dx)^2 \log(a+bx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right) - 4b^2(c+dx)^2 \log(c+dx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right) + 2(bc-ad)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right) + 4b(c+dx)(bc-ad) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A \right)}{4(b^2c^2d^3)}$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x)])^2/(c*i + d*i*x)^3,x]

[Out] (-2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 + (B*(2*(b*c - a*d)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 4*b*(b*c - a*d)*(c + d*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 4*b^2*(c + d*x)^2*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 4*b^2*(c + d*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x] - 4*b*B*(c + d*x)*(b*c - a*d + b*(c + d*x)*Log[a + b*x] - b*(c + d*x)*Log[c + d*x]) - B*((b*c - a*d)^2 + 2*b*(b*c - a*d)*(c + d*x) + 2*b^2*(c + d*x)^2*Log[a + b*x] - 2*b^2*(c + d*x)^2*Log[c + d*x]) - 2*b^2*B*(c + d*x)^2*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + 2*b^2*B*(c + d*x)^2*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(b*c - a*d)^2)/(4*d*i^3*(c + d*x)^2)

fricas [A] time = 0.67, size = 373, normalized size = 1.26

$$\frac{(2A^2 - 6AB + 7B^2)b^2c^2 - 4(A^2 - 2AB + 2B^2)abcd + (2A^2 - 2AB + B^2)a^2d^2 - 2(B^2b^2d^2x^2 + 2B^2b^2cdx + 2B^2c^2d^3)}{4((b^2c^2d^3))}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^3,x, algorithm="fricas")

[Out] -1/4*((2*A^2 - 6*A*B + 7*B^2)*b^2*c^2 - 4*(A^2 - 2*A*B + 2*B^2)*a*b*c*d + (2*A^2 - 2*A*B + B^2)*a^2*d^2 - 2*(B^2*b^2*d^2*x^2 + 2*B^2*b^2*c*d*x + 2*B^2*a*b*c*d - B^2*a^2*d^2)*log((b*e*x + a*e)/(d*x + c))^2 - 2*((2*A*B - 3*B^2)*b^2*c*d - (2*A*B - 3*B^2)*a*b*d^2)*x - 2*((2*A*B - 3*B^2)*b^2*d^2*x^2 + 4*(A*B - B^2)*a*b*c*d - (2*A*B - B^2)*a^2*d^2 - 2*(B^2*a*b*d^2 - 2*(A*B - B^2)*b^2*c*d)*x)*log((b*e*x + a*e)/(d*x + c)))/((b^2*c^2*d^3 - 2*a*b*c*d^4 + a^2*d^5)*i^3*x^2 + 2*(b^2*c^3*d^2 - 2*a*b*c^2*d^3 + a^2*c*d^4)*i^3*x + (b^2*c^4*d - 2*a*b*c^3*d^2 + a^2*c^2*d^3)*i^3)

giac [A] time = 1.43, size = 499, normalized size = 1.69

$$\frac{\left(\frac{4(bxe+ae)B^2bie \log\left(\frac{bxe+ae}{dx+c}\right)^2}{dx+c} + \frac{8(bxe+ae)ABbie \log\left(\frac{bxe+ae}{dx+c}\right)}{dx+c} - \frac{8(bxe+ae)B^2bie \log\left(\frac{bxe+ae}{dx+c}\right)}{dx+c} - \frac{2(bxe+ae)^2B^2di \log\left(\frac{bxe+ae}{dx+c}\right)^2}{(dx+c)^2} + \frac{4(bxe+ae)A^2bie}{dx+c} \right)}{4((b^2c^2d^3))}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^3,x, algorithm="giac")

[Out] $\frac{1}{4} * (4 * (b * x * e + a * e) * B^2 * b * i * e * \log((b * x * e + a * e) / (d * x + c))^2 / (d * x + c) + 8 * (b * x * e + a * e) * A * B * b * i * e * \log((b * x * e + a * e) / (d * x + c)) / (d * x + c) - 8 * (b * x * e + a * e) * B^2 * b * i * e * \log((b * x * e + a * e) / (d * x + c)) / (d * x + c) - 2 * (b * x * e + a * e)^2 * B^2 * d * i * \log((b * x * e + a * e) / (d * x + c))^2 / (d * x + c)^2 + 4 * (b * x * e + a * e) * A^2 * b * i * e / (d * x + c) - 8 * (b * x * e + a * e) * A * B * b * i * e / (d * x + c) + 8 * (b * x * e + a * e) * B^2 * b * i * e / (d * x + c) - 4 * (b * x * e + a * e)^2 * A * B * d * i * \log((b * x * e + a * e) / (d * x + c)) / (d * x + c)^2 + 2 * (b * x * e + a * e)^2 * B^2 * d * i * \log((b * x * e + a * e) / (d * x + c)) / (d * x + c)^2 - 2 * (b * x * e + a * e)^2 * A^2 * d * i / (d * x + c)^2 + 2 * (b * x * e + a * e)^2 * A * B * d * i / (d * x + c)^2 - (b * x * e + a * e)^2 * B^2 * d * i / (d * x + c)^2 * (b * c / ((b * c * e - a * d * e) * (b * c - a * d)) - a * d / ((b * c * e - a * d * e) * (b * c - a * d))) / (b * c * e - a * d * e)$

maple [B] time = 0.05, size = 1917, normalized size = 6.48

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)^2/(d*i*x+c*i)^3,x)

[Out]
$$\begin{aligned} & -3/2/(a*d-b*c)^3/i^3*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2*a-1/4*d^2/(a*d \\ & -b*c)^3/i^3*B^2/(d*x+c)^2*a^3-1/2*d^2/(a*d-b*c)^3/i^3*A^2/(d*x+c)^2*a^3+1/2 \\ & / (a*d-b*c)^3/i^3*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b^2*a+3/2/(a*d-b*c)^ \\ & 3/i^3*A*B/(d*x+c)^2*b^2*c^2*a-d^2/(a*d-b*c)^3/i^3*A*B*\ln(b/d*e+(a*d-b*c)/(d \\ & *x+c)/d*e)/(d*x+c)^2*a^3-d/(a*d-b*c)^3/i^3*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d \\ & *e)*b/(d*x+c)*a^2+3/2/d/(a*d-b*c)^3/i^3*A*B*b^3*c-3/2/(a*d-b*c)^3/i^3*A*B*b \\ & ^2*a-3/4/(a*d-b*c)^3/i^3*B^2/(d*x+c)^2*b^2*c^2*a-3/2/(a*d-b*c)^3/i^3*A^2/(d \\ & *x+c)^2*b^2*c^2*a+1/(a*d-b*c)^3/i^3*A*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2 \\ & *a-1/d/(a*d-b*c)^3/i^3*A*B*b^3/(d*x+c)*c^2+1/2/d/(a*d-b*c)^3/i^3*A^2/(d*x+c \\ &)^2*b^3*c^3+1/4/d/(a*d-b*c)^3/i^3*B^2/(d*x+c)^2*b^3*c^3+3/2/d/(a*d-b*c)^3/i \\ & ^3*B^2*b^3/(d*x+c)*c^2-1/2*d^2/(a*d-b*c)^3/i^3*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+ \\ & c)/d*e)^2/(d*x+c)^2*a^3+1/2*d^2/(a*d-b*c)^3/i^3*B^2*\ln(b/d*e+(a*d-b*c)/(d*x \\ & +c)/d*e)/(d*x+c)^2*a^3+3/2/d/(a*d-b*c)^3/i^3*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c) \\ & /d*e)*b^3*c-1/2/d/(a*d-b*c)^3/i^3*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b^3 \\ & *c+1/2/(a*d-b*c)^3/i^3*A^2*b^2*a-1/2/d/(a*d-b*c)^3/i^3*A^2*b^3*c+7/4/(a*d-b \\ & *c)^3/i^3*B^2*b^2*a-1/d/(a*d-b*c)^3/i^3*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e) \\ & *b^3/(d*x+c)*c^2+2/(a*d-b*c)^3/i^3*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2/ \\ & (d*x+c)*a*c-1/d/(a*d-b*c)^3/i^3*A*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^3*c-3 \\ & /2/(a*d-b*c)^3/i^3*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d*x+c)^2*b^2*c^2* \\ & a+3/2*d/(a*d-b*c)^3/i^3*A^2/(d*x+c)^2*a^2*b*c-d/(a*d-b*c)^3/i^3*A*B*b/(d*x+ \\ & c)*a^2-3/(a*d-b*c)^3/i^3*B^2*b^2/(d*x+c)*a*c+1/2*d^2/(a*d-b*c)^3/i^3*A*B/(d \\ & *x+c)^2*a^3+3/2*d/(a*d-b*c)^3/i^3*B^2*b/(d*x+c)*a^2-7/4/d/(a*d-b*c)^3/i^3*B \\ & ^2*b^3*c+3/4*d/(a*d-b*c)^3/i^3*B^2/(d*x+c)^2*a^2*b*c+2/(a*d-b*c)^3/i^3*A*B* \end{aligned}$$

$$\begin{aligned} & b^2/(d*x+c)*a*c-1/2/d/(a*d-b*c)^3/i^3*A*B/(d*x+c)^2*b^3*c^3-1/2/d/(a*d-b*c) \\ & ^3/i^3*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*b^3*c^3+3/2/(a*d-b*c) \\ & ^3/i^3*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*b^2*c^2*a+1/2/d/(a*d-b*c) \\ & ^3/i^3*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d*x+c)^2*b^3*c^3-3/(a*d-b*c) \\ & ^3/i^3*A*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a*b^2*c^2+3/2*d/(a*d- \\ & b*c)^3/i^3*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d*x+c)^2*a^2*b*c-3/2*d/(a \\ & *d-b*c)^3/i^3*A*B/(d*x+c)^2*a^2*b*c+1/d/(a*d-b*c)^3/i^3*A*B*\ln(b/d*e+(a*d-b \\ & *c)/(d*x+c)/d*e)/(d*x+c)^2*b^3*c^3-3/2*d/(a*d-b*c)^3/i^3*B^2*\ln(b/d*e+(a*d- \\ & b*c)/(d*x+c)/d*e)/(d*x+c)^2*a^2*b*c+3*d/(a*d-b*c)^3/i^3*A*B*\ln(b/d*e+(a*d-b \\ & *c)/(d*x+c)/d*e)/(d*x+c)^2*a^2*b*c \end{aligned}$$

maxima [B] time = 1.46, size = 848, normalized size = 2.86

$$\frac{1}{4} \left(2 \left(\frac{2 b d x + 3 b c - a d}{(b c d^3 - a d^4) i^3 x^2 + 2 (b c^2 d^2 - a c d^3) i^3 x + (b c^3 d - a c^2 d^2) i^3} + \frac{2 b^2 \log(b x + a)}{(b^2 c^2 d - 2 a b c d^2 + a^2 d^3) i^3} - \frac{2 b^2 \log(d x + a)}{(b^2 c^2 d - 2 a b c d^2 + a^2 d^3) i^3} \right) \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^3,x, algorithm="maxima")

[Out] 1/4*(2*((2*b*d*x + 3*b*c - a*d)/((b*c*d^3 - a*d^4)*i^3*x^2 + 2*(b*c^2*d^2 - a*c*d^3)*i^3*x + (b*c^3*d - a*c^2*d^2)*i^3) + 2*b^2*log(b*x + a)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3) - 2*b^2*log(d*x + c)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3))*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - (7*b^2*c^2 - 8*a*b*c*d + a^2*d^2 + 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a)^2 + 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(d*x + c)^2 + 6*(b^2*c*d - a*b*d^2)*x + 6*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a) - 2*(3*b^2*d^2*x^2 + 6*b^2*c*d*x + 3*b^2*c^2 + 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a))*log(d*x + c))/(b^2*c^4*d*i^3 - 2*a*b*c^3*d^2*i^3 + a^2*c^2*d^3*i^3 + (b^2*c^2*d^3*i^3 - 2*a*b*c*d^4*i^3 + a^2*d^5*i^3)*x^2 + 2*(b^2*c^3*d^2*i^3 - 2*a*b*c^2*d^3*i^3 + a^2*c*d^4*i^3)*x))*B^2 + 1/2*A*B*((2*b*d*x + 3*b*c - a*d)/((b*c*d^3 - a*d^4)*i^3*x^2 + 2*(b*c^2*d^2 - a*c*d^3)*i^3*x + (b*c^3*d - a*c^2*d^2)*i^3) - 2*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(d^3*i^3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3) + 2*b^2*log(b*x + a)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3) - 2*b^2*log(d*x + c)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3)) - 1/2*B^2*log(b*e*x/(d*x + c) + a*e/(d*x + c))^2/(d^3*i^3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3) - 1/2*A^2/(d^3*i^3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3)

mupad [B] time = 6.48, size = 507, normalized size = 1.71

$$\frac{\frac{2A^2ad - 2A^2bc + B^2ad - 7B^2bc - 2ABad + 6ABbc}{2(ad-bc)} - \frac{x(3B^2bd - 2ABbd)}{ad-bc}}{2c^2d^3 + 4cd^2i^3x + 2d^3i^3x^2} - \ln\left(\frac{e(a+bx)}{c+dx}\right)^2 \left(\frac{B^2}{2d^2i^3\left(2cx + dx^2 + \frac{c^2}{d}\right)} - \frac{2A}{2d^2i^3\left(2cx + dx^2 + \frac{c^2}{d}\right)} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((A + B*log((e*(a + b*x))/(c + d*x)))^2/(c*i + d*i*x)^3,x)

[Out] (B*b^2*atan((B*b^2*(2*b*d*x + (a^2*d^3*i^3 - b^2*c^2*d*i^3)/(d*i^3*(a*d - b*c)))/(d*i^3*(a*d - b*c)))/(a*d - b*c))*((2*A - 3*B)*1i)/((a*d - b*c)*(3*B^2*b^2 - 2*A*B*b^2)))/(d*i^3*(a*d - b*c)^2) - log((e*(a + b*x))/(c + d*x))^2*(B^2/(2*d^2*i^3*(2*c*x + d*x^2 + c^2/d)) - (B^2*b^2)/(2*d*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))) - (log((e*(a + b*x))/(c + d*x)))*((A*B)/(b*d^2*i^3) + (B^2*x*(a*d - b*c))/(d*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) - (B^2*b^2*((a^2*d^2 + 2*b^2*c^2 - 3*a*b*c*d)/(2*b^3*d) - (c*(a*d - b*c))/(2*b^2*d)))/(d*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)))/((d*x^2)/b + c^2/(b*d) + (2*c*x)/b - ((2*A^2*a*d - 2*A^2*b*c + B^2*a*d - 7*B^2*b*c - 2*A*B*a*d + 6*A*B*b*c)/(2*(a*d - b*c)) - (x*(3*B^2*b*d - 2*A*B*b*d))/(a*d - b*c))/(2*c^2*d*i^3 + 2*d^3*i^3*x^2 + 4*c*d^2*i^3*x)

sympy [B] time = 6.18, size = 892, normalized size = 3.01

$$\frac{Bb^2(2A - 3B) \log\left(x + \frac{2ABab^2d + 2ABb^3c - 3B^2ab^2d - 3B^2b^3c - \frac{Ba^3b^2d^3(2A-3B)}{(ad-bc)^2} + \frac{3Ba^2b^3cd^2(2A-3B)}{(ad-bc)^2} - \frac{3Bab^4c^2d(2A-3B)}{(ad-bc)^2} + \frac{Bb^5c^3(2A-3B)}{(ad-bc)^2}}{4ABb^3d - 6B^2b^3d}\right)}{2di^3(ad-bc)^2} + Bb^2$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))**2/(d*i*x+c*i)**3,x)

[Out] -B*b**2*(2*A - 3*B)*log(x + (2*A*B*a*b**2*d + 2*A*B*b**3*c - 3*B**2*a*b**2*d - 3*B**2*b**3*c - B*a**3*b**2*d**3*(2*A - 3*B)/(a*d - b*c)**2 + 3*B*a**2*b**3*c*d**2*(2*A - 3*B)/(a*d - b*c)**2 - 3*B*a*b**4*c**2*d*(2*A - 3*B)/(a*d - b*c)**2 + B*b**5*c**3*(2*A - 3*B)/(a*d - b*c)**2)/(4*A*B*b**3*d - 6*B**2*b**3*d))/(2*d*i**3*(a*d - b*c)**2) + B*b**2*(2*A - 3*B)*log(x + (2*A*B*a*b**2*d + 2*A*B*b**3*c - 3*B**2*a*b**2*d - 3*B**2*b**3*c + B*a**3*b**2*d**3*(2*A - 3*B)/(a*d - b*c)**2 - 3*B*a**2*b**3*c*d**2*(2*A - 3*B)/(a*d - b*c)**2 + 3*B*a*b**4*c**2*d*(2*A - 3*B)/(a*d - b*c)**2 - B*b**5*c**3*(2*A - 3*B)/(a*d - b*c)**2)/(4*A*B*b**3*d - 6*B**2*b**3*d))/(2*d*i**3*(a*d - b*c)**2) + (-B**2*a**2*d + 2*B**2*a*b*c + 2*B**2*b**2*c*x + B**2*b**2*d*x**2)*log(e*(a

$$\begin{aligned}
& + b*x)/(c + d*x))**2/(2*a**2*c**2*d**2*i**3 + 4*a**2*c*d**3*i**3*x + 2*a** \\
& 2*d**4*i**3*x**2 - 4*a*b*c**3*d*i**3 - 8*a*b*c**2*d**2*i**3*x - 4*a*b*c*d** \\
& 3*i**3*x**2 + 2*b**2*c**4*i**3 + 4*b**2*c**3*d*i**3*x + 2*b**2*c**2*d**2*i* \\
& *3*x**2) + (-2*A*B*a*d + 2*A*B*b*c + B**2*a*d - 3*B**2*b*c - 2*B**2*b*d*x)* \\
& \log(e*(a + b*x)/(c + d*x))/(2*a*c**2*d**2*i**3 + 4*a*c*d**3*i**3*x + 2*a*d* \\
& *4*i**3*x**2 - 2*b*c**3*d*i**3 - 4*b*c**2*d**2*i**3*x - 2*b*c*d**3*i**3*x** \\
& 2) + (-2*A**2*a*d + 2*A**2*b*c + 2*A*B*a*d - 6*A*B*b*c - B**2*a*d + 7*B**2* \\
& b*c + x*(-4*A*B*b*d + 6*B**2*b*d))/(4*a*c**2*d**2*i**3 - 4*b*c**3*d*i**3 + \\
& x**2*(4*a*d**4*i**3 - 4*b*c*d**3*i**3) + x*(8*a*c*d**3*i**3 - 8*b*c**2*d**2 \\
& *i**3))
\end{aligned}$$

$$3.104 \quad \int \frac{\left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)(ci+dix)^3} dx$$

Optimal. Leaf size=375

$$\frac{b^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)^3}{3Bgi^3(bc-ad)^3} + \frac{d^2(a+bx)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)^2}{2gi^3(c+dx)^2(bc-ad)^3} - \frac{Bd^2(a+bx)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{2gi^3(c+dx)^2(bc-ad)^3} - \frac{2bd(a+bx)}{gi^3(c+dx)}$$

[Out] $\frac{1}{4}B^2d^2(bx+a)^2/(-ad+bc)^3/g/i^3/(dx+c)^2+4A*b*B*d*(bx+a)/(-ad+bc)^3/g/i^3/(dx+c)-4*b*B^2*d*(bx+a)/(-ad+bc)^3/g/i^3/(dx+c)+4*b*B^2*d*(bx+a)*\ln(e*(bx+a)/(dx+c))/(-ad+bc)^3/g/i^3/(dx+c)-1/2*B*d^2*(bx+a)^2*(A+B*\ln(e*(bx+a)/(dx+c)))/(-ad+bc)^3/g/i^3/(dx+c)^2+1/2*d^2*(bx+a)^2*(A+B*\ln(e*(bx+a)/(dx+c)))^2/(-ad+bc)^3/g/i^3/(dx+c)^2-2*b*d*(bx+a)*(A+B*\ln(e*(bx+a)/(dx+c)))^2/(-ad+bc)^3/g/i^3/(dx+c)+1/3*b^2*(A+B*\ln(e*(bx+a)/(dx+c)))^3/B/(-ad+bc)^3/g/i^3$

Rubi [C] time = 7.37, antiderivative size = 1899, normalized size of antiderivative = 5.06, number of steps used = 117, number of rules used = 31, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}} = 0.738$, Rules used = {2528, 2524, 12, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2525, 44, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x)])^2/((a*g + b*g*x)*(c*i + d*i*x)^3), x]

[Out] $\frac{B^2}{(4*(b*c - a*d)*g*i^3*(c + d*x)^2) + (7*b*B^2)/(2*(b*c - a*d)^2*g*i^3*(c + d*x))} + \frac{(7*b^2*B^2*Log[a + b*x])/(2*(b*c - a*d)^3*g*i^3) - (A*b^2*B*Log[a + b*x]^2)/((b*c - a*d)^3*g*i^3) + (3*b^2*B^2*Log[a + b*x]^2)/(2*(b*c - a*d)^3*g*i^3) + (b^2*B^2*Log[a + b*x]*Log[(c + d*x)^{-1}]^2)/((b*c - a*d)^3*g*i^3) - (b^2*B^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[(c + d*x)^{-1}]^2)/((b*c - a*d)^3*g*i^3) - (b^2*B^2*Log[-((b*c - a*d)/(d*(a + b*x))])*Log[(e*(a + b*x))/(c + d*x)]^2)/((b*c - a*d)^3*g*i^3) - (b^2*B^2*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)]^2)/((b*c - a*d)^3*g*i^3) - (B*(A + B*Log[(e*(a + b*x))/(c + d*x]))/(2*(b*c - a*d)*g*i^3*(c + d*x)^2) - (3*b*B*(A + B*Log[(e*(a + b*x))/(c + d*x])))/((b*c - a*d)^2*g*i^3*(c + d*x)) - (3*b^2*B*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x])))/((b*c - a*d)^3*g*i^3) + (A + B*Log[(e*(a + b*x))/(c + d*x)]^2)/(2*(b*c - a*d)*g*i^3*(c + d*x)^2) + (b*(A + B*Log[(e*(a + b*x))/(c + d*x)]^2)/((b*c - a*d)^2*g*i^3*(c + d*x)) + (b^2*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]^2)/((b*c - a*d)^3*g*i^3) - ($

$$\begin{aligned}
& 7*b^2*B^2*Log[c + d*x]]/(2*(b*c - a*d)^3*g*i^3) + (b^2*B^2*Log[a + b*x]^2*Log[c + d*x]]/((b*c - a*d)^3*g*i^3) + (2*A*b^2*B*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x]]/((b*c - a*d)^3*g*i^3) - (3*b^2*B^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x]]/((b*c - a*d)^3*g*i^3) + (2*b^2*B^2*Log[a + b*x]*Log[(c + d*x)^(-1)]*Log[c + d*x]]/((b*c - a*d)^3*g*i^3) - (2*b^2*B^2*Log[-((d*(a + b*x))/(b*c - a*d))]*(Log[a + b*x] + Log[(c + d*x)^(-1)] - Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x]]/((b*c - a*d)^3*g*i^3) + (3*b^2*B*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x]]/((b*c - a*d)^3*g*i^3) - (b^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2*Log[c + d*x]]/((b*c - a*d)^3*g*i^3) - (A*b^2*B*Log[c + d*x]^2)/((b*c - a*d)^3*g*i^3) + (3*b^2*B^2*Log[c + d*x]^2)/(2*(b*c - a*d)^3*g*i^3) + (b^2*B^2*Log[a + b*x]*Log[c + d*x]^2)/((b*c - a*d)^3*g*i^3) - (b^2*B^2*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x]^2)/((b*c - a*d)^3*g*i^3) - (b^2*B^2*Log[c + d*x]^3)/(3*(b*c - a*d)^3*g*i^3) + (2*A*b^2*B*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)]/((b*c - a*d)^3*g*i^3) - (3*b^2*B^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)]/((b*c - a*d)^3*g*i^3) - (b^2*B^2*Log[a + b*x]^2*Log[(b*(c + d*x))/(b*c - a*d)]/((b*c - a*d)^3*g*i^3) + (2*A*b^2*B*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))]/((b*c - a*d)^3*g*i^3) - (3*b^2*B^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))]/((b*c - a*d)^3*g*i^3) - (2*b^2*B^2*Log[a + b*x]*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))]/((b*c - a*d)^3*g*i^3) + (2*A*b^2*B*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]/((b*c - a*d)^3*g*i^3) - (3*b^2*B^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]/((b*c - a*d)^3*g*i^3) + (2*b^2*B^2*Log[(c + d*x)^(-1)]*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]/((b*c - a*d)^3*g*i^3) - (2*b^2*B^2*(Log[a + b*x] + Log[(c + d*x)^(-1)] - Log[(e*(a + b*x))/(c + d*x)])*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]/((b*c - a*d)^3*g*i^3) + (2*b^2*B^2*Log[(e*(a + b*x))/(c + d*x)]*PolyLog[2, 1 + (b*c - a*d)/(d*(a + b*x))]/((b*c - a*d)^3*g*i^3) + (2*b^2*B^2*PolyLog[3, -((d*(a + b*x))/(b*c - a*d))]/((b*c - a*d)^3*g*i^3) + (2*b^2*B^2*PolyLog[3, (b*(c + d*x))/(b*c - a*d)]/((b*c - a*d)^3*g*i^3) + (2*b^2*B^2*PolyLog[3, 1 + (b*c - a*d)/(d*(a + b*x))]/((b*c - a*d)^3*g*i^3)
\end{aligned}$$

Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 30

```
Int[(x_)^(m_), x_Symbol] := Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && NeQ[m, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])
```

Rule 2301

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2302

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] := Dist[1/(b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p}, x]

Rule 2317

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e, Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]

Rule 2344

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_.) + (e_.)*(x_))), x_Symbol] := Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]

Rule 2374

Int[(Log[(d_.)*((e_.) + (f_.)*(x_)^(m_.))]*(a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] := -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0] && EqQ[d*e, 1]

Rule 2375

Int[(Log[(d_.)*((e_.) + (f_.)*(x_)^(m_.))^(r_.)]*(a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] := Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m - 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d, e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_.)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))])*(b_.)/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])^p/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] := Dist[1/e, Subst[Int[(g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
```

RfX, x] && IntegerQ[p]

Rule 2433

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] := Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(e*i - d*j)/e + (j*x)/e]^m)], x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]

Rule 2434

Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] := Simp[Log[x]*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Log[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x]*(f + g*Log[h*(i + j*x)^m))]/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]

Rule 2440

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] := Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f + g*Log[h*(-((j*k - i*l)/l) + (j*x)/l]^m)], x], x, k + l*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]

Rule 2488

Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] := -Simp[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/h, x] + Dist[(p*r*s*(b*c - a*d)/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1)/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c, d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ[b*g - a*h, 0] && IGtQ[s, 0]

Rule 2499

Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]*(s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.) + (k_.)*(x_)), x_Symbol] := Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r)/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dist[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)

, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r}, x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]

Rule 2500

Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]*(s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))/((j_.) + (k_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a + b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x), x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ[b*c - a*d, 0]

Rule 2506

Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[(v - 1)*(c + d*x)/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/(b*c - a*d), x] + Dist[h*p*r*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1)/(a + b*x)*(c + d*x), x], x] /; FreeQ[{g, h}, x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]

Rule 2507

Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_Symbol] :> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g + h*x)^t]^u)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/(p*r*(s + 1)*(b*c - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/(g + h*x), x], x] /; FreeQ[k, x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && NeQ[s, -1]

Rule 2524

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]

Rule 2525

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.


```
), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunci
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] := With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /; !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] := With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] := With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\begin{aligned}
\int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(104c + 104dx)^3(ag + bgx)} dx &= \int \left(\frac{b^3 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{1124864(bc - ad)^3g(a + bx)} - \frac{d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{1124864(bc - ad)g(c + dx)^3} - \frac{bd \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{1124864(bc - ad)g(c + dx)^2} \right) dx \\
&= \frac{b^3 \int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{a+bx} dx}{1124864(bc - ad)^3g} - \frac{(b^2d) \int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{c+dx} dx}{1124864(bc - ad)^3g} - \frac{(bd) \int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(c+dx)^2} dx}{1124864(bc - ad)g} \\
&= \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{2249728(bc - ad)g(c + dx)^2} + \frac{b \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{1124864(bc - ad)^2g(c + dx)} + \frac{b^2 \log(a + bx)}{1124864(bc - ad)g} \\
&= \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{2249728(bc - ad)g(c + dx)^2} + \frac{b \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{1124864(bc - ad)^2g(c + dx)} + \frac{b^2 \log(a + bx)}{1124864(bc - ad)g} \\
&= \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{2249728(bc - ad)g(c + dx)^2} + \frac{b \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{1124864(bc - ad)^2g(c + dx)} + \frac{b^2 \log(a + bx)}{1124864(bc - ad)g} \\
&= \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{2249728(bc - ad)g(c + dx)^2} + \frac{b \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{1124864(bc - ad)^2g(c + dx)} + \frac{b^2 \log(a + bx)}{1124864(bc - ad)g} \\
&= -\frac{B \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2249728(bc - ad)g(c + dx)^2} - \frac{3bB \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1124864(bc - ad)^2g(c + dx)} - \frac{3b^2B \log(a + bx)}{1124864(bc - ad)g} \\
&= -\frac{B \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2249728(bc - ad)g(c + dx)^2} - \frac{3bB \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1124864(bc - ad)^2g(c + dx)} - \frac{3b^2B \log(a + bx)}{1124864(bc - ad)g} \\
&= -\frac{b^2B^2 \log(a + bx) \log^2\left(\frac{e(a+bx)}{c+dx}\right)}{1124864(bc - ad)^3g} - \frac{B \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2249728(bc - ad)g(c + dx)^2} - \frac{3bB \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1124864(bc - ad)g} \\
&= \frac{B^2}{4499456(bc - ad)g(c + dx)^2} + \frac{7bB^2}{2249728(bc - ad)^2g(c + dx)} + \frac{7b^2B^2 \log(a + bx)}{2249728(bc - ad)g} \\
&= \frac{B^2}{4499456(bc - ad)g(c + dx)^2} + \frac{7bB^2}{2249728(bc - ad)^2g(c + dx)} + \frac{7b^2B^2 \log(a + bx)}{2249728(bc - ad)g} \\
&= \frac{B^2}{4499456(bc - ad)g(c + dx)^2} + \frac{7bB^2}{2249728(bc - ad)^2g(c + dx)} + \frac{7b^2B^2 \log(a + bx)}{2249728(bc - ad)g}
\end{aligned}$$

Mathematica [A] time = 1.26, size = 290, normalized size = 0.77

$$\frac{6b^2(2A^2 - 6AB + 7B^2)\log(a + bx) + \frac{6b(2A^2 - 6AB + 7B^2)(bc - ad)}{c + dx} + \frac{3(2A^2 - 2AB + B^2)(bc - ad)^2}{(c + dx)^2} + \frac{6B(Bd(a + bx)(ad - 4bc - 3bdx) + 2Ab^2)}{(c + dx)^2}}{}$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x]))^2/((a*g + b*g*x)*(c*i + d*i*x)^3), x]

[Out] ((3*(2*A^2 - 2*A*B + B^2)*(b*c - a*d)^2)/(c + d*x)^2 + (6*b*(2*A^2 - 6*A*B + 7*B^2)*(b*c - a*d))/(c + d*x) + 6*b^2*(2*A^2 - 6*A*B + 7*B^2)*Log[a + b*x] + (6*B*(b*c - a*d)*(B*(-7*b*c + a*d - 6*b*d*x) + A*(6*b*c - 2*a*d + 4*b*d*x))*Log[(e*(a + b*x))/(c + d*x)]/(c + d*x)^2 + (6*B*(2*A*b^2*(c + d*x)^2 + B*d*(a + b*x)*(-4*b*c + a*d - 3*b*d*x))*Log[(e*(a + b*x))/(c + d*x)]^2)/(c + d*x)^2 + 4*b^2*B^2*Log[(e*(a + b*x))/(c + d*x)]^3 - 6*b^2*(2*A^2 - 6*A*B + 7*B^2)*Log[c + d*x])/(12*(b*c - a*d)^3*g*i^3)

fricas [A] time = 1.06, size = 545, normalized size = 1.45

$$\frac{3(6A^2 - 14AB + 15B^2)b^2c^2 - 24(A^2 - 2AB + 2B^2)abcd + 3(2A^2 - 2AB + B^2)a^2d^2 + 4(B^2b^2d^2x^2 + 2B^2b^2d^2x + B^2b^2d^2)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)/(d*i*x+c*i)^3,x, algorithm="fricas")

[Out] 1/12*(3*(6*A^2 - 14*A*B + 15*B^2)*b^2*c^2 - 24*(A^2 - 2*A*B + 2*B^2)*a*b*c*d + 3*(2*A^2 - 2*A*B + B^2)*a^2*d^2 + 4*(B^2*b^2*d^2*x^2 + 2*B^2*b^2*c*d*x + B^2*b^2*c^2)*log((b*e*x + a*e)/(d*x + c))^3 + 6*((2*A*B - 3*B^2)*b^2*d^2*x^2 + 2*A*B*b^2*c^2 - 4*B^2*a*b*c*d + B^2*a^2*d^2 - 2*(B^2*a*b*d^2 - 2*(A*B - B^2)*b^2*c*d)*x)*log((b*e*x + a*e)/(d*x + c))^2 + 6*((2*A^2 - 6*A*B + 7*B^2)*b^2*c*d - (2*A^2 - 6*A*B + 7*B^2)*a*b*d^2)*x + 6*((2*A^2 - 6*A*B + 7*B^2)*b^2*d^2*x^2 + 2*A^2*b^2*c^2 - 8*(A*B - B^2)*a*b*c*d + (2*A*B - B^2)*a^2*d^2 + 2*(2*(A^2 - 2*A*B + 2*B^2)*b^2*c*d - (2*A*B - 3*B^2)*a*b*d^2)*x)*log((b*e*x + a*e)/(d*x + c)))/(b^3*c^3*d^2 - 3*a*b^2*c^2*d^3 + 3*a^2*b*c^2*d^4 - a^3*d^5)*g*i^3*x^2 + 2*(b^3*c^4*d - 3*a*b^2*c^3*d^2 + 3*a^2*b*c^2*d^3 - a^3*c*d^4)*g*i^3*x + (b^3*c^5 - 3*a*b^2*c^4*d + 3*a^2*b*c^3*d^2 - a^3*c^2*d^3)*g*i^3)

giac [A] time = 1.56, size = 628, normalized size = 1.67

$$\left(4 B^2 b^2 i e^2 \log\left(\frac{bx+ae}{dx+c}\right)^3 + 12 AB b^2 i e^2 \log\left(\frac{bx+ae}{dx+c}\right)^2 - \frac{24 (bx+ae) B^2 b d i e \log\left(\frac{bx+ae}{dx+c}\right)^2}{dx+c} + 12 A^2 b^2 i e^2 \log\left(\frac{bx+ae}{dx+c}\right) - \frac{48 (bx+ae)}{dx+c} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)/(d*i*x+c*i)^3,x, algorith="giac")

[Out] 1/12*(4*B^2*b^2*i*e^2*log((b*x*e + a*e)/(d*x + c))^3 + 12*A*B*b^2*i*e^2*log((b*x*e + a*e)/(d*x + c))^2 - 24*(b*x*e + a*e)*B^2*b*d*i*e*log((b*x*e + a*e)/(d*x + c))^2/(d*x + c) + 12*A^2*b^2*i*e^2*log((b*x*e + a*e)/(d*x + c)) - 48*(b*x*e + a*e)*A*B*b*d*i*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c) + 48*(b*x*e + a*e)*B^2*b*d*i*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c) + 6*(b*x*e + a*e)^2*B^2*d^2*i*log((b*x*e + a*e)/(d*x + c))^2/(d*x + c)^2 - 24*(b*x*e + a*e)*A^2*b*d*i*e/(d*x + c) + 48*(b*x*e + a*e)*A*B*b*d*i*e/(d*x + c) - 48*(b*x*e + a*e)*B^2*b*d*i*e/(d*x + c) + 12*(b*x*e + a*e)^2*A*B*d^2*i*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 - 6*(b*x*e + a*e)^2*B^2*d^2*i*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 + 6*(b*x*e + a*e)^2*A^2*d^2*i/(d*x + c)^2 - 6*(b*x*e + a*e)^2*A*B*d^2*i/(d*x + c)^2 + 3*(b*x*e + a*e)^2*B^2*d^2*i/(d*x + c)^2*(b*c/((b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))/(b^2*c^2*g*e - 2*a*b*c*d*g*e + a^2*d^2*g*e)

maple [B] time = 0.05, size = 2842, normalized size = 7.58

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)/(d*i*x+c*i)^3,x)

[Out] -2*d/i^3/(a*d-b*c)^4/g*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b^2/(d*x+c)*a*c+1/i^3/(a*d-b*c)^4/g*A^2*b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+7/2/i^3/(a*d-b*c)^4/g*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^3*c+1/3/i^3/(a*d-b*c)^4/g*B^2*b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^3*c-3/2/i^3/(a*d-b*c)^4/g*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b^3*c-1/4*d^3/i^3/(a*d-b*c)^4/g*B^2/(d*x+c)^2*a^3-1/2*d^3/i^3/(a*d-b*c)^4/g*A^2/(d*x+c)^2*a^3+7/2/i^3/(a*d-b*c)^4/g*B^2*b^3/(d*x+c)*c^2-3/2/i^3/(a*d-b*c)^4/g*A^2*b^3*c+1/4/i^3/(a*d-b*c)^4/g*B^2/(d*x+c)^2*b^3*c^3+1/i^3/(a*d-b*c)^4/g*A^2*b^3/(d*x+c)*c^2+1/2/i^3/(a*d-b*c)^4/g*A^2/(d*x+c)^2*b^3*c^3-3/i^3/(a*d-b*c)^4/g*A*B*b^3/(d*x+c)*c^2-1/2/i^3/(a*d-b*c)^4/g*A*B/(d*x+c)^2*b^3*c^3-3/2*d^2/i^3/(a*d-b*c)^4/g*A*B/(d*x+c)^2*a^2*b*c+3/2*d/i^3/(a*d-b*c)^4/g*A*B/(d*x+c)^2*a*b^2*c^2-3/2*d^2/i^3/(a*d-b*c)

$$\begin{aligned}
&)^4/g*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a^2*b*c+15/4*d/i^3/(a*d \\
&-b*c)^4/g*B^2*b^2*a-15/4/i^3/(a*d-b*c)^4/g*B^2*b^3*c+3/2*d/i^3/(a*d-b*c)^4/ \\
&g*A^2*b^2*a+1/2*d^3/i^3/(a*d-b*c)^4/g*A*B/(d*x+c)^2*a^3+d^2/i^3/(a*d-b*c)^4 \\
&/g*A^2*b/(d*x+c)*a^2-1/3*d/i^3/(a*d-b*c)^4/g*B^2*b^2*\ln(b/d*e+(a*d-b*c)/(d* \\
&x+c)/d*e)^3*a+7/2*d^2/i^3/(a*d-b*c)^4/g*B^2*b/(d*x+c)*a^2+1/2*d^3/i^3/(a*d- \\
&b*c)^4/g*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a^3-7/2*d/i^3/(a*d-b \\
&*c)^4/g*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2*a-1/2/i^3/(a*d-b*c)^4/g*B^2 \\
&*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*b^3*c^3+1/i^3/(a*d-b*c)^4/g*B^2* \\
&ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b^3/(d*x+c)*c^2+1/2/i^3/(a*d-b*c)^4/g*B^2 \\
&*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d*x+c)^2*b^3*c^3+3/2*d/i^3/(a*d-b*c)^4/ \\
&g*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b^2*a-1/2*d^3/i^3/(a*d-b*c)^4/g*B^2 \\
&*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d*x+c)^2*a^3-d/i^3/(a*d-b*c)^4/g*A^2*b^ \\
&2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+1/i^3/(a*d-b*c)^4/g*A*B*b^3*\ln(b/d*e+(a \\
&*d-b*c)/(d*x+c)/d*e)^2*c-3/i^3/(a*d-b*c)^4/g*A*B*\ln(b/d*e+(a*d-b*c)/(d*x+c) \\
&/d*e)*b^3*c-3/i^3/(a*d-b*c)^4/g*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^3/(d* \\
&x+c)*c^2+3*d^2/i^3/(a*d-b*c)^4/g*A*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c \\
&)^2*a^2*b*c-3*d/i^3/(a*d-b*c)^4/g*A*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+ \\
&c)^2*a*b^2*c^2-4*d/i^3/(a*d-b*c)^4/g*A*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^ \\
&2/(d*x+c)*a*c+3/2*d/i^3/(a*d-b*c)^4/g*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(\\
&d*x+c)^2*a*b^2*c^2+1/i^3/(a*d-b*c)^4/g*A*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(\\
&d*x+c)^2*b^3*c^3+d^2/i^3/(a*d-b*c)^4/g*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e) \\
&^2*b/(d*x+c)*a^2+6*d/i^3/(a*d-b*c)^4/g*A*B*b^2/(d*x+c)*a*c-7/2*d/i^3/(a*d-b \\
&*c)^4/g*A*B*b^2*a+7/2/i^3/(a*d-b*c)^4/g*A*B*b^3*c-3*d^2/i^3/(a*d-b*c)^4/g*A \\
&*B*b/(d*x+c)*a^2+3/2*d^2/i^3/(a*d-b*c)^4/g*A^2/(d*x+c)^2*a^2*b*c-3*d^2/i^3/ \\
&(a*d-b*c)^4/g*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b/(d*x+c)*a^2-2*d/i^3/(a \\
&d-b*c)^4/g*A^2*b^2/(d*x+c)*a*c-7*d/i^3/(a*d-b*c)^4/g*B^2*b^2/(d*x+c)*a*c-3/ \\
&4*d/i^3/(a*d-b*c)^4/g*B^2/(d*x+c)^2*a*b^2*c^2+3/4*d^2/i^3/(a*d-b*c)^4/g*B^2 \\
&/d*x+c)^2*a^2*b*c-3/2*d/i^3/(a*d-b*c)^4/g*A^2/(d*x+c)^2*b^2*c^2*a-d^3/i^3/ \\
&(a*d-b*c)^4/g*A*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a^3+3*d/i^3/(a \\
&d-b*c)^4/g*A*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2*a+6*d/i^3/(a*d-b*c)^4/g* \\
&B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2/(d*x+c)*a*c-d/i^3/(a*d-b*c)^4/g*A*B \\
&*b^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a+3/2*d^2/i^3/(a*d-b*c)^4/g*B^2*\ln(b \\
&/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d*x+c)^2*a^2*b*c-3/2*d/i^3/(a*d-b*c)^4/g*B^2 \\
&*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d*x+c)^2*a*b^2*c^2+2*d^2/i^3/(a*d-b*c)^ \\
&4/g*A*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b/(d*x+c)*a^2+2/i^3/(a*d-b*c)^4/g*A \\
&*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^3/(d*x+c)*c^2
\end{aligned}$$

maxima [B] time = 3.06, size = 2116, normalized size = 5.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)/(d*i*x+c*i)^3,x, algor
ithm="maxima")

[Out] $\frac{1}{2}B^2 \left(\frac{(2bdx + 3bc - a)d}{(b^2c^2d^2 - 2abc^2d^3 + a^2d^4)} g^i \right)^3 x^2 + 2(b^2c^3d - 2abc^2d^2 + a^2cd^3) g^i^3 x + (b^2c^4 - 2abc^3d + a^2c^2d^2) g^i^3 + 2b^2 \log(bx + a) / ((b^3c^3 - 3ab^2c^2d + 3a^2b^2cd^2 - a^3d^3) g^i^3) - 2b^2 \log(dx + c) / ((b^3c^3 - 3ab^2c^2d + 3a^2b^2cd^2 - a^3d^3) g^i^3) - 2b^2 \log(dx + c) / ((b^3c^3 - 3ab^2c^2d + 3a^2b^2cd^2 - a^3d^3) g^i^3) \log(bex/(dx + c) + a/(dx + c))^2 + AB \left(\frac{(2bdx + 3bc - a)d}{(b^2c^2d^2 - 2abc^2d^3 + a^2d^4)} g^i \right)^3 x^2 + 2(b^2c^3d - 2abc^2d^2 + a^2cd^3) g^i^3 x + (b^2c^4 - 2abc^3d + a^2c^2d^2) g^i^3 + 2b^2 \log(bx + a) / ((b^3c^3 - 3ab^2c^2d + 3a^2b^2cd^2 - a^3d^3) g^i^3) - 2b^2 \log(dx + c) / ((b^3c^3 - 3ab^2c^2d + 3a^2b^2cd^2 - a^3d^3) g^i^3) \log(bex/(dx + c) + a/(dx + c)) - \frac{1}{12}B^2 (6(7b^2c^2 - 8abc^2d + a^2d^2 + 2(b^2d^2x^2 + 2b^2cdx + b^2c^2) \log(bx + a)^2 + 2(b^2d^2x^2 + 2b^2cdx + b^2c^2) \log(dx + c)^2 + 6(b^2cd - abd^2)x + 6(b^2d^2x^2 + 2b^2cdx + b^2c^2) \log(bx + a) - 2(3b^2d^2x^2 + 6b^2cdx + 3b^2c^2 + 2(b^2d^2x^2 + 2b^2cdx + b^2c^2) \log(bx + a)) \log(dx + c)) \log(bex/(dx + c) + a/(dx + c)) / (b^3c^5g^i^3 - 3ab^2c^4d^2g^i^3 + 3a^2b^2c^3d^2g^i^3 - a^3c^2d^3g^i^3 + (b^3c^3d^2g^i^3 - 3ab^2c^2d^3g^i^3 + 3a^2b^2cd^4g^i^3 - a^3d^5g^i^3)x^2 + 2(b^3c^4d^2g^i^3 - 3ab^2c^3d^2g^i^3 + 3a^2b^2cd^3g^i^3 - a^3cd^4g^i^3)x) - (45b^2c^2 - 48abc^2d + 3a^2d^2 + 4(b^2d^2x^2 + 2b^2cdx + b^2c^2) \log(bx + a)^3 - 4(b^2d^2x^2 + 2b^2cdx + b^2c^2) \log(dx + c)^3 + 18(b^2d^2x^2 + 2b^2cdx + b^2c^2) \log(bx + a)^2 + 6(3b^2d^2x^2 + 6b^2cdx + 3b^2c^2 + 2(b^2d^2x^2 + 2b^2cdx + b^2c^2) \log(bx + a)) \log(dx + c)^2 + 42(b^2cd - abd^2)x + 42(b^2d^2x^2 + 2b^2cdx + b^2c^2) \log(bx + a) - 6(7b^2d^2x^2 + 14b^2cdx + 7b^2c^2 + 2(b^2d^2x^2 + 2b^2cdx + b^2c^2) \log(bx + a)^2 + 6(b^2d^2x^2 + 2b^2cdx + b^2c^2) \log(bx + a)) \log(dx + c)) / (b^3c^5g^i^3 - 3ab^2c^4d^2g^i^3 + 3a^2b^2c^3d^2g^i^3 - a^3c^2d^3g^i^3 + (b^3c^3d^2g^i^3 - 3ab^2c^2d^3g^i^3 + 3a^2b^2cd^4g^i^3 - a^3d^5g^i^3)x^2 + 2(b^3c^4d^2g^i^3 - 3ab^2c^3d^2g^i^3 + 3a^2b^2cd^3g^i^3 - a^3cd^4g^i^3)x) + \frac{1}{2}A^2 \left(\frac{(2bdx + 3bc - a)d}{(b^2c^2d^2 - 2abc^2d^3 + a^2d^4)} g^i \right)^3 x^2 + 2(b^2c^3d - 2abc^2d^2 + a^2cd^3) g^i^3 x + (b^2c^4 - 2abc^3d + a^2c^2d^2) g^i^3 + 2b^2 \log(bx + a) / ((b^3c^3 - 3ab^2c^2d + 3a^2b^2cd^2 - a^3d^3) g^i^3) - 2b^2 \log(dx + c) / ((b^3c^3 - 3ab^2c^2d + 3a^2b^2cd^2 - a^3d^3) g^i^3) - \frac{1}{2}(7b^2c^2 - 8abc^2d + a^2d^2 + 2(b^2d^2x^2 + 2b^2cdx + b^2c^2) \log(bx + a)^2 + 2(b^2d^2x^2 + 2b^2cdx + b^2c^2) \log(dx + c)^2 + 6(b^2cd - abd^2)x + 6(b^2d^2x^2 + 2b^2cdx + b^2c^2) \log(bx + a) - 2(3b^2d^2x^2 + 6b^2cdx + 3b^2c^2 + 2(b^2d^2x^2 + 2b^2cdx + b^2c^2) \log(bx + a)) \log(dx + c)) AB / (b^3c^5g^i^3 - 3ab^2c^4d^2g^i^3 + 3a^2b^2c^3d^2g^i^3 - a^3c^2d^3g^i^3 + (b^3c^3d^2g^i^3 - 3ab^2c^2d^3g^i^3 + 3a^2b^2cd^4g^i^3 - a^3d^5g^i^3)x^2 + 2(b^3c^4d^2g^i^3 - 3ab^2c^3d^2g^i^3 + 3a^2b^2cd^3g^i^3 - a^3cd^4g^i^3)x)$

mupad [B] time = 8.10, size = 984, normalized size = 2.62

$$-\ln\left(\frac{e(a+bx)}{c+dx}\right)^2 \left(\frac{B^2 b^2 \left(\frac{a^2 d^2 - 3abcd + 2b^2 c^2}{2b^3 d} - \frac{c(ad-bc)}{2b^2 d} \right)}{g i^3 (a^3 d^3 - 3a^2 b c d^2 + 3a b^2 c^2 d - b^3 c^3)} - \frac{B^2 x(ad-bc)}{g i^3 (a^3 d^3 - 3a^2 b c d^2 + 3a b^2 c^2 d - b^3 c^3)} \right) + \frac{B b^2 (2A + \dots)}{2g i^3 (a^3 d^3 - 3a^2 b c d^2 + \dots)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((A + B*log((e*(a + b*x))/(c + d*x)))^2/((a*g + b*g*x)*(c*i + d*i*x)^3), x)`

[Out] `(b^2*atan((b^2*(A^2 + (7*B^2)/2 - 3*A*B)*(2*a^3*d^3*g*i^3 + 2*b^3*c^3*g*i^3 - 2*a*b^2*c^2*d*g*i^3 - 2*a^2*b*c*d^2*g*i^3)*1i)/(g*i^3*(a*d - b*c)^3*(2*A^2*b^2 + 7*B^2*b^2 - 6*A*B*b^2)) + (b^3*d*x*(a^2*d^2*g*i^3 + b^2*c^2*g*i^3 - 2*a*b*c*d*g*i^3)*(A^2 + (7*B^2)/2 - 3*A*B)*4i)/(g*i^3*(a*d - b*c)^3*(2*A^2*b^2 + 7*B^2*b^2 - 6*A*B*b^2)))*(A^2 + (7*B^2)/2 - 3*A*B)*2i)/(g*i^3*(a*d - b*c)^3) - ((2*A^2*a*d - 6*A^2*b*c + B^2*a*d - 15*B^2*b*c - 2*A*B*a*d + 14*A*B*b*c)/(2*(a*d - b*c)) - (x*(2*A^2*b*d + 7*B^2*b*d - 6*A*B*b*d))/(a*d - b*c))/(x^2*(2*a*d^3*g*i^3 - 2*b*c*d^2*g*i^3) + x*(4*a*c*d^2*g*i^3 - 4*b*c^2*d*g*i^3) - 2*b*c^3*g*i^3 + 2*a*c^2*d*g*i^3) - (log((e*(a + b*x))/(c + d*x)))*(B^2/(b*d*g*i^3*(a*d - b*c)) + (B*b^2*((a^2*d^2 + 2*b^2*c^2 - 3*a*b*c*d)/(2*b^3*d) - (c*(a*d - b*c))/(2*b^2*d))*(2*A - 3*B))/(g*i^3*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2)) - (B*x*(2*A - 3*B)*(a*d - b*c))/(g*i^3*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2)))/((d*x^2)/b + c^2/(b*d) + (2*c*x)/b) - log((e*(a + b*x))/(c + d*x))^2*((B^2*b^2*((a^2*d^2 + 2*b^2*c^2 - 3*a*b*c*d)/(2*b^3*d) - (c*(a*d - b*c))/(2*b^2*d)))/(g*i^3*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2)) - (B^2*x*(a*d - b*c))/(g*i^3*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2)))/((d*x^2)/b + c^2/(b*d) + (2*c*x)/b) + (B*b^2*(2*A - 3*B))/(2*g*i^3*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2)) - (B^2*b^2*log((e*(a + b*x))/(c + d*x))^3)/(3*g*i^3*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2))`

sympy [B] time = 14.45, size = 1488, normalized size = 3.97

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)/(d*i*x+c*i)**3,x)`

[Out] `-B**2*b**2*log(e*(a + b*x)/(c + d*x))**3/(3*a**3*d**3*g*i**3 - 9*a**2*b*c*d**2*g*i**3 + 9*a*b**2*c**2*d*g*i**3 - 3*b**3*c**3*g*i**3) + b**2*(2*A**2 - 6*A*B + 7*B**2)*log(x + (2*A**2*a*b**2*d + 2*A**2*b**3*c - 6*A*B*a*b**2*d -`

$$\begin{aligned}
& 6*A*B*b**3*c + 7*B**2*a*b**2*d + 7*B**2*b**3*c - a**4*b**2*d**4*(2*A**2 - \\
& 6*A*B + 7*B**2)/(a*d - b*c)**3 + 4*a**3*b**3*c*d**3*(2*A**2 - 6*A*B + 7*B** \\
& 2)/(a*d - b*c)**3 - 6*a**2*b**4*c**2*d**2*(2*A**2 - 6*A*B + 7*B**2)/(a*d - \\
& b*c)**3 + 4*a*b**5*c**3*d*(2*A**2 - 6*A*B + 7*B**2)/(a*d - b*c)**3 - b**6*c \\
& **4*(2*A**2 - 6*A*B + 7*B**2)/(a*d - b*c)**3)/(4*A**2*b**3*d - 12*A*B*b**3* \\
& d + 14*B**2*b**3*d))/(2*g*i**3*(a*d - b*c)**3) - b**2*(2*A**2 - 6*A*B + 7*B \\
& **2)*log(x + (2*A**2*a*b**2*d + 2*A**2*b**3*c - 6*A*B*a*b**2*d - 6*A*B*b**3 \\
& *c + 7*B**2*a*b**2*d + 7*B**2*b**3*c + a**4*b**2*d**4*(2*A**2 - 6*A*B + 7*B \\
& **2)/(a*d - b*c)**3 - 4*a**3*b**3*c*d**3*(2*A**2 - 6*A*B + 7*B**2)/(a*d - b \\
& *c)**3 + 6*a**2*b**4*c**2*d**2*(2*A**2 - 6*A*B + 7*B**2)/(a*d - b*c)**3 - 4 \\
& *a*b**5*c**3*d*(2*A**2 - 6*A*B + 7*B**2)/(a*d - b*c)**3 + b**6*c**4*(2*A**2 \\
& - 6*A*B + 7*B**2)/(a*d - b*c)**3)/(4*A**2*b**3*d - 12*A*B*b**3*d + 14*B**2 \\
& *b**3*d))/(2*g*i**3*(a*d - b*c)**3) + (-2*A*B*a*d + 6*A*B*b*c + 4*A*B*b*d*x \\
& + B**2*a*d - 7*B**2*b*c - 6*B**2*b*d*x)*log(e*(a + b*x)/(c + d*x))/(2*a**2 \\
& *c**2*d**2*g*i**3 + 4*a**2*c*d**3*g*i**3*x + 2*a**2*d**4*g*i**3*x**2 - 4*a* \\
& b*c**3*d*g*i**3 - 8*a*b*c**2*d**2*g*i**3*x - 4*a*b*c*d**3*g*i**3*x**2 + 2*b \\
& **2*c**4*g*i**3 + 4*b**2*c**3*d*g*i**3*x + 2*b**2*c**2*d**2*g*i**3*x**2) + \\
& (-2*A*B*b**2*c**2 - 4*A*B*b**2*c*d*x - 2*A*B*b**2*d**2*x**2 - B**2*a**2*d** \\
& 2 + 4*B**2*a*b*c*d + 2*B**2*a*b*d**2*x + 4*B**2*b**2*c*d*x + 3*B**2*b**2*d* \\
& *2*x**2)*log(e*(a + b*x)/(c + d*x))**2/(2*a**3*c**2*d**3*g*i**3 + 4*a**3*c* \\
& d**4*g*i**3*x + 2*a**3*d**5*g*i**3*x**2 - 6*a**2*b*c**3*d**2*g*i**3 - 12*a* \\
& *2*b*c**2*d**3*g*i**3*x - 6*a**2*b*c*d**4*g*i**3*x**2 + 6*a*b**2*c**4*d*g*i \\
& **3 + 12*a*b**2*c**3*d**2*g*i**3*x + 6*a*b**2*c**2*d**3*g*i**3*x**2 - 2*b** \\
& 3*c**5*g*i**3 - 4*b**3*c**4*d*g*i**3*x - 2*b**3*c**3*d**2*g*i**3*x**2) + (- \\
& 2*A**2*a*d + 6*A**2*b*c + 2*A*B*a*d - 14*A*B*b*c - B**2*a*d + 15*B**2*b*c + \\
& x*(4*A**2*b*d - 12*A*B*b*d + 14*B**2*b*d))/(4*a**2*c**2*d**2*g*i**3 - 8*a* \\
& b*c**3*d*g*i**3 + 4*b**2*c**4*g*i**3 + x**2*(4*a**2*d**4*g*i**3 - 8*a*b*c*d \\
& **3*g*i**3 + 4*b**2*c**2*d**2*g*i**3) + x*(8*a**2*c*d**3*g*i**3 - 16*a*b*c* \\
& *2*d**2*g*i**3 + 8*b**2*c**3*d*g*i**3))
\end{aligned}$$

$$3.105 \quad \int \frac{\left(A+B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^2(ci+dix)^3} dx$$

Optimal. Leaf size=525

$$\frac{b^3(c+dx)\left(B \log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{g^2i^3(a+bx)(bc-ad)^4} - \frac{2b^3B(c+dx)\left(B \log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{g^2i^3(a+bx)(bc-ad)^4} - \frac{b^2d\left(B \log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^3}{Bg^2i^3(bc-ad)^4} - \frac{d^3(a+bx)^2}{2g^2i^3}$$

[Out] $-1/4*B^2*d^3*(b*x+a)^2/(-a*d+b*c)^4/g^2/i^3/(d*x+c)^2-6*A*b*B*d^2*(b*x+a)/(-a*d+b*c)^4/g^2/i^3/(d*x+c)+6*b*B^2*d^2*(b*x+a)/(-a*d+b*c)^4/g^2/i^3/(d*x+c)-2*b^3*B^2*(d*x+c)/(-a*d+b*c)^4/g^2/i^3/(b*x+a)-6*b*B^2*d^2*(b*x+a)*\ln(e*(b*x+a)/(d*x+c))/(-a*d+b*c)^4/g^2/i^3/(d*x+c)+1/2*B*d^3*(b*x+a)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^4/g^2/i^3/(d*x+c)^2-2*b^3*B*(d*x+c)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^4/g^2/i^3/(b*x+a)-1/2*d^3*(b*x+a)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/(-a*d+b*c)^4/g^2/i^3/(d*x+c)^2+3*b*d^2*(b*x+a)*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/(-a*d+b*c)^4/g^2/i^3/(d*x+c)-b^3*(d*x+c)*(A+B*\ln(e*(b*x+a)/(d*x+c)))^2/(-a*d+b*c)^4/g^2/i^3/(b*x+a)-b^2*d*(A+B*\ln(e*(b*x+a)/(d*x+c)))^3/B/(-a*d+b*c)^4/g^2/i^3$

Rubi [C] time = 8.42, antiderivative size = 2071, normalized size of antiderivative = 3.94, number of steps used = 143, number of rules used = 31, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}} = 0.738$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x)])^2/((a*g + b*g*x)^2*(c*i + d*i*x)^3), x]

[Out] $(-2*b^2*B^2)/((b*c - a*d)^3*g^2*i^3*(a + b*x)) - (B^2*d)/(4*(b*c - a*d)^2*g^2*i^3*(c + d*x)^2) - (11*b*B^2*d)/(2*(b*c - a*d)^3*g^2*i^3*(c + d*x)) - (15*b^2*B^2*d*Log[a + b*x])/(2*(b*c - a*d)^4*g^2*i^3) + (3*A*b^2*B*d*Log[a + b*x]^2)/((b*c - a*d)^4*g^2*i^3) - (3*b^2*B^2*d*Log[a + b*x]^2)/(2*(b*c - a*d)^4*g^2*i^3) - (3*b^2*B^2*d*Log[a + b*x]*Log[(c + d*x)^(-1)]^2)/((b*c - a*d)^4*g^2*i^3) + (3*b^2*B^2*d*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[(c + d*x)^(-1)]^2)/((b*c - a*d)^4*g^2*i^3) + (3*b^2*B^2*d*Log[-((b*c - a*d)/(d*(a + b*x))])*Log[(e*(a + b*x))/(c + d*x)]^2)/((b*c - a*d)^4*g^2*i^3) + (3*b^2*B^2*d*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)]^2)/((b*c - a*d)^4*g^2*i^3) - (2*b^2*B*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/((b*c - a*d)^3*g^2*i^3*(a + b*x)) + (B*d*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(2*(b*c - a*d)^2*g^2*i^3*(c + d*x)^2) + (5*b*B*d*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/((b*c - a*d$

$$\begin{aligned}
&)^3 g^{2i^3} (c + dx) + (3b^2 B^2 d \operatorname{Log}[a + bx] * (A + B \operatorname{Log}[(e(a + bx)) / (c + dx)])) / ((b^2 c - a^2 d)^4 g^{2i^3} - (b^2 (A + B \operatorname{Log}[(e(a + bx)) / (c + dx)]))^2) / ((b^2 c - a^2 d)^3 g^{2i^3} (a + bx)) - (d (A + B \operatorname{Log}[(e(a + bx)) / (c + dx)]))^2 / (2 (b^2 c - a^2 d)^2 g^{2i^3} (c + dx)^2) - (2 b^2 d (A + B \operatorname{Log}[(e(a + bx)) / (c + dx)]))^2 / ((b^2 c - a^2 d)^3 g^{2i^3} (c + dx)) - (3 b^2 d \operatorname{Log}[a + bx] * (A + B \operatorname{Log}[(e(a + bx)) / (c + dx)]))^2 / ((b^2 c - a^2 d)^4 g^{2i^3} + (15 b^2 B^2 d \operatorname{Log}[c + dx]) / (2 (b^2 c - a^2 d)^4 g^{2i^3} - (3 b^2 B^2 d \operatorname{Log}[a + bx]^2 \operatorname{Log}[c + dx]) / ((b^2 c - a^2 d)^4 g^{2i^3} - (6 A b^2 B^2 d \operatorname{Log}[-((d(a + bx)) / (b^2 c - a^2 d))] * \operatorname{Log}[c + dx]) / ((b^2 c - a^2 d)^4 g^{2i^3} + (3 b^2 B^2 d \operatorname{Log}[-((d(a + bx)) / (b^2 c - a^2 d))] * \operatorname{Log}[c + dx]) / ((b^2 c - a^2 d)^4 g^{2i^3} - (6 b^2 B^2 d \operatorname{Log}[a + bx] * \operatorname{Log}[(c + dx)^{-1}] * \operatorname{Log}[c + dx]) / ((b^2 c - a^2 d)^4 g^{2i^3} + (6 b^2 B^2 d \operatorname{Log}[-((d(a + bx)) / (b^2 c - a^2 d))] * (\operatorname{Log}[a + bx] + \operatorname{Log}[(c + dx)^{-1}] - \operatorname{Log}[(e(a + bx)) / (c + dx)])) * \operatorname{Log}[c + dx]) / ((b^2 c - a^2 d)^4 g^{2i^3} - (3 b^2 B^2 d (A + B \operatorname{Log}[(e(a + bx)) / (c + dx)])) * \operatorname{Log}[c + dx]) / ((b^2 c - a^2 d)^4 g^{2i^3} + (3 b^2 d (A + B \operatorname{Log}[(e(a + bx)) / (c + dx)]))^2 \operatorname{Log}[c + dx]) / ((b^2 c - a^2 d)^4 g^{2i^3} + (3 A b^2 B^2 d \operatorname{Log}[c + dx]^2) / ((b^2 c - a^2 d)^4 g^{2i^3} - (3 b^2 B^2 d \operatorname{Log}[c + dx]^2) / (2 (b^2 c - a^2 d)^4 g^{2i^3} - (3 b^2 B^2 d \operatorname{Log}[a + bx] * \operatorname{Log}[c + dx]^2) / ((b^2 c - a^2 d)^4 g^{2i^3} + (3 b^2 B^2 d \operatorname{Log}[(e(a + bx)) / (c + dx)] * \operatorname{Log}[c + dx]^2) / ((b^2 c - a^2 d)^4 g^{2i^3} + (b^2 B^2 d \operatorname{Log}[c + dx]^3) / ((b^2 c - a^2 d)^4 g^{2i^3} - (6 A b^2 B^2 d \operatorname{Log}[a + bx] * \operatorname{Log}[(b(c + dx)) / (b^2 c - a^2 d)]) / ((b^2 c - a^2 d)^4 g^{2i^3} + (3 b^2 B^2 d \operatorname{Log}[a + bx] * \operatorname{Log}[(b(c + dx)) / (b^2 c - a^2 d)]) / ((b^2 c - a^2 d)^4 g^{2i^3} + (3 b^2 B^2 d \operatorname{Log}[a + bx]^2 \operatorname{Log}[(b(c + dx)) / (b^2 c - a^2 d)]) / ((b^2 c - a^2 d)^4 g^{2i^3} - (6 A b^2 B^2 d \operatorname{PolyLog}[2, -((d(a + bx)) / (b^2 c - a^2 d))]) / ((b^2 c - a^2 d)^4 g^{2i^3} + (3 b^2 B^2 d \operatorname{PolyLog}[2, -((d(a + bx)) / (b^2 c - a^2 d))]) / ((b^2 c - a^2 d)^4 g^{2i^3} + (6 b^2 B^2 d \operatorname{Log}[a + bx] * \operatorname{PolyLog}[2, -((d(a + bx)) / (b^2 c - a^2 d))]) / ((b^2 c - a^2 d)^4 g^{2i^3} - (6 A b^2 B^2 d \operatorname{PolyLog}[2, (b(c + dx)) / (b^2 c - a^2 d)]) / ((b^2 c - a^2 d)^4 g^{2i^3} + (3 b^2 B^2 d \operatorname{PolyLog}[2, (b(c + dx)) / (b^2 c - a^2 d)]) / ((b^2 c - a^2 d)^4 g^{2i^3} - (6 b^2 B^2 d \operatorname{Log}[(c + dx)^{-1}] * \operatorname{PolyLog}[2, (b(c + dx)) / (b^2 c - a^2 d)]) / ((b^2 c - a^2 d)^4 g^{2i^3} + (6 b^2 B^2 d * (\operatorname{Log}[a + bx] + \operatorname{Log}[(c + dx)^{-1}] - \operatorname{Log}[(e(a + bx)) / (c + dx)])) * \operatorname{PolyLog}[2, (b(c + dx)) / (b^2 c - a^2 d)]) / ((b^2 c - a^2 d)^4 g^{2i^3} - (6 b^2 B^2 d \operatorname{Log}[(e(a + bx)) / (c + dx)] * \operatorname{PolyLog}[2, 1 + (b^2 c - a^2 d) / (d(a + bx))]) / ((b^2 c - a^2 d)^4 g^{2i^3} - (6 b^2 B^2 d \operatorname{PolyLog}[3, -((d(a + bx)) / (b^2 c - a^2 d))]) / ((b^2 c - a^2 d)^4 g^{2i^3} - (6 b^2 B^2 d \operatorname{PolyLog}[3, (b(c + dx)) / (b^2 c - a^2 d)]) / ((b^2 c - a^2 d)^4 g^{2i^3} - (6 b^2 B^2 d \operatorname{PolyLog}[3, 1 + (b^2 c - a^2 d) / (d(a + bx))]) / ((b^2 c - a^2 d)^4 g^{2i^3}))
\end{aligned}$$

Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] := Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
```

eQ[m, -1]

Rule 44

Int[((a_) + (b_)*(x_)^(m_))*((c_) + (d_)*(x_)^(n_)), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])

Rule 2301

Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2302

Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)^(p_)/(x_), x_Symbol] := Dist[1/(b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p}, x]

Rule 2317

Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)^(p_)/((d_) + (e_)*(x_)), x_Symbol] := Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e, Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]

Rule 2344

Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)^(p_)/((x_)*((d_) + (e_)*(x_))), x_Symbol] := Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]

Rule 2374

Int[(Log[(d_)*((e_) + (f_)*(x_)^(m_))])*((a_) + Log[(c_)*(x_)^(n_)])*(b_)^(p_)/(x_), x_Symbol] := -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0] && EqQ[d*e, 1]

Rule 2375

Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.))/(x_), x_Symbol] := Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m - 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d, e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*((f_) + (g_.)*(x_)^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2396

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]

Rule 2411

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*((f_.) + (g_.)*(x_)^(q_.))*((h_.) + (i_.)*(x_)^(r_.), x_Symbol] := Dist[1/e, Subst[Int[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e

*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]

Rule 2418

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n]]^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]

Rule 2433

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] := Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(e*i - d*j)/e + (j*x)/e]^m)], x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]

Rule 2434

Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] := Simp[Log[x]*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Log[x]*(a + b*Log[c*(d + e*x)^n))]/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x]*(f + g*Log[h*(i + j*x)^m))]/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]

Rule 2440

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] := Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f + g*Log[h*(-((j*k - i*l)/l) + (j*x)/l]^m)], x], x, k + l*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]

Rule 2488

Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] := -Simp[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/h, x] + Dist[(p*r*s*(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c, d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ[b*g - a*h, 0] && IGtQ[s, 0]

Rule 2499

```

Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] := Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q]^r)/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]

```

Rule 2500

```

Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] := Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]

```

Rule 2506

```

Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] := With[{g = Simplify[((v - 1)*(c +
d*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1)/(a
+ b*x)*(c + d*x), x], x] /; FreeQ[{g, h}, x] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]

```

Rule 2507

```

Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] := With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
h*x)^t]^u)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/(p*r*(s + 1)*(b*c
- a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q]^r]^s)/(g + h*x), x], x] /; FreeQ[k, x] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
EqQ[p + q, 0] && NeQ[s, -1]

```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] := With[{w = DerivativeDivides[v, u*v, x]}, Simp[w*PolyLog[n + 1, v], x] /; !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] := With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; SimplifyIntegrandQ[v, u, x]]
```

Rule 6742

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Int[u_, x_Symbol] := With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]]
```

Rubi steps

$$\begin{aligned}
\int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(105c + 105dx)^3(ag + bgx)^2} dx &= \int \left(\frac{b^3 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{1157625(bc - ad)^3 g^2 (a + bx)^2} - \frac{b^3 d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{385875(bc - ad)^4 g^2 (a + bx)} + \frac{d^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{1157625(bc - ad)^3 g^2 (c + dx)^2} \right) dx \\
&= -\frac{(b^3 d) \int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{a+bx} dx}{385875(bc - ad)^4 g^2} + \frac{(b^2 d^2) \int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{c+dx} dx}{385875(bc - ad)^4 g^2} + \frac{b^3 \int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{a+bx} dx}{1157625(bc - ad)^3 g^2} \\
&= -\frac{b^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{1157625(bc - ad)^3 g^2 (a + bx)} - \frac{d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{2315250(bc - ad)^2 g^2 (c + dx)^2} - \frac{2bd \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{1157625(bc - ad)^3 g^2 (a + bx)} \\
&= -\frac{b^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{1157625(bc - ad)^3 g^2 (a + bx)} - \frac{d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{2315250(bc - ad)^2 g^2 (c + dx)^2} - \frac{2bd \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{1157625(bc - ad)^3 g^2 (a + bx)} \\
&= -\frac{b^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{1157625(bc - ad)^3 g^2 (a + bx)} - \frac{d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{2315250(bc - ad)^2 g^2 (c + dx)^2} - \frac{2bd \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{1157625(bc - ad)^3 g^2 (a + bx)} \\
&= -\frac{b^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{1157625(bc - ad)^3 g^2 (a + bx)} - \frac{d \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{2315250(bc - ad)^2 g^2 (c + dx)^2} - \frac{2bd \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{1157625(bc - ad)^3 g^2 (a + bx)} \\
&= -\frac{2b^2 B \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1157625(bc - ad)^3 g^2 (a + bx)} + \frac{Bd \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2315250(bc - ad)^2 g^2 (c + dx)^2} + \frac{bBd \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2315250(bc - ad)^3 g^2 (a + bx)} \\
&= -\frac{2b^2 B \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1157625(bc - ad)^3 g^2 (a + bx)} + \frac{Bd \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2315250(bc - ad)^2 g^2 (c + dx)^2} + \frac{bBd \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2315250(bc - ad)^3 g^2 (a + bx)} \\
&= \frac{b^2 B^2 d \log(a + bx) \log^2\left(\frac{e(a+bx)}{c+dx}\right)}{385875(bc - ad)^4 g^2} - \frac{2b^2 B \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1157625(bc - ad)^3 g^2 (a + bx)} + \frac{Bd \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2315250(bc - ad)^2 g^2 (c + dx)^2} \\
&= -\frac{2b^2 B^2}{1157625(bc - ad)^3 g^2 (a + bx)} - \frac{B^2 d}{4630500(bc - ad)^2 g^2 (c + dx)^2} - \frac{2b^2 B^2}{1157625(bc - ad)^3 g^2 (a + bx)} \\
&= -\frac{2b^2 B^2}{1157625(bc - ad)^3 g^2 (a + bx)} - \frac{B^2 d}{4630500(bc - ad)^2 g^2 (c + dx)^2} - \frac{2b^2 B^2}{1157625(bc - ad)^3 g^2 (a + bx)} \\
&= -\frac{2b^2 B^2}{1157625(bc - ad)^3 g^2 (a + bx)} - \frac{B^2 d}{4630500(bc - ad)^2 g^2 (c + dx)^2} - \frac{2b^2 B^2}{1157625(bc - ad)^3 g^2 (a + bx)}
\end{aligned}$$

Mathematica [A] time = 1.55, size = 453, normalized size = 0.86

$$2B(a^3Bd^3 - 3a^2bBd^2(2c + dx) + 3ab^2d(2A(c + dx)^2 - Bdx(4c + 3dx)) + b^3(6Adx(c + dx)^2 + B(2c^3 + 6c^2dx$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x)])^2/((a*g + b*g*x)^2*(c*i + d*i*x)^3), x]

[Out]
$$-1/4*((2*A^2 - 2*A*B + B^2)*d*(b*c - a*d)^2*(a + b*x) + 2*b*(4*A^2 - 10*A*B + 11*B^2)*d*(b*c - a*d)*(a + b*x)*(c + d*x) + 4*b^2*(A^2 + 2*A*B + 2*B^2)*(b*c - a*d)*(c + d*x)^2 + 6*b^2*(2*A^2 - 2*A*B + 5*B^2)*d*(a + b*x)*(c + d*x)^2*\text{Log}[a + b*x] + 2*B*(b*c - a*d)*((2*A - B)*d*(b*c - a*d)*(a + b*x) + 2*b*(4*A - 5*B)*d*(a + b*x)*(c + d*x) + 4*b^2*(A + B)*(c + d*x)^2)*\text{Log}[(e*(a + b*x))/(c + d*x)] + 2*B*(a^3*B*d^3 - 3*a^2*b*B*d^2*(2*c + d*x) + 3*a*b^2*d*(2*A*(c + d*x)^2 - B*d*x*(4*c + 3*d*x)) + b^3*(6*A*d*x*(c + d*x)^2 + B*(2*c^3 + 6*c^2*d*x - 3*d^3*x^3)))*\text{Log}[(e*(a + b*x))/(c + d*x)]^2 + 4*b^2*B^2*d*(a + b*x)*(c + d*x)^2*\text{Log}[(e*(a + b*x))/(c + d*x)]^3 - 6*b^2*(2*A^2 - 2*A*B + 5*B^2)*d*(a + b*x)*(c + d*x)^2*\text{Log}[c + d*x]/((b*c - a*d)^4*g^2*i^3*(a + b*x)*(c + d*x)^2)$$

fricas [A] time = 0.93, size = 1008, normalized size = 1.92

$$4(A^2 + 2AB + 2B^2)b^3c^3 + 3(2A^2 - 10AB + 5B^2)ab^2c^2d - 12(A^2 - 2AB + 2B^2)a^2bcd^2 + (2A^2 - 2AB +$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^2/(d*i*x+c*i)^3,x, algorithm="fricas")

[Out]
$$-1/4*(4*(A^2 + 2*A*B + 2*B^2)*b^3*c^3 + 3*(2*A^2 - 10*A*B + 5*B^2)*a*b^2*c^2*d - 12*(A^2 - 2*A*B + 2*B^2)*a^2*b*c*d^2 + (2*A^2 - 2*A*B + B^2)*a^3*d^3 + 4*(B^2*b^3*d^3*x^3 + B^2*a*b^2*c^2*d + (2*B^2*b^3*c*d^2 + B^2*a*b^2*d^3)*x^2 + (B^2*b^3*c^2*d + 2*B^2*a*b^2*c*d^2)*x)*\text{log}((b*e*x + a*e)/(d*x + c))^3 + 6*((2*A^2 - 2*A*B + 5*B^2)*b^3*c*d^2 - (2*A^2 - 2*A*B + 5*B^2)*a*b^2*d^3)*x^2 + 2*(3*(2*A*B - B^2)*b^3*d^3*x^3 + 2*B^2*b^3*c^3 + 6*A*B*a*b^2*c^2*d - 6*B^2*a^2*b*c*d^2 + B^2*a^3*d^3 + 3*(4*A*B*b^3*c*d^2 + (2*A*B - 3*B^2)*a*b^2*d^3)*x^2 - 3*(B^2*a^2*b*d^3 - 2*(A*B + B^2)*b^3*c^2*d - 4*(A*B - B^2)*a*b^2*c*d^2)*x)*\text{log}((b*e*x + a*e)/(d*x + c))^2 + 3*((6*A^2 - 2*A*B + 13*B^2)*b^3*c^2*d - 2*(2*A^2 + 2*A*B + 3*B^2)*a*b^2*c*d^2 - (2*A^2 - 6*A*B + 7*B^2)*a^2*b*d^3)*x + 2*(3*(2*A^2 - 2*A*B + 5*B^2)*b^3*d^3*x^3 + 6*A^2*a*b^2*c^2*d + 4*(A*B + B^2)*b^3*c^3 - 12*(A*B - B^2)*a^2*b*c*d^2 + (2*A*B - B^2)*a^3$$

```
*d^3 + 3*(4*(A^2 + 2*B^2)*b^3*c*d^2 + (2*A^2 - 6*A*B + 7*B^2)*a*b^2*d^3)*x^
2 + 3*(2*(A^2 + 2*A*B + 2*B^2)*b^3*c^2*d + 4*(A^2 - 2*A*B + 2*B^2)*a*b^2*c*
d^2 - (2*A*B - 3*B^2)*a^2*b*d^3)*x)*log((b*e*x + a*e)/(d*x + c))/((b^5*c^4
*d^2 - 4*a*b^4*c^3*d^3 + 6*a^2*b^3*c^2*d^4 - 4*a^3*b^2*c*d^5 + a^4*b*d^6)*g
^2*i^3*x^3 + (2*b^5*c^5*d - 7*a*b^4*c^4*d^2 + 8*a^2*b^3*c^3*d^3 - 2*a^3*b^2
*c^2*d^4 - 2*a^4*b*c*d^5 + a^5*d^6)*g^2*i^3*x^2 + (b^5*c^6 - 2*a*b^4*c^5*d
- 2*a^2*b^3*c^4*d^2 + 8*a^3*b^2*c^3*d^3 - 7*a^4*b*c^2*d^4 + 2*a^5*c*d^5)*g^
2*i^3*x + (a*b^4*c^6 - 4*a^2*b^3*c^5*d + 6*a^3*b^2*c^4*d^2 - 4*a^4*b*c^3*d^
3 + a^5*c^2*d^4)*g^2*i^3)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^2/(d*i*x+c*i)^3,x, alg
orithm="giac")
```

[Out] Timed out

maple [B] time = 0.06, size = 3802, normalized size = 7.24

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^2/(d*i*x+c*i)^3,x)
```

```
[Out] -1/4*d^4/i^3/(a*d-b*c)^5/g^2*B^2/(d*x+c)^2*a^3-1/2*d^4/i^3/(a*d-b*c)^5/g^2*
A^2/(d*x+c)^2*a^3+2*e/i^3/(a*d-b*c)^5/g^2*B^2*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*
b*c/d*e+b/d*e)*c+3*d^3/i^3/(a*d-b*c)^5/g^2*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d
*e)/(d*x+c)^2*a^2*b*c-3*d^2/i^3/(a*d-b*c)^5/g^2*A*B*ln(b/d*e+(a*d-b*c)/(d*x
+c)/d*e)/(d*x+c)^2*a*b^2*c^2-8*d^2/i^3/(a*d-b*c)^5/g^2*A*B*ln(b/d*e+(a*d-b*
c)/(d*x+c)/d*e)*b^2/(d*x+c)*a*c-2*d*e/i^3/(a*d-b*c)^5/g^2*A*B*b^3/(1/(d*x+c)
)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+3/2*d^3/i^
3/(a*d-b*c)^5/g^2*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d*x+c)^2*a^2*b*c-3
/2*d^2/i^3/(a*d-b*c)^5/g^2*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d*x+c)^2*
a*b^2*c^2-3/2*d^3/i^3/(a*d-b*c)^5/g^2*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(
d*x+c)^2*a^2*b*c+4*d^3/i^3/(a*d-b*c)^5/g^2*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d
*e)*b/(d*x+c)*a^2+d/i^3/(a*d-b*c)^5/g^2*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)
/(d*x+c)^2*b^3*c^3+4*d/i^3/(a*d-b*c)^5/g^2*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d
*e)*b^3/(d*x+c)*c^2-2*d*e/i^3/(a*d-b*c)^5/g^2*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x
+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-d*e/i^3/(a*d-b*c)^5/g^
2*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)
)/d*e)^2*a+2*e/i^3/(a*d-b*c)^5/g^2*A*B*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e
```

$$\begin{aligned}
& +b/d*e)*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-23/4*d/i^3/(a*d-b*c)^5/g^2*B^2*b^3*c+23/4*d^2/i^3/(a*d-b*c)^5/g^2*B^2*b^2*a+2*d^3/i^3/(a*d-b*c)^5/g^2*A^2*b/(d*x+c)*a^2+3*d/i^3/(a*d-b*c)^5/g^2*A*B*b^3*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c+5*d^2/i^3/(a*d-b*c)^5/g^2*A*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2*a-5*d/i^3/(a*d-b*c)^5/g^2*A*B*b^3/(d*x+c)*c^2+3/2*d^2/i^3/(a*d-b*c)^5/g^2*A*B/(d*x+c)^2*a*b^2*c^2-3/2*d^3/i^3/(a*d-b*c)^5/g^2*A*B/(d*x+c)^2*a^2*b*c+10*d^2/i^3/(a*d-b*c)^5/g^2*A*B*b^2/(d*x+c)*a*c-2*d*e/i^3/(a*d-b*c)^5/g^2*A*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a+10*d^2/i^3/(a*d-b*c)^5/g^2*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2/(d*x+c)*a*c+3/2*d^2/i^3/(a*d-b*c)^5/g^2*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a*b^2*c^2-4*d^2/i^3/(a*d-b*c)^5/g^2*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b^2/(d*x+c)*c*a-1/2*d/i^3/(a*d-b*c)^5/g^2*A*B/(d*x+c)^2*b^3*c^3-5*d^3/i^3/(a*d-b*c)^5/g^2*A*B*b/(d*x+c)*a^2+e/i^3/(a*d-b*c)^5/g^2*B^2*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c+2*e/i^3/(a*d-b*c)^5/g^2*B^2*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-3*d^2/i^3/(a*d-b*c)^5/g^2*A^2*b^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+11/2*d^3/i^3/(a*d-b*c)^5/g^2*B^2*b/(d*x+c)*a^2+11/2*d/i^3/(a*d-b*c)^5/g^2*B^2*b^3/(d*x+c)*c^2+1/4*d/i^3/(a*d-b*c)^5/g^2*B^2/(d*x+c)^2*b^3*c^3+1/2*d^4/i^3/(a*d-b*c)^5/g^2*A*B/(d*x+c)^2*a^3+11/2*d/i^3/(a*d-b*c)^5/g^2*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^3*c-5/2*d/i^3/(a*d-b*c)^5/g^2*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b^2*a-1/2*d^4/i^3/(a*d-b*c)^5/g^2*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d*x+c)^2*a^3+1/2*d^4/i^3/(a*d-b*c)^5/g^2*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a^3-11/2*d^2/i^3/(a*d-b*c)^5/g^2*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2*a-d^2/i^3/(a*d-b*c)^5/g^2*B^2*b^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^3*a+e/i^3/(a*d-b*c)^5/g^2*A^2*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c+2*d/i^3/(a*d-b*c)^5/g^2*A^2*b^3/(d*x+c)*c^2+1/2*d/i^3/(a*d-b*c)^5/g^2*A^2/(d*x+c)^2*b^3*c^3-5/2*d/i^3/(a*d-b*c)^5/g^2*A^2*b^3*c+5/2*d^2/i^3/(a*d-b*c)^5/g^2*A^2*b^2*a+d/i^3/(a*d-b*c)^5/g^2*B^2*b^3*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^3*c+3*d/i^3/(a*d-b*c)^5/g^2*A^2*b^3*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+2*e/i^3/(a*d-b*c)^5/g^2*A*B*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c-3*d^2/i^3/(a*d-b*c)^5/g^2*A*B*b^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a-1/2*d/i^3/(a*d-b*c)^5/g^2*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*b^3*c^3-11/2*d^2/i^3/(a*d-b*c)^5/g^2*A*B*b^2*a+11/2*d/i^3/(a*d-b*c)^5/g^2*A*B*b^3*c-d*e/i^3/(a*d-b*c)^5/g^2*A^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a-5*d/i^3/(a*d-b*c)^5/g^2*A*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^3*c-2*d*e/i^3/(a*d-b*c)^5/g^2*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a-3/4*d^2/i^3/(a*d-b*c)^5/g^2*B^2/(d*x+c)^2*a*b^2*c^2+2*d^3/i^3/(a*d-b*c)^5/g^2*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b/(d*x+c)*a^2-d^4/i^3/(a*d-b*c)^5/g^2*A*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a^3+2*d/i^3/(a*d-b*c)^5/g^2*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b^3/(d*x+c)*c^2+1/2*d/i^3/(a*d-b*c)^5/g^2*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d*x+c)^2*b^3*c^3-5*d^3/i^3/(a*d-b*c)^5/g^2*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b/(d*x+c)*a^2-5*d/i^3/(a*d-b*c)^5/g^2*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^3/(d*x+c)*c^2-11*d^2/i^3/(a*d-b*c)^5/g^2*B^2*b^2/(d*x+c)*a*c-3/2*d^2/i^3/(a*d-b*c)^5/g^2*A^2/(d*x+c)^2*a*b^2*
\end{aligned}$$

$$c^2+3/4*d^3/i^3/(a*d-b*c)^5/g^2*B^2/(d*x+c)^2*a^2*b*c-4*d^2/i^3/(a*d-b*c)^5$$

$$/g^2*A^2*b^2/(d*x+c)*a*c+3/2*d^3/i^3/(a*d-b*c)^5/g^2*A^2/(d*x+c)^2*a^2*b*c$$

maxima [B] time = 4.82, size = 4188, normalized size = 7.98

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^2/(d*i*x+c*i)^3,x, alg
orithm="maxima")

[Out]
$$-1/2*B^2*((6*b^2*d^2*x^2 + 2*b^2*c^2 + 5*a*b*c*d - a^2*d^2 + 3*(3*b^2*c*d + a*b*d^2)*x)/((b^4*c^3*d^2 - 3*a*b^3*c^2*d^3 + 3*a^2*b^2*c*d^4 - a^3*b*d^5)$$

$$*g^2*i^3*x^3 + (2*b^4*c^4*d - 5*a*b^3*c^3*d^2 + 3*a^2*b^2*c^2*d^3 + a^3*b*c*d^4 - a^4*d^5)*g^2*i^3*x^2 + (b^4*c^5 - a*b^3*c^4*d - 3*a^2*b^2*c^3*d^2 + 5*a^3*b*c^2*d^3 - 2*a^4*c*d^4)*g^2*i^3*x + (a*b^3*c^5 - 3*a^2*b^2*c^4*d + 3$$

$$*a^3*b*c^3*d^2 - a^4*c^2*d^3)*g^2*i^3) + 6*b^2*d*log(b*x + a)/((b^4*c^4 - 4$$

$$*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^2*i^3) - 6*b^2*d*log(d*x + c)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^2*i^3))$$

$$*log(b*e*x/(d*x + c) + a*e/(d*x + c))^2 - A*B*((6*b^2*d^2*x^2 + 2*b^2*c^2 + 5*a*b*c*d - a^2*d^2 + 3*(3*b^2*c*d + a*b*d^2)*x)/((b^4*c^3*d^2 - 3*a*b^3*c^2*d^3 + 3*a^2*b^2*c*d^4 - a^3*b*d^5)*g^2*i^3*x^3 +$$

$$(2*b^4*c^4*d - 5*a*b^3*c^3*d^2 + 3*a^2*b^2*c^2*d^3 + a^3*b*c*d^4 - a^4*d^5)$$

$$)*g^2*i^3*x^2 + (b^4*c^5 - a*b^3*c^4*d - 3*a^2*b^2*c^3*d^2 + 5*a^3*b*c^2*d^3 - 2*a^4*c*d^4)*g^2*i^3*x + (a*b^3*c^5 - 3*a^2*b^2*c^4*d + 3*a^3*b*c^3*d^2 - a^4*c^2*d^3)*g^2*i^3) + 6*b^2*d*log(b*x + a)/((b^4*c^4 - 4*a*b^3*c^3*d +$$

$$6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^2*i^3) - 6*b^2*d*log(d*x +$$

$$c)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)$$

$$)*g^2*i^3)) *log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 1/4*B^2*(2*(4*b^3*c^3 - 1$$

$$5*a*b^2*c^2*d + 12*a^2*b*c*d^2 - a^3*d^3 - 6*(b^3*c*d^2 - a*b^2*d^3)*x^2 -$$

$$6*(b^3*d^3*x^3 + a*b^2*c^2*d + (2*b^3*c*d^2 + a*b^2*d^3)*x^2 + (b^3*c^2*d +$$

$$2*a*b^2*c*d^2)*x)*log(b*x + a)^2 - 6*(b^3*d^3*x^3 + a*b^2*c^2*d + (2*b^3*c$$

$$*d^2 + a*b^2*d^3)*x^2 + (b^3*c^2*d + 2*a*b^2*c*d^2)*x)*log(d*x + c)^2 - 3*($$

$$b^3*c^2*d + 2*a*b^2*c*d^2 - 3*a^2*b*d^3)*x - 6*(b^3*d^3*x^3 + a*b^2*c^2*d +$$

$$(2*b^3*c*d^2 + a*b^2*d^3)*x^2 + (b^3*c^2*d + 2*a*b^2*c*d^2)*x)*log(b*x + a$$

$$) + 6*(b^3*d^3*x^3 + a*b^2*c^2*d + (2*b^3*c*d^2 + a*b^2*d^3)*x^2 + (b^3*c^2$$

$$*d + 2*a*b^2*c*d^2)*x + 2*(b^3*d^3*x^3 + a*b^2*c^2*d + (2*b^3*c*d^2 + a*b^2$$

$$*d^3)*x^2 + (b^3*c^2*d + 2*a*b^2*c*d^2)*x)*log(b*x + a))*log(d*x + c))*log($$

$$b*e*x/(d*x + c) + a*e/(d*x + c))/(a*b^4*c^6*g^2*i^3 - 4*a^2*b^3*c^5*d*g^2*i$$

$$^3 + 6*a^3*b^2*c^4*d^2*g^2*i^3 - 4*a^4*b*c^3*d^3*g^2*i^3 + a^5*c^2*d^4*g^2*i$$

$$^3 + (b^5*c^4*d^2*g^2*i^3 - 4*a*b^4*c^3*d^3*g^2*i^3 + 6*a^2*b^3*c^2*d^4*g^2$$

$$*i^3 - 4*a^3*b^2*c*d^5*g^2*i^3 + a^4*b*d^6*g^2*i^3)*x^3 + (2*b^5*c^5*d*g^2$$

$$*i^3 - 7*a*b^4*c^4*d^2*g^2*i^3 + 8*a^2*b^3*c^3*d^3*g^2*i^3 - 2*a^3*b^2*c^2*d$$

$$^4*g^2*i^3 - 2*a^4*b*c*d^5*g^2*i^3 + a^5*d^6*g^2*i^3)*x^2 + (b^5*c^6*g^2*i$$

$$^3 - 2*a*b^4*c^5*d*g^2*i^3 - 2*a^2*b^3*c^4*d^2*g^2*i^3 + 8*a^3*b^2*c^3*d^3*$$

$$\begin{aligned}
& g^2 i^3 - 7a^4 b^3 c^2 d^4 g^2 i^3 + 2a^5 c^2 d^5 g^2 i^3) x) + (8b^3 c^3 + \\
& 15a^2 b^2 c^2 d - 24a^2 b^3 c^2 d^2 + a^3 d^3 + 4(b^3 d^3 x^3 + a^2 b^2 c^2 d + \\
& (2b^3 c^2 d^2 + a^2 b^2 d^3) x^2 + (b^3 c^2 d + 2a^2 b^2 c^2 d^2) x) \log(bx + a) \\
& ^3 - 4(b^3 d^3 x^3 + a^2 b^2 c^2 d + (2b^3 c^2 d^2 + a^2 b^2 d^3) x^2 + (b^3 c^2 \\
& d + 2a^2 b^2 c^2 d^2) x) \log(dx + c)^3 + 30(b^3 c^2 d^2 - a^2 b^2 d^3) x^2 + 6 \\
& *(b^3 d^3 x^3 + a^2 b^2 c^2 d + (2b^3 c^2 d^2 + a^2 b^2 d^3) x^2 + (b^3 c^2 d + \\
& 2a^2 b^2 c^2 d^2) x) \log(bx + a)^2 + 6(b^3 d^3 x^3 + a^2 b^2 c^2 d + (2b^3 c^2 \\
& d^2 + a^2 b^2 d^3) x^2 + (b^3 c^2 d + 2a^2 b^2 c^2 d^2) x + 2(b^3 d^3 x^3 + a^2 b \\
& ^2 c^2 d + (2b^3 c^2 d^2 + a^2 b^2 d^3) x^2 + (b^3 c^2 d + 2a^2 b^2 c^2 d^2) x) * \\
& \log(bx + a) \log(dx + c)^2 + 3(13b^3 c^2 d - 6a^2 b^2 c^2 d^2 - 7a^2 b^3 d^3) \\
&) x + 30(b^3 d^3 x^3 + a^2 b^2 c^2 d + (2b^3 c^2 d^2 + a^2 b^2 d^3) x^2 + (b^3 c^2 \\
& d + 2a^2 b^2 c^2 d^2) x) \log(bx + a) - 6(5b^3 d^3 x^3 + 5a^2 b^2 c^2 d + \\
& 5(2b^3 c^2 d^2 + a^2 b^2 d^3) x^2 + 2(b^3 d^3 x^3 + a^2 b^2 c^2 d + (2b^3 c^2 \\
& d^2 + a^2 b^2 d^3) x^2 + (b^3 c^2 d + 2a^2 b^2 c^2 d^2) x) \log(bx + a)^2 + 5(b \\
& ^3 c^2 d + 2a^2 b^2 c^2 d^2) x + 2(b^3 d^3 x^3 + a^2 b^2 c^2 d + (2b^3 c^2 d^2 + \\
& a^2 b^2 d^3) x^2 + (b^3 c^2 d + 2a^2 b^2 c^2 d^2) x) \log(bx + a) \log(dx + c) \\
&) / (a^4 c^6 g^2 i^3 - 4a^2 b^3 c^5 d g^2 i^3 + 6a^3 b^2 c^4 d^2 g^2 i^3 - \\
& 4a^4 b^3 c^3 d^3 g^2 i^3 + a^5 c^2 d^4 g^2 i^3 + (b^5 c^4 d^2 g^2 i^3 - 4a \\
& a^4 b^3 c^3 d^3 g^2 i^3 + 6a^2 b^3 c^2 d^4 g^2 i^3 - 4a^3 b^2 c^2 d^5 g^2 i^3 \\
& + a^4 b^3 d^6 g^2 i^3) x^3 + (2b^5 c^5 d g^2 i^3 - 7a^4 b^4 c^4 d^2 g^2 i^3 \\
& + 8a^2 b^3 c^3 d^3 g^2 i^3 - 2a^3 b^2 c^2 d^4 g^2 i^3 - 2a^4 b^3 c^2 d^5 g^2 \\
& i^3 + a^5 d^6 g^2 i^3) x^2 + (b^5 c^6 g^2 i^3 - 2a^4 b^4 c^5 d g^2 i^3 - 2a \\
& ^2 b^3 c^4 d^2 g^2 i^3 + 8a^3 b^2 c^3 d^3 g^2 i^3 - 7a^4 b^3 c^2 d^4 g^2 i^3 \\
& ^3 + 2a^5 c^2 d^5 g^2 i^3) x) - 1/2 A^2 ((6b^2 d^2 x^2 + 2b^2 c^2 + 5a^2 b \\
& c^2 d - a^2 d^2 + 3(3b^2 c^2 d + a^2 b^2 d^2) x) / ((b^4 c^3 d^2 - 3a^2 b^3 c^2 d^3 \\
& + 3a^2 b^2 c^2 d^4 - a^3 b^2 d^5) g^2 i^3 x^3 + (2b^4 c^4 d - 5a^2 b^3 c^3 d^2 \\
& + 3a^2 b^2 c^2 d^3 + a^3 b^2 c^2 d^4 - a^4 d^5) g^2 i^3 x^2 + (b^4 c^5 - a^2 b \\
& ^3 c^4 d - 3a^2 b^2 c^3 d^2 + 5a^3 b^2 c^2 d^3 - 2a^4 c^2 d^4) g^2 i^3 x + (\\
& a^2 b^3 c^5 - 3a^2 b^2 c^4 d + 3a^3 b^2 c^3 d^2 - a^4 c^2 d^3) g^2 i^3) + 6b \\
& ^2 d \log(bx + a) / ((b^4 c^4 - 4a^2 b^3 c^3 d + 6a^2 b^2 c^2 d^2 - 4a^3 b^2 c \\
& d^3 + a^4 d^4) g^2 i^3) - 6b^2 d \log(dx + c) / ((b^4 c^4 - 4a^2 b^3 c^3 d + \\
& 6a^2 b^2 c^2 d^2 - 4a^3 b^2 c^2 d^3 + a^4 d^4) g^2 i^3) - 1/2 (4b^3 c^3 - \\
& 15a^2 b^2 c^2 d + 12a^2 b^3 c^2 d^2 - a^3 d^3 - 6(b^3 c^2 d^2 - a^2 b^2 d^3) x^2 - \\
& 6(b^3 d^3 x^3 + a^2 b^2 c^2 d + (2b^3 c^2 d^2 + a^2 b^2 d^3) x^2 + (b^3 c^2 d \\
& + 2a^2 b^2 c^2 d^2) x) \log(bx + a)^2 - 6(b^3 d^3 x^3 + a^2 b^2 c^2 d + (2b^3 c^2 \\
& d^2 + a^2 b^2 d^3) x^2 + (b^3 c^2 d + 2a^2 b^2 c^2 d^2) x) \log(dx + c)^2 - 3 \\
& (b^3 c^2 d + 2a^2 b^2 c^2 d^2 - 3a^2 b^2 d^3) x - 6(b^3 d^3 x^3 + a^2 b^2 c^2 d \\
& + (2b^3 c^2 d^2 + a^2 b^2 d^3) x^2 + (b^3 c^2 d + 2a^2 b^2 c^2 d^2) x) \log(bx + \\
& a) + 6(b^3 d^3 x^3 + a^2 b^2 c^2 d + (2b^3 c^2 d^2 + a^2 b^2 d^3) x^2 + (b^3 c^2 \\
& d + 2a^2 b^2 c^2 d^2) x + 2(b^3 d^3 x^3 + a^2 b^2 c^2 d + (2b^3 c^2 d^2 + a^2 b \\
& ^2 d^3) x^2 + (b^3 c^2 d + 2a^2 b^2 c^2 d^2) x) \log(bx + a) \log(dx + c) A^2 B \\
& / (a^4 c^6 g^2 i^3 - 4a^2 b^3 c^5 d g^2 i^3 + 6a^3 b^2 c^4 d^2 g^2 i^3 - \\
& 4a^4 b^3 c^3 d^3 g^2 i^3 + a^5 c^2 d^4 g^2 i^3 + (b^5 c^4 d^2 g^2 i^3 - 4a \\
& a^4 b^3 c^3 d^3 g^2 i^3 + 6a^2 b^3 c^2 d^4 g^2 i^3 - 4a^3 b^2 c^2 d^5 g^2 i^3 \\
& + a^4 b^3 d^6 g^2 i^3) x^3 + (2b^5 c^5 d g^2 i^3 - 7a^4 b^4 c^4 d^2 g^2 i^3 +
\end{aligned}$$

$$8*a^2*b^3*c^3*d^3*g^2*i^3 - 2*a^3*b^2*c^2*d^4*g^2*i^3 - 2*a^4*b*c*d^5*g^2*i^3 + a^5*d^6*g^2*i^3)*x^2 + (b^5*c^6*g^2*i^3 - 2*a*b^4*c^5*d*g^2*i^3 - 2*a^2*b^3*c^4*d^2*g^2*i^3 + 8*a^3*b^2*c^3*d^3*g^2*i^3 - 7*a^4*b*c^2*d^4*g^2*i^3 + 2*a^5*c*d^5*g^2*i^3)*x)$$

mupad [B] time = 11.56, size = 1505, normalized size = 2.87

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{int}((A + B \cdot \log((e \cdot (a + b \cdot x)) / (c + d \cdot x)))^2 / ((a \cdot g + b \cdot g \cdot x)^2 \cdot (c \cdot i + d \cdot i \cdot x))^3), x)$

[Out] $((4 \cdot A^2 \cdot b^2 \cdot c^2 - 2 \cdot A^2 \cdot a^2 \cdot d^2 - B^2 \cdot a^2 \cdot d^2 + 8 \cdot B^2 \cdot b^2 \cdot c^2 + 2 \cdot A \cdot B \cdot a^2 \cdot d^2 + 8 \cdot A \cdot B \cdot b^2 \cdot c^2 + 10 \cdot A^2 \cdot a \cdot b \cdot c \cdot d + 23 \cdot B^2 \cdot a \cdot b \cdot c \cdot d - 22 \cdot A \cdot B \cdot a \cdot b \cdot c \cdot d) / (2 \cdot (a \cdot d - b \cdot c)) + (3 \cdot x^2 \cdot (2 \cdot A^2 \cdot b^2 \cdot d^2 + 5 \cdot B^2 \cdot b^2 \cdot d^2 - 2 \cdot A \cdot B \cdot b^2 \cdot d^2)) / (a \cdot d - b \cdot c) + (3 \cdot x \cdot (2 \cdot A^2 \cdot a \cdot b \cdot d^2 + 7 \cdot B^2 \cdot a \cdot b \cdot d^2 + 6 \cdot A^2 \cdot b^2 \cdot c \cdot d + 13 \cdot B^2 \cdot b^2 \cdot c \cdot d - 6 \cdot A \cdot B \cdot a \cdot b \cdot d^2 - 2 \cdot A \cdot B \cdot b^2 \cdot c \cdot d)) / (2 \cdot (a \cdot d - b \cdot c))) / (x \cdot (2 \cdot b^3 \cdot c^4 \cdot g^2 \cdot i^3 + 4 \cdot a^3 \cdot c \cdot d^3 \cdot g^2 \cdot i^3 - 6 \cdot a^2 \cdot b \cdot c^2 \cdot d^2 \cdot g^2 \cdot i^3) + x^2 \cdot (2 \cdot a^3 \cdot d^4 \cdot g^2 \cdot i^3 + 4 \cdot b^3 \cdot c^3 \cdot d \cdot g^2 \cdot i^3 - 6 \cdot a \cdot b^2 \cdot c^2 \cdot d^2 \cdot g^2 \cdot i^3) + x^3 \cdot (2 \cdot b^3 \cdot c^2 \cdot d^2 \cdot g^2 \cdot i^3 + 2 \cdot a^2 \cdot b \cdot d^4 \cdot g^2 \cdot i^3 - 4 \cdot a \cdot b^2 \cdot c \cdot d^3 \cdot g^2 \cdot i^3) + 2 \cdot a^3 \cdot c^2 \cdot d^2 \cdot g^2 \cdot i^3 + 2 \cdot a \cdot b^2 \cdot c^4 \cdot g^2 \cdot i^3 - 4 \cdot a^2 \cdot b \cdot c^3 \cdot d \cdot g^2 \cdot i^3) - \log((e \cdot (a + b \cdot x)) / (c + d \cdot x))^2 \cdot ((x \cdot ((3 \cdot B^2) / (2 \cdot g^2 \cdot i^3 \cdot (a^2 \cdot d^2 + b^2 \cdot c^2 - 2 \cdot a \cdot b \cdot c \cdot d))) - (3 \cdot B^2 \cdot (a \cdot d + b \cdot c)) / (g^2 \cdot i^3 \cdot (a \cdot d - b \cdot c) \cdot (a^2 \cdot d^2 + b^2 \cdot c^2 - 2 \cdot a \cdot b \cdot c \cdot d))) + (B^2 \cdot (a \cdot d + 2 \cdot b \cdot c)) / (2 \cdot g^2 \cdot i^3 \cdot (a^2 \cdot b \cdot d^3 + b^3 \cdot c^2 \cdot d - 2 \cdot a \cdot b^2 \cdot c \cdot d^2)) - (3 \cdot B^2 \cdot a \cdot c) / (g^2 \cdot i^3 \cdot (a \cdot d - b \cdot c) \cdot (a^2 \cdot d^2 + b^2 \cdot c^2 - 2 \cdot a \cdot b \cdot c \cdot d))) - (3 \cdot B^2 \cdot b \cdot d \cdot x^2) / (g^2 \cdot i^3 \cdot (a \cdot d - b \cdot c) \cdot (a^2 \cdot d^2 + b^2 \cdot c^2 - 2 \cdot a \cdot b \cdot c \cdot d))) / (d \cdot x^3 + (a \cdot c^2) / (b \cdot d) + (x^2 \cdot (a \cdot d^2 + 2 \cdot b \cdot c \cdot d)) / (b \cdot d) + (x \cdot (b \cdot c^2 + 2 \cdot a \cdot c \cdot d)) / (b \cdot d)) + (3 \cdot B \cdot b^2 \cdot d \cdot (2 \cdot A - B)) / (2 \cdot g^2 \cdot i^3 \cdot (a \cdot d - b \cdot c)^2 \cdot (a^2 \cdot d^2 + b^2 \cdot c^2 - 2 \cdot a \cdot b \cdot c \cdot d))) - (\log((e \cdot (a + b \cdot x)) / (c + d \cdot x)) \cdot (x \cdot ((3 \cdot (B^2 + 2 \cdot A \cdot B)) / (2 \cdot g^2 \cdot i^3 \cdot (a^2 \cdot d^2 + b^2 \cdot c^2 - 2 \cdot a \cdot b \cdot c \cdot d))) - (3 \cdot B \cdot (2 \cdot A - B) \cdot (a \cdot d + b \cdot c)) / (g^2 \cdot i^3 \cdot (a \cdot d - b \cdot c) \cdot (a^2 \cdot d^2 + b^2 \cdot c^2 - 2 \cdot a \cdot b \cdot c \cdot d))) + (4 \cdot B^2 \cdot b \cdot c - B^2 \cdot a \cdot d + 2 \cdot A \cdot B \cdot a \cdot d + 4 \cdot A \cdot B \cdot b \cdot c) / (2 \cdot g^2 \cdot i^3 \cdot (a^2 \cdot b \cdot d^3 + b^3 \cdot c^2 \cdot d - 2 \cdot a \cdot b^2 \cdot c \cdot d^2)) - (3 \cdot B \cdot a \cdot c \cdot (2 \cdot A - B)) / (g^2 \cdot i^3 \cdot (a \cdot d - b \cdot c) \cdot (a^2 \cdot d^2 + b^2 \cdot c^2 - 2 \cdot a \cdot b \cdot c \cdot d))) - (3 \cdot B \cdot b \cdot d \cdot x^2 \cdot (2 \cdot A - B)) / (g^2 \cdot i^3 \cdot (a \cdot d - b \cdot c) \cdot (a^2 \cdot d^2 + b^2 \cdot c^2 - 2 \cdot a \cdot b \cdot c \cdot d)))) / (d \cdot x^3 + (a \cdot c^2) / (b \cdot d) + (x^2 \cdot (a \cdot d^2 + 2 \cdot b \cdot c \cdot d)) / (b \cdot d) + (x \cdot (b \cdot c^2 + 2 \cdot a \cdot c \cdot d)) / (b \cdot d)) + (b^2 \cdot d \cdot \text{atan}((b^2 \cdot d \cdot (2 \cdot A^2 + 5 \cdot B^2 - 2 \cdot A \cdot B) \cdot (2 \cdot a^4 \cdot d^4 \cdot g^2 \cdot i^3 - 2 \cdot b^4 \cdot c^4 \cdot g^2 \cdot i^3 + 4 \cdot a \cdot b^3 \cdot c^3 \cdot d \cdot g^2 \cdot i^3 - 4 \cdot a^3 \cdot b \cdot c \cdot d^3 \cdot g^2 \cdot i^3) \cdot 3i) / (2 \cdot g^2 \cdot i^3 \cdot (a \cdot d - b \cdot c)^4 \cdot (6 \cdot A^2 \cdot b^2 \cdot d + 15 \cdot B^2 \cdot b^2 \cdot d - 6 \cdot A \cdot B \cdot b^2 \cdot d))) + (b^3 \cdot d^2 \cdot x \cdot (2 \cdot A^2 + 5 \cdot B^2 - 2 \cdot A \cdot B) \cdot (a^3 \cdot d^3 \cdot g^2 \cdot i^3 - b^3 \cdot c^3 \cdot g^2 \cdot i^3 + 3 \cdot a \cdot b^2 \cdot c^2 \cdot d \cdot g^2 \cdot i^3 - 3 \cdot a^2 \cdot b \cdot c \cdot d^2 \cdot g^2 \cdot i^3) \cdot 6i) / (g^2 \cdot i^3 \cdot (a \cdot d - b \cdot c)^4 \cdot (6 \cdot A^2 \cdot b^2 \cdot d + 15 \cdot B^2 \cdot b^2 \cdot d - 6 \cdot A \cdot B \cdot b^2 \cdot d))) \cdot (2 \cdot A^2 + 5 \cdot B^2 - 2 \cdot A \cdot B) \cdot 3i) / (g^2 \cdot i^3 \cdot (a \cdot d - b \cdot c)^4) - (B^2 \cdot b^2 \cdot d \cdot \log((e \cdot (a + b \cdot x)) / (c + d \cdot x))^3) / (g^2 \cdot i^3 \cdot (a \cdot d - b \cdot c)^2 \cdot (a^2 \cdot d^2 + b^2 \cdot c^2 - 2 \cdot a \cdot b \cdot c \cdot d)))$

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)**2/(d*i*x+c*i)**3,x)

[Out] Timed out

$$3.106 \quad \int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^3(ci+dix)^3} dx$$

Optimal. Leaf size=685

$$\frac{b^4(c+dx)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)^2}{2g^3i^3(a+bx)^2(bc-ad)^5} - \frac{b^4B(c+dx)^2 \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)}{2g^3i^3(a+bx)^2(bc-ad)^5} + \frac{4b^3d(c+dx) \left(B \log\left(\frac{e(a+bx)}{c+dx}\right) + A\right)^2}{g^3i^3(a+bx)(bc-ad)^5} + \dots$$

[Out] $\frac{1}{4}B^2d^4(bx+a)^2/(-ad+bc)^5/g^3/i^3/(dx+c)^2 + 8Ab^3d^3(bx+a)/(-ad+bc)^5/g^3/i^3/(dx+c) + 8b^3B^2d^3(dx+c)/(-ad+bc)^5/g^3/i^3/(bx+a) - 1/4b^4B^2(dx+c)^2/(-ad+bc)^5/g^3/i^3/(bx+a)^2 + 8b^3B^2d^3(bx+a) \ln(e(bx+a)/(dx+c))/(-ad+bc)^5/g^3/i^3/(dx+c) - 1/2Bd^4(bx+a)^2(A+B \ln(e(bx+a)/(dx+c)))/(-ad+bc)^5/g^3/i^3/(dx+c)^2 + 8b^3Bd^3(dx+c)(A+B \ln(e(bx+a)/(dx+c)))/(-ad+bc)^5/g^3/i^3/(bx+a) - 1/2b^4B(dx+c)^2(A+B \ln(e(bx+a)/(dx+c)))/(-ad+bc)^5/g^3/i^3/(bx+a)^2 + 1/2d^4(bx+a)^2(A+B \ln(e(bx+a)/(dx+c)))^2/(-ad+bc)^5/g^3/i^3/(dx+c)^2 - 4b^3d^3(bx+a)(A+B \ln(e(bx+a)/(dx+c)))^2/(-ad+bc)^5/g^3/i^3/(dx+c) + 4b^3d^3(dx+c)(A+B \ln(e(bx+a)/(dx+c)))^2/(-ad+bc)^5/g^3/i^3/(bx+a) - 1/2b^4(dx+c)^2(A+B \ln(e(bx+a)/(dx+c)))^2/(-ad+bc)^5/g^3/i^3/(bx+a)^2 + 2b^2d^2(A+B \ln(e(bx+a)/(dx+c)))^3/B/(-ad+bc)^5/g^3/i^3$

Rubi [C] time = 9.58, antiderivative size = 1921, normalized size of antiderivative = 2.80, number of steps used = 173, number of rules used = 31, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}} = 0.738$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

[In] $\text{Int}\left[\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2 / \left((ag+bgx)^3(ci+dix)^3\right), x\right]$

[Out] $-(b^2B^2)/(4(bc-ad)^3g^3i^3(a+bx)^2) + (15b^2B^2d)/(2(bc-ad)^4g^3i^3(a+bx)) + (B^2d^2)/(4(bc-ad)^3g^3i^3(c+dx)^2) + (15b^3B^2d^2)/(2(bc-ad)^4g^3i^3(c+dx)) + (15b^2B^2d^2 \text{Log}[a+bx])/((bc-ad)^5g^3i^3) - (6A^2b^2Bd^2 \text{Log}[a+bx]^2)/((bc-ad)^5g^3i^3) + (6b^2B^2d^2 \text{Log}[a+bx] \text{Log}[(c+dx)^{-1}])^2/((bc-ad)^5g^3i^3) - (6b^2B^2d^2 \text{Log}[-((d(a+bx))/(bc-ad))] \text{Log}[(c+dx)^{-1}])^2/((bc-ad)^5g^3i^3) - (6b^2B^2d^2 \text{Log}[-((bc-ad)/(d(a+bx)))] \text{Log}[(e(a+bx))/(c+dx])^2)/((bc-ad)^5g^3i^3) - (6b^2B^2d^2 \text{Log}[a+bx] \text{Log}[(e(a+bx))/(c+dx])^2)/((bc-ad)^5g^3i^3)$

$$\begin{aligned}
& 5g^3i^3) - (b^2B(A + B\text{Log}[(e(a + bx))/(c + dx)]))/(2(b^2c - a^2d)^3g^3i^3(a + bx)^2 + (7b^2Bd(A + B\text{Log}[(e(a + bx))/(c + dx)]))/(b^2c - a^2d)^4g^3i^3(a + bx)) - (Bd^2(A + B\text{Log}[(e(a + bx))/(c + dx)]))/(2(b^2c - a^2d)^3g^3i^3(c + dx)^2 - (7b^2Bd^2(A + B\text{Log}[(e(a + bx))/(c + dx)]))/(b^2c - a^2d)^4g^3i^3(c + dx)) - (b^2(A + B\text{Log}[(e(a + bx))/(c + dx)]))^2/(2(b^2c - a^2d)^3g^3i^3(a + bx)^2 + (3b^2d(A + B\text{Log}[(e(a + bx))/(c + dx)]))^2)/((b^2c - a^2d)^4g^3i^3(a + bx)) + (d^2(A + B\text{Log}[(e(a + bx))/(c + dx)]))^2/(2(b^2c - a^2d)^3g^3i^3(c + dx)^2 + (3bd^2(A + B\text{Log}[(e(a + bx))/(c + dx)]))^2)/((b^2c - a^2d)^4g^3i^3(c + dx)) + (6b^2d^2\text{Log}[a + bx]*(A + B\text{Log}[(e(a + bx))/(c + dx)]))^2)/((b^2c - a^2d)^5g^3i^3) - (15b^2B^2d^2\text{Log}[c + dx])/((b^2c - a^2d)^5g^3i^3) + (6b^2B^2d^2\text{Log}[a + bx]^2\text{Log}[c + dx])/((b^2c - a^2d)^5g^3i^3) + (12Ab^2Bd^2\text{Log}[-((d(a + bx))/(b^2c - a^2d))]*\text{Log}[c + dx])/((b^2c - a^2d)^5g^3i^3) + (12b^2B^2d^2\text{Log}[a + bx]*\text{Log}[(c + dx)^{-1}]*\text{Log}[c + dx])/((b^2c - a^2d)^5g^3i^3) - (12b^2B^2d^2\text{Log}[-((d(a + bx))/(b^2c - a^2d))]*(\text{Log}[a + bx] + \text{Log}[(c + dx)^{-1}] - \text{Log}[(e(a + bx))/(c + dx)]))*\text{Log}[c + dx])/((b^2c - a^2d)^5g^3i^3) - (6b^2d^2(A + B\text{Log}[(e(a + bx))/(c + dx)]))^2\text{Log}[c + dx])/((b^2c - a^2d)^5g^3i^3) - (6Ab^2Bd^2*\text{Log}[c + dx]^2)/((b^2c - a^2d)^5g^3i^3) + (6b^2B^2d^2\text{Log}[a + bx]*\text{Log}[c + dx]^2)/((b^2c - a^2d)^5g^3i^3) - (6b^2B^2d^2\text{Log}[(e(a + bx))/(c + dx)]*\text{Log}[c + dx]^2)/((b^2c - a^2d)^5g^3i^3) - (2b^2B^2d^2\text{Log}[c + dx]^3)/((b^2c - a^2d)^5g^3i^3) + (12Ab^2Bd^2\text{Log}[a + bx]*\text{Log}[(b^2(c + dx))/(b^2c - a^2d)])/((b^2c - a^2d)^5g^3i^3) - (6b^2B^2d^2\text{Log}[a + bx]^2\text{Log}[(b^2(c + dx))/(b^2c - a^2d)])/((b^2c - a^2d)^5g^3i^3) + (12Ab^2Bd^2\text{PolyLog}[2, -((d(a + bx))/(b^2c - a^2d))])/((b^2c - a^2d)^5g^3i^3) - (12b^2B^2d^2\text{Log}[a + bx]*\text{PolyLog}[2, -((d(a + bx))/(b^2c - a^2d))])/((b^2c - a^2d)^5g^3i^3) + (12Ab^2Bd^2\text{PolyLog}[2, (b^2(c + dx))/(b^2c - a^2d)])/((b^2c - a^2d)^5g^3i^3) + (12b^2B^2d^2\text{Log}[(c + dx)^{-1}]*\text{PolyLog}[2, (b^2(c + dx))/(b^2c - a^2d)])/((b^2c - a^2d)^5g^3i^3) - (12b^2B^2d^2*(\text{Log}[a + bx] + \text{Log}[(c + dx)^{-1}] - \text{Log}[(e(a + bx))/(c + dx)]))*\text{PolyLog}[2, (b^2(c + dx))/(b^2c - a^2d)])/((b^2c - a^2d)^5g^3i^3) + (12b^2B^2d^2\text{Log}[(e(a + bx))/(c + dx)]*\text{PolyLog}[2, 1 + (b^2c - a^2d)/(d(a + bx))])/((b^2c - a^2d)^5g^3i^3) + (12b^2B^2d^2\text{PolyLog}[3, -((d(a + bx))/(b^2c - a^2d))])/((b^2c - a^2d)^5g^3i^3) + (12b^2B^2d^2\text{PolyLog}[3, (b^2(c + dx))/(b^2c - a^2d)])/((b^2c - a^2d)^5g^3i^3) + (12b^2B^2d^2\text{PolyLog}[3, 1 + (b^2c - a^2d)/(d(a + bx))])/((b^2c - a^2d)^5g^3i^3)
\end{aligned}$$

Rule 12

`Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]`

Rule 30

`Int[(x_)^(m_), x_Symbol] := Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && NeQ[m, -1]`

Rule 44

```
Int[((a_) + (b_)*(x_))^(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_) + Log[(c_)*(x_)]^(n_))* (b_)]/(x_), x_Symbol] := Simp[(a + b*Log
[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_) + Log[(c_)*(x_)]^(n_))* (b_)]^(p_)]/(x_), x_Symbol] := Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
x]
```

Rule 2317

```
Int[((a_) + Log[(c_)*(x_)]^(n_))* (b_)]^(p_)]/((d_) + (e_)*(x_)), x_Symb
ol] := Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_) + Log[(c_)*(x_)]^(n_))* (b_)]^(p_)]/((x_)*((d_) + (e_)*(x_))),
x_Symbol] := Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_)*((e_) + (f_)*(x_)]^(m_)))]*((a_) + Log[(c_)*(x_)]^(n_))* (b
_)^(p_)]/(x_), x_Symbol] := -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_)*((e_) + (f_)*(x_)]^(m_))]^(r_)]*((a_) + Log[(c_)*(x_)]^(n
_))* (b_)]^(p_)]/(x_), x_Symbol] := Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
```

$c*x^n)^{(p+1)}/(b*n*(p+1)), x] - \text{Dist}[(f*m*r)/(b*n*(p+1)), \text{Int}[(x^{(m-1)}*(a + b*\text{Log}[c*x^n])^{(p+1)})/(e + f*x^m), x], x] /; \text{FreeQ}\{a, b, c, d, e, f, r, m, n\}, x] \ \&\& \ \text{IGtQ}[p, 0] \ \&\& \ \text{NeQ}[d*e, 1]$

Rule 2390

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_.) + (e_.)*(x_.))^{(n_.)}]*(b_.))^{(p_.)}*((f_.) + (g_.)*(x_.))^{(q_.)}, x_Symbol] \rightarrow \text{Dist}[1/e, \text{Subst}[\text{Int}[(f*x)/d]^q*(a + b*\text{Log}[c*x^n])^p, x], x, d + e*x], x] /; \text{FreeQ}\{a, b, c, d, e, f, g, n, p, q\}, x] \ \&\& \ \text{EqQ}[e*f - d*g, 0]$

Rule 2391

$\text{Int}[\text{Log}[(c_.)*((d_.) + (e_.)*(x_.))^{(n_.)}]]/(x_), x_Symbol] \rightarrow -\text{Simp}[\text{PolyLog}[2, -(c*e*x^n)]/n, x] /; \text{FreeQ}\{c, d, e, n\}, x] \ \&\& \ \text{EqQ}[c*d, 1]$

Rule 2393

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_.) + (e_.)*(x_.))]*(b_.)]/((f_.) + (g_.)*(x_.)), x_Symbol] \rightarrow \text{Dist}[1/g, \text{Subst}[\text{Int}[(a + b*\text{Log}[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; \text{FreeQ}\{a, b, c, d, e, f, g\}, x] \ \&\& \ \text{NeQ}[e*f - d*g, 0] \ \&\& \ \text{EqQ}[g + c*(e*f - d*g), 0]$

Rule 2394

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_.) + (e_.)*(x_.))^{(n_.)}]*(b_.)]/((f_.) + (g_.)*(x_.)), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[(e*(f + g*x))/(e*f - d*g)]*(a + b*\text{Log}[c*(d + e*x)^n]))/g, x] - \text{Dist}[(b*e*n)/g, \text{Int}[\text{Log}[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; \text{FreeQ}\{a, b, c, d, e, f, g, n\}, x] \ \&\& \ \text{NeQ}[e*f - d*g, 0]$

Rule 2396

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_.) + (e_.)*(x_.))^{(n_.)}]*(b_.))^{(p_.)}/((f_.) + (g_.)*(x_.)), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[(e*(f + g*x))/(e*f - d*g)]*(a + b*\text{Log}[c*(d + e*x)^n])^p)/g, x] - \text{Dist}[(b*e*n*p)/g, \text{Int}[(\text{Log}[(e*(f + g*x))/(e*f - d*g)]*(a + b*\text{Log}[c*(d + e*x)^n])^{(p-1)})/(d + e*x), x], x] /; \text{FreeQ}\{a, b, c, d, e, f, g, n, p\}, x] \ \&\& \ \text{NeQ}[e*f - d*g, 0] \ \&\& \ \text{IGtQ}[p, 1]$

Rule 2411

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_.) + (e_.)*(x_.))^{(n_.)}]*(b_.))^{(p_.)}*((f_.) + (g_.)*(x_.))^{(q_.)}*((h_.) + (i_.)*(x_.))^{(r_.)}, x_Symbol] \rightarrow \text{Dist}[1/e, \text{Subst}[\text{Int}[(g*x)/e]^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*\text{Log}[c*x^n])^p, x], x, d + e*x], x] /; \text{FreeQ}\{a, b, c, d, e, f, g, h, i, n, p, q, r\}, x] \ \&\& \ \text{EqQ}[e*f - d$

*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]

Rule 2418

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]

Rule 2433

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] := Dist[1/e, Subst[Int[(k*x)/d]^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(e*i - d*j)/e + (j*x)/e]^m), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]

Rule 2434

Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] := Simp[Log[x]*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Log[x]*(a + b*Log[c*(d + e*x)^n))]/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x]*(f + g*Log[h*(i + j*x)^m))]/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]

Rule 2440

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] := Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f + g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]

Rule 2488

Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)]^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] := -Simp[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/h, x] + Dist[(p*r*s*(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1)/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c, d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ[b*g - a*h, 0] && IGtQ[s, 0]

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] := Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q]^r)/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/(j_.) + (k
_.)*(x_)), x_Symbol] := Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2506

```
Int[Log[v]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] := With[{g = Simplify[(v - 1)*(c + d
*x)/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] := With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
h*x)^t]^u)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^(s + 1))/(p*r*(s + 1)*(b*c
- a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q]^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol]
:> Simp[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^n)/e, x] - Dist[(b*n*p)/e,
Int[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.),
x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1)),
x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*
(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /; FreeQ[{a, b, c, d,
e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]]
/; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x]
&& IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_Symbol]
:> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d,
e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /; !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; SimplifyIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]]
```

Rubi steps

Mathematica [A] time = 2.20, size = 611, normalized size = 0.89

$$-2B(-a^4Bd^4 + 4a^3bBd^3(2c + dx) - 6a^2b^2d^2(2A(c + dx)^2 - Bdx(4c + 3dx)) - 4ab^3d(6Adx(c + dx)^2 + B(2c^3 + 6c^2dx + 3cdx^2 + dx^3)))$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x)])^2/((a*g + b*g*x)^3*(c*i + d*i*x)^3), x]

[Out] ((2*A^2 - 2*A*B + B^2)*d^2*(b*c - a*d)^2*(a + b*x)^2 + 2*b*(6*A^2 - 14*A*B + 15*B^2)*d^2*(b*c - a*d)*(a + b*x)^2*(c + d*x) - b^2*(2*A^2 + 2*A*B + B^2)*(b*c - a*d)^2*(c + d*x)^2 + 2*b^2*(6*A^2 + 14*A*B + 15*B^2)*d*(b*c - a*d)*(a + b*x)*(c + d*x)^2 + 12*b^2*(2*A^2 + 5*B^2)*d^2*(a + b*x)^2*(c + d*x)^2*Log[a + b*x] + 2*B*(b*c - a*d)*((2*A - B)*d^2*(b*c - a*d)*(a + b*x)^2 + 2*b*(6*A - 7*B)*d^2*(a + b*x)^2*(c + d*x) - b^2*(2*A + B)*(b*c - a*d)*(c + d*x)^2 + 2*b^2*(6*A + 7*B)*d*(a + b*x)*(c + d*x)^2)*Log[(e*(a + b*x))/(c + d*x)] - 2*B*(-(a^4*B*d^4) + 4*a^3*b*B*d^3*(2*c + d*x) - 6*a^2*b^2*d^2*(2*A*(c + d*x)^2 - B*d*x*(4*c + 3*d*x)) + b^4*(-12*A*d^2*x^2*(c + d*x)^2 + B*c*(c^3 - 4*c^2*d*x - 18*c*d^2*x^2 - 12*d^3*x^3)) - 4*a*b^3*d*(6*A*d*x*(c + d*x)^2 + B*(2*c^3 + 6*c^2*d*x - 3*d^3*x^3))*Log[(e*(a + b*x))/(c + d*x)]^2 + 8*b^2*B^2*d^2*(a + b*x)^2*(c + d*x)^2*Log[(e*(a + b*x))/(c + d*x)]^3 - 12*b^2*(2*A^2 + 5*B^2)*d^2*(a + b*x)^2*(c + d*x)^2*Log[c + d*x]/(4*(b*c - a*d)^5*g^3*i^3*(a + b*x)^2*(c + d*x)^2)

fricas [B] time = 0.96, size = 1517, normalized size = 2.21

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^3/(d*i*x+c*i)^3,x, algorithm="fricas")

[Out] -1/4*(60*A*B*a^2*b^2*c^2*d^2 + (2*A^2 + 2*A*B + B^2)*b^4*c^4 - 16*(A^2 + 2*A*B + 2*B^2)*a*b^3*c^3*d + 16*(A^2 - 2*A*B + 2*B^2)*a^3*b*c*d^3 - (2*A^2 - 2*A*B + B^2)*a^4*d^4 - 12*((2*A^2 + 5*B^2)*b^4*c*d^3 - (2*A^2 + 5*B^2)*a*b^3*d^4)*x^3 - 8*(B^2*b^4*d^4*x^4 + B^2*a^2*b^2*c^2*d^2 + 2*(B^2*b^4*c*d^3 + B^2*a*b^3*d^4)*x^3 + (B^2*b^4*c^2*d^2 + 4*B^2*a*b^3*c*d^3 + B^2*a^2*b^2*d^4)*x^2 + 2*(B^2*a*b^3*c^2*d^2 + B^2*a^2*b^2*c*d^3)*x)*log((b*e*x + a*e)/(d*x + c))^3 + 6*(8*A*B*a*b^3*c*d^3 - (6*A^2 + 4*A*B + 15*B^2)*b^4*c^2*d^2 + (6*A^2 - 4*A*B + 15*B^2)*a^2*b^2*d^4)*x^2 - 2*(12*A*B*b^4*d^4*x^4 - B^2*b^4*c^4 + 8*B^2*a*b^3*c^3*d + 12*A*B*a^2*b^2*c^2*d^2 - 8*B^2*a^3*b*c*d^3 + B^2*a^4*d^4 + 12*((2*A*B + B^2)*b^4*c*d^3 + (2*A*B - B^2)*a*b^3*d^4)*x^3 + 6*(8*A*B*a*b^3*c*d^3 + (2*A*B + 3*B^2)*b^4*c^2*d^2 + (2*A*B - 3*B^2)*a^2*b^2*d^4

$$\begin{aligned}
&) * x^2 + 4 * (B^2 * b^4 * c^3 * d - B^2 * a^3 * b * d^4 + 6 * (A * B + B^2) * a * b^3 * c^2 * d^2 + 6 * \\
& (A * B - B^2) * a^2 * b^2 * c * d^3) * x) * \log((b * e * x + a * e) / (d * x + c))^2 - 4 * ((2 * A^2 + \\
& 6 * A * B + 7 * B^2) * b^4 * c^3 * d + 6 * (2 * A^2 - A * B + 4 * B^2) * a * b^3 * c^2 * d^2 - 6 * (2 * A^2 \\
& + A * B + 4 * B^2) * a^2 * b^2 * c * d^3 - (2 * A^2 - 6 * A * B + 7 * B^2) * a^3 * b * d^4) * x - 2 * (6 \\
& * (2 * A^2 + 5 * B^2) * b^4 * d^4 * x^4 + 12 * A^2 * a^2 * b^2 * c^2 * d^2 - (2 * A * B + B^2) * b^4 * c \\
& ^4 + 16 * (A * B + B^2) * a * b^3 * c^3 * d - 16 * (A * B - B^2) * a^3 * b * c * d^3 + (2 * A * B - B^2 \\
&) * a^4 * d^4 + 12 * ((2 * A^2 + 2 * A * B + 5 * B^2) * b^4 * c * d^3 + (2 * A^2 - 2 * A * B + 5 * B^2) \\
& * a * b^3 * d^4) * x^3 + 6 * ((2 * A^2 + 6 * A * B + 7 * B^2) * b^4 * c^2 * d^2 + 8 * (A^2 + 2 * B^2) * \\
& a * b^3 * c * d^3 + (2 * A^2 - 6 * A * B + 7 * B^2) * a^2 * b^2 * d^4) * x^2 + 4 * ((2 * A * B + 3 * B^2) \\
& * b^4 * c^3 * d + 6 * (A^2 + 2 * A * B + 2 * B^2) * a * b^3 * c^2 * d^2 + 6 * (A^2 - 2 * A * B + 2 * B^2 \\
&) * a^2 * b^2 * c * d^3 - (2 * A * B - 3 * B^2) * a^3 * b * d^4) * x) * \log((b * e * x + a * e) / (d * x + c \\
&)) / ((b^7 * c^5 * d^2 - 5 * a * b^6 * c^4 * d^3 + 10 * a^2 * b^5 * c^3 * d^4 - 10 * a^3 * b^4 * c^2 * d^5 \\
& + 5 * a^4 * b^3 * c * d^6 - a^5 * b^2 * d^7) * g^3 * i^3 * x^4 + 2 * (b^7 * c^6 * d - 4 * a * b^6 * c^5 \\
& * d^2 + 5 * a^2 * b^5 * c^4 * d^3 - 5 * a^4 * b^3 * c^2 * d^5 + 4 * a^5 * b^2 * c * d^6 - a^6 * b * d^7) \\
& * g^3 * i^3 * x^3 + (b^7 * c^7 - a * b^6 * c^6 * d - 9 * a^2 * b^5 * c^5 * d^2 + 25 * a^3 * b^4 * c^4 * \\
& d^3 - 25 * a^4 * b^3 * c^3 * d^4 + 9 * a^5 * b^2 * c^2 * d^5 + a^6 * b * c * d^6 - a^7 * d^7) * g^3 * i \\
& ^3 * x^2 + 2 * (a * b^6 * c^7 - 4 * a^2 * b^5 * c^6 * d + 5 * a^3 * b^4 * c^5 * d^2 - 5 * a^5 * b^2 * c^3 \\
& * d^4 + 4 * a^6 * b * c^2 * d^5 - a^7 * c * d^6) * g^3 * i^3 * x + (a^2 * b^5 * c^7 - 5 * a^3 * b^4 * c^6 \\
& * d + 10 * a^4 * b^3 * c^5 * d^2 - 10 * a^5 * b^2 * c^4 * d^3 + 5 * a^6 * b * c^3 * d^4 - a^7 * c^2 * d \\
& ^5) * g^3 * i^3)
\end{aligned}$$

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^3/(d*i*x+c*i)^3,x, alg
orithm="giac")

[Out] Timed out

maple [B] time = 0.06, size = 4782, normalized size = 6.98

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^3/(d*i*x+c*i)^3,x)

[Out]
$$\begin{aligned}
& -3/2 * d^4 / i^3 / (a * d - b * c)^6 / g^3 * B^2 * \ln(b / d * e + (a * d - b * c) / (d * x + c) / d * e) / (d * x + c)^2 * \\
& a^2 * b * c + 3/2 * d^3 / i^3 / (a * d - b * c)^6 / g^3 * B^2 * \ln(b / d * e + (a * d - b * c) / (d * x + c) / d * e) / (d * \\
& x + c)^2 * a * b^2 * c^2 + 1/2 * d * e^2 / i^3 / (a * d - b * c)^6 / g^3 * B^2 * b^4 / (1 / (d * x + c) * a * e - 1 / (d * \\
& x + c) * b * c / d * e + b / d * e)^2 * \ln(b / d * e + (a * d - b * c) / (d * x + c) / d * e)^2 * a + 1/2 * d * e^2 / i^3 / (a * \\
& d - b * c)^6 / g^3 * B^2 * b^4 / (1 / (d * x + c) * a * e - 1 / (d * x + c) * b * c / d * e + b / d * e)^2 * \ln(b / d * e + (a * \\
& d - b * c) / (d * x + c) / d * e) * a - 4 * d^2 * e / i^3 / (a * d - b * c)^6 / g^3 * B^2 * b^3 / (1 / (d * x + c) * a * e - 1 /
\end{aligned}$$

$$\begin{aligned}
& (d*x+c)*b*c/d*e+b/d*e)*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a+4*d*e/i^3/(a*d-b*c)^6/g^3*B^2*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c-8*d^2*e/i^3/(a*d-b*c)^6/g^3*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a+8*d*e/i^3/(a*d-b*c)^6/g^3*B^2*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c-3/2*d^4/i^3/(a*d-b*c)^6/g^3*A*B/(d*x+c)^2*a^2*b*c+3*d^4/i^3/(a*d-b*c)^6/g^3*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b/(d*x+c)*a^2-1/2*d^5/i^3/(a*d-b*c)^6/g^3*A^2/(d*x+c)^2*a^3-1/4*d^5/i^3/(a*d-b*c)^6/g^3*B^2/(d*x+c)^2*a^3-3*d^3/i^3/(a*d-b*c)^6/g^3*A*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a*b^2*c^2-12*d^3/i^3/(a*d-b*c)^6/g^3*A*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2/(d*x+c)*a*c-8*d^2*e/i^3/(a*d-b*c)^6/g^3*A*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a+8*d*e/i^3/(a*d-b*c)^6/g^3*A*B*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c+3*d^4/i^3/(a*d-b*c)^6/g^3*A*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a^2*b*c+d*e^2/i^3/(a*d-b*c)^6/g^3*A*B*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a+15/2*d^2/i^3/(a*d-b*c)^6/g^3*B^2*b^3/(d*x+c)*c^2-7/2*d^2/i^3/(a*d-b*c)^6/g^3*A^2*b^3*c+7/2*d^3/i^3/(a*d-b*c)^6/g^3*A^2*b^2*a+31/4*d^3/i^3/(a*d-b*c)^6/g^3*B^2*b^2*a-31/4*d^2/i^3/(a*d-b*c)^6/g^3*B^2*b^3*c+15/2*d^4/i^3/(a*d-b*c)^6/g^3*B^2*b/(d*x+c)*a^2-6*d^3/i^3/(a*d-b*c)^6/g^3*A^2*b^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a+6*d^2/i^3/(a*d-b*c)^6/g^3*A^2*b^3*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c+7/2*d^3/i^3/(a*d-b*c)^6/g^3*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b^2*a-15/2*d^3/i^3/(a*d-b*c)^6/g^3*A*B*b^2*a+15/2*d^2/i^3/(a*d-b*c)^6/g^3*A*B*b^3*c-7/2*d^2/i^3/(a*d-b*c)^6/g^3*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b^3*c-15/2*d^3/i^3/(a*d-b*c)^6/g^3*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2*a+15/2*d^2/i^3/(a*d-b*c)^6/g^3*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^3*c-2*d^3/i^3/(a*d-b*c)^6/g^3*B^2*b^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^3*a+2*d^2/i^3/(a*d-b*c)^6/g^3*B^2*b^3*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^3*c-1/2*d^5/i^3/(a*d-b*c)^6/g^3*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d*x+c)^2*a^3+1/2*d^5/i^3/(a*d-b*c)^6/g^3*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a^3+3*d^2/i^3/(a*d-b*c)^6/g^3*A^2*b^3/(d*x+c)*c^2+1/2*d^2/i^3/(a*d-b*c)^6/g^3*A^2/(d*x+c)^2*b^3*c^3-1/4*d^2/i^3/(a*d-b*c)^6/g^3*B^2*b^5/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*c-1/2*d^2/i^3/(a*d-b*c)^6/g^3*A^2*b^5/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*c+3/2*d^4/i^3/(a*d-b*c)^6/g^3*A^2/(d*x+c)^2*a^2*b*c+3/2*d^3/i^3/(a*d-b*c)^6/g^3*A*B/(d*x+c)^2*a*b^2*c^2+14*d^3/i^3/(a*d-b*c)^6/g^3*A*B*b^2/(d*x+c)*a*c+1/2*d^2/i^3/(a*d-b*c)^6/g^3*A*B*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a+8*d*e/i^3/(a*d-b*c)^6/g^3*A*B*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c-8*d^2*e/i^3/(a*d-b*c)^6/g^3*A*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a-6*d^3/i^3/(a*d-b*c)^6/g^3*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b^2/(d*x+c)*c*a+6*d^4/i^3/(a*d-b*c)^6/g^3*A*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b/(d*x+c)*a^2+6*d^2/i^3/(a*d-b*c)^6/g^3*A*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^3/(d*x+c)*c^2+3/2*d^4/i^3/(a*d-b*c)^6/g^3*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d*x+c)^2*a^2*b*c+14*d^3/i^3/(a*d-b*c)^6/g^3*B^2*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2/(d*x+c)*a*c+d^2/i^3/(a*d-b*c)^6/g^3*A*B*\ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*b^3*c^3-3/2*d^3/i^3/(a*d-b*c)^6/g^3*B^2*\ln(
\end{aligned}$$

$$\frac{b/d * e + (a*d - b*c) / (d*x + c) / d * e}{(d*x + c)^2 * a * b^2 * c^2 - e^2 / i^3 / (a*d - b*c)^6 / g^3 * A * B * b^5 / (1 / (d*x + c) * a * e - 1 / (d*x + c) * b * c / d * e + b / d * e)^2 * \ln(b/d * e + (a*d - b*c) / (d*x + c) / d * e) * c + 3 * d^4 / i^3 / (a*d - b*c)^6 / g^3 * A^2 * b / (d*x + c) * a^2 + 1/2 * d^5 / i^3 / (a*d - b*c)^6 / g^3 * A * B / (d*x + c)^2 * a^3 + 1/4 * d^2 / i^3 / (a*d - b*c)^6 / g^3 * B^2 / (d*x + c)^2 * b^3 * c^3 + 1/4 * d * e^2 / i^3 / (a*d - b*c)^6 / g^3 * B^2 * b^4 / (1 / (d*x + c) * a * e - 1 / (d*x + c) * b * c / d * e + b / d * e)^2 * a + 1/2 * d * e^2 / i^3 / (a*d - b*c)^6 / g^3 * A^2 * b^4 / (1 / (d*x + c) * a * e - 1 / (d*x + c) * b * c / d * e + b / d * e)^2 * a - 1/2 * e^2 / i^3 / (a*d - b*c)^6 / g^3 * B^2 * b^5 / (1 / (d*x + c) * a * e - 1 / (d*x + c) * b * c / d * e + b / d * e)^2 * \ln(b/d * e + (a*d - b*c) / (d*x + c) / d * e) * c - 6 * d^3 / i^3 / (a*d - b*c)^6 / g^3 * A * B * b^2 * \ln(b/d * e + (a*d - b*c) / (d*x + c) / d * e) / (d*x + c)^2 * a - d^5 / i^3 / (a*d - b*c)^6 / g^3 * A * B * \ln(b/d * e + (a*d - b*c) / (d*x + c) / d * e) / (d*x + c)^2 * a^3 + 3 * d^2 / i^3 / (a*d - b*c)^6 / g^3 * B^2 * \ln(b/d * e + (a*d - b*c) / (d*x + c) / d * e) / (d*x + c)^2 * b^3 / (d*x + c) * c^2 + 1/2 * d^2 / i^3 / (a*d - b*c)^6 / g^3 * B^2 * \ln(b/d * e + (a*d - b*c) / (d*x + c) / d * e)^2 / (d*x + c)^2 * b^3 * c^3 + 7 * d^3 / i^3 / (a*d - b*c)^6 / g^3 * A * B * \ln(b/d * e + (a*d - b*c) / (d*x + c) / d * e) * b^2 * a - 7 * d^2 / i^3 / (a*d - b*c)^6 / g^3 * A * B * b^3 * \ln(b/d * e + (a*d - b*c) / (d*x + c) / d * e) * b^3 * c + 6 * d^2 / i^3 / (a*d - b*c)^6 / g^3 * A * B * b^3 * \ln(b/d * e + (a*d - b*c) / (d*x + c) / d * e)^2 * c - 8 * d^2 * e / i^3 / (a*d - b*c)^6 / g^3 * B^2 * b^3 / (1 / (d*x + c) * a * e - 1 / (d*x + c) * b * c / d * e + b / d * e) * a + 8 * d * e / i^3 / (a*d - b*c)^6 / g^3 * B^2 * b^4 / (1 / (d*x + c) * a * e - 1 / (d*x + c) * b * c / d * e + b / d * e) * c - 4 * d^2 * e / i^3 / (a*d - b*c)^6 / g^3 * A^2 * b^3 / (1 / (d*x + c) * a * e - 1 / (d*x + c) * b * c / d * e + b / d * e) * a + 4 * d * e / i^3 / (a*d - b*c)^6 / g^3 * A^2 * b^4 / (1 / (d*x + c) * a * e - 1 / (d*x + c) * b * c / d * e + b / d * e) * c + 3/4 * d^4 / i^3 / (a*d - b*c)^6 / g^3 * B^2 / (d*x + c)^2 * a^2 * b * c - 3/4 * d^3 / i^3 / (a*d - b*c)^6 / g^3 * B^2 / (d*x + c)^2 * a * b^2 * c^2 - 6 * d^3 / i^3 / (a*d - b*c)^6 / g^3 * A^2 * b^2 / (d*x + c) * a * c - 7 * d^2 / i^3 / (a*d - b*c)^6 / g^3 * A * B * b^3 / (d*x + c) * c^2 - 1/2 * e^2 / i^3 / (a*d - b*c)^6 / g^3 * A * B * b^5 / (1 / (d*x + c) * a * e - 1 / (d*x + c) * b * c / d * e + b / d * e)^2 * c - 1/2 * d^2 / i^3 / (a*d - b*c)^6 / g^3 * A * B / (d*x + c)^2 * b^3 * c^3 - 7 * d^4 / i^3 / (a*d - b*c)^6 / g^3 * B^2 * \ln(b/d * e + (a*d - b*c) / (d*x + c) / d * e) * b / (d*x + c) * a^2 - 7 * d^2 / i^3 / (a*d - b*c)^6 / g^3 * B^2 * \ln(b/d * e + (a*d - b*c) / (d*x + c) / d * e) * b^3 / (d*x + c) * c^2 - 1/2 * d^2 / i^3 / (a*d - b*c)^6 / g^3 * B^2 * \ln(b/d * e + (a*d - b*c) / (d*x + c) / d * e) / (d*x + c)^2 * b^3 * c^3 - 7 * d^4 / i^3 / (a*d - b*c)^6 / g^3 * A * B * b / (d*x + c) * a^2 - 1/2 * e^2 / i^3 / (a*d - b*c)^6 / g^3 * B^2 * b^5 / (1 / (d*x + c) * a * e - 1 / (d*x + c) * b * c / d * e + b / d * e)^2 * \ln(b/d * e + (a*d - b*c) / (d*x + c) / d * e)^2 * c - 3/2 * d^3 / i^3 / (a*d - b*c)^6 / g^3 * A^2 / (d*x + c)^2 * a * b^2 * c^2 - 15 * d^3 / i^3 / (a*d - b*c)^6 / g^3 * B^2 * b^2 / (d*x + c) * a * c$$

maxima [B] time = 5.72, size = 5583, normalized size = 8.15

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^3/(d*i*x+c*i)^3,x, algorithm="maxima")

[Out] $\frac{1}{2} * B^2 * ((12 * b^3 * d^3 * x^3 - b^3 * c^3 + 7 * a * b^2 * c^2 * d + 7 * a^2 * b * c * d^2 - a^3 * d^3 + 18 * (b^3 * c * d^2 + a * b^2 * d^3) * x^2 + 4 * (b^3 * c^2 * d + 7 * a * b^2 * c * d^2 + a^2 * b * d^3) * x) / ((b^6 * c^4 * d^2 - 4 * a * b^5 * c^3 * d^3 + 6 * a^2 * b^4 * c^2 * d^4 - 4 * a^3 * b^3 * c * d^5 + a^4 * b^2 * d^6) * g^3 * i^3 * x^4 + 2 * (b^6 * c^5 * d - 3 * a * b^5 * c^4 * d^2 + 2 * a^2 * b^4 * c^3 * d^3 + 2 * a^3 * b^3 * c^2 * d^4 - 3 * a^4 * b^2 * c * d^5 + a^5 * b * d^6) * g^3 * i^3 * x^3 + (b^6 * c^6 - 9 * a^2 * b^4 * c^4 * d^2 + 16 * a^3 * b^3 * c^3 * d^3 - 9 * a^4 * b^2 * c^2 * d^4 + a^5 * d^5$

$$\begin{aligned}
& 6) * g^3 * i^3 * x^2 + 2 * (a * b^5 * c^6 - 3 * a^2 * b^4 * c^5 * d + 2 * a^3 * b^3 * c^4 * d^2 + 2 * a^4 * \\
& b^2 * c^3 * d^3 - 3 * a^5 * b * c^2 * d^4 + a^6 * c * d^5) * g^3 * i^3 * x + (a^2 * b^4 * c^6 - 4 * a^3 * \\
& b^3 * c^5 * d + 6 * a^4 * b^2 * c^4 * d^2 - 4 * a^5 * b * c^3 * d^3 + a^6 * c^2 * d^4) * g^3 * i^3) + \\
& 12 * b^2 * d^2 * \log(b * x + a) / ((b^5 * c^5 - 5 * a * b^4 * c^4 * d + 10 * a^2 * b^3 * c^3 * d^2 - 1 \\
& 0 * a^3 * b^2 * c^2 * d^3 + 5 * a^4 * b * c * d^4 - a^5 * d^5) * g^3 * i^3) - 12 * b^2 * d^2 * \log(d * x \\
& + c) / ((b^5 * c^5 - 5 * a * b^4 * c^4 * d + 10 * a^2 * b^3 * c^3 * d^2 - 10 * a^3 * b^2 * c^2 * d^3 + \\
& 5 * a^4 * b * c * d^4 - a^5 * d^5) * g^3 * i^3) * \log(b * e * x / (d * x + c) + a * e / (d * x + c))^2 + \\
& A * B * ((12 * b^3 * d^3 * x^3 - b^3 * c^3 + 7 * a * b^2 * c^2 * d + 7 * a^2 * b * c * d^2 - a^3 * d^3 + \\
& 18 * (b^3 * c * d^2 + a * b^2 * d^3) * x^2 + 4 * (b^3 * c^2 * d + 7 * a * b^2 * c * d^2 + a^2 * b * d^3) \\
& * x) / ((b^6 * c^4 * d^2 - 4 * a * b^5 * c^3 * d^3 + 6 * a^2 * b^4 * c^2 * d^4 - 4 * a^3 * b^3 * c * d^5 + \\
& a^4 * b^2 * d^6) * g^3 * i^3 * x^4 + 2 * (b^6 * c^5 * d - 3 * a * b^5 * c^4 * d^2 + 2 * a^2 * b^4 * c^3 * \\
& d^3 + 2 * a^3 * b^3 * c^2 * d^4 - 3 * a^4 * b^2 * c * d^5 + a^5 * b * d^6) * g^3 * i^3 * x^3 + (b^6 * c^6 \\
& - 9 * a^2 * b^4 * c^4 * d^2 + 16 * a^3 * b^3 * c^3 * d^3 - 9 * a^4 * b^2 * c^2 * d^4 + a^6 * d^6) * \\
& g^3 * i^3 * x^2 + 2 * (a * b^5 * c^6 - 3 * a^2 * b^4 * c^5 * d + 2 * a^3 * b^3 * c^4 * d^2 + 2 * a^4 * b^2 * \\
& c^3 * d^3 - 3 * a^5 * b * c^2 * d^4 + a^6 * c * d^5) * g^3 * i^3 * x + (a^2 * b^4 * c^6 - 4 * a^3 * b^3 * \\
& c^5 * d + 6 * a^4 * b^2 * c^4 * d^2 - 4 * a^5 * b * c^3 * d^3 + a^6 * c^2 * d^4) * g^3 * i^3) + 12 \\
& * b^2 * d^2 * \log(b * x + a) / ((b^5 * c^5 - 5 * a * b^4 * c^4 * d + 10 * a^2 * b^3 * c^3 * d^2 - 10 * a^3 * \\
& b^2 * c^2 * d^3 + 5 * a^4 * b * c * d^4 - a^5 * d^5) * g^3 * i^3) - 12 * b^2 * d^2 * \log(d * x + c \\
&) / ((b^5 * c^5 - 5 * a * b^4 * c^4 * d + 10 * a^2 * b^3 * c^3 * d^2 - 10 * a^3 * b^2 * c^2 * d^3 + 5 * a^4 * \\
& b * c * d^4 - a^5 * d^5) * g^3 * i^3) * \log(b * e * x / (d * x + c) + a * e / (d * x + c)) - 1/4 * \\
& B^2 * (2 * (b^4 * c^4 - 16 * a * b^3 * c^3 * d + 30 * a^2 * b^2 * c^2 * d^2 - 16 * a^3 * b * c * d^3 + a^4 * \\
& d^4 - 12 * (b^4 * c^2 * d^2 - 2 * a * b^3 * c * d^3 + a^2 * b^2 * d^4) * x^2 + 12 * (b^4 * d^4 * x^4 \\
& + a^2 * b^2 * c^2 * d^2 + 2 * (b^4 * c * d^3 + a * b^3 * d^4) * x^3 + (b^4 * c^2 * d^2 + 4 * a * b^3 * \\
& c * d^3 + a^2 * b^2 * d^4) * x^2 + 2 * (a * b^3 * c^2 * d^2 + a^2 * b^2 * c * d^3) * x) * \log(b * x + \\
& a)^2 - 24 * (b^4 * d^4 * x^4 + a^2 * b^2 * c^2 * d^2 + 2 * (b^4 * c * d^3 + a * b^3 * d^4) * x^3 + \\
& (b^4 * c^2 * d^2 + 4 * a * b^3 * c * d^3 + a^2 * b^2 * d^4) * x^2 + 2 * (a * b^3 * c^2 * d^2 + a^2 * b^2 * \\
& c * d^3) * x) * \log(b * x + a) * \log(d * x + c) + 12 * (b^4 * d^4 * x^4 + a^2 * b^2 * c^2 * d^2 \\
& + 2 * (b^4 * c * d^3 + a * b^3 * d^4) * x^3 + (b^4 * c^2 * d^2 + 4 * a * b^3 * c * d^3 + a^2 * b^2 * d^4) \\
& * x^2 + 2 * (a * b^3 * c^2 * d^2 + a^2 * b^2 * c * d^3) * x) * \log(d * x + c)^2 - 12 * (b^4 * c^3 * \\
& d - a * b^3 * c^2 * d^2 - a^2 * b^2 * c * d^3 + a^3 * b * d^4) * x) * \log(b * e * x / (d * x + c) + a * e \\
& / (d * x + c)) / (a^2 * b^5 * c^7 * g^3 * i^3 - 5 * a^3 * b^4 * c^6 * d * g^3 * i^3 + 10 * a^4 * b^3 * c^5 * \\
& d^2 * g^3 * i^3 - 10 * a^5 * b^2 * c^4 * d^3 * g^3 * i^3 + 5 * a^6 * b * c^3 * d^4 * g^3 * i^3 - a^7 * c^2 * \\
& d^5 * g^3 * i^3 + (b^7 * c^5 * d^2 * g^3 * i^3 - 5 * a * b^6 * c^4 * d^3 * g^3 * i^3 + 10 * a^2 * b^5 * \\
& c^3 * d^4 * g^3 * i^3 - 10 * a^3 * b^4 * c^2 * d^5 * g^3 * i^3 + 5 * a^4 * b^3 * c * d^6 * g^3 * i^3 - \\
& a^5 * b^2 * d^7 * g^3 * i^3) * x^4 + 2 * (b^7 * c^6 * d * g^3 * i^3 - 4 * a * b^6 * c^5 * d^2 * g^3 * i^3 + \\
& 5 * a^2 * b^5 * c^4 * d^3 * g^3 * i^3 - 5 * a^4 * b^3 * c^2 * d^5 * g^3 * i^3 + 4 * a^5 * b^2 * c * d^6 * g^3 * \\
& i^3 - a^6 * b * d^7 * g^3 * i^3) * x^3 + (b^7 * c^7 * g^3 * i^3 - a * b^6 * c^6 * d * g^3 * i^3 - 9 \\
& * a^2 * b^5 * c^5 * d^2 * g^3 * i^3 + 25 * a^3 * b^4 * c^4 * d^3 * g^3 * i^3 - 25 * a^4 * b^3 * c^3 * d^4 * \\
& g^3 * i^3 + 9 * a^5 * b^2 * c^2 * d^5 * g^3 * i^3 + a^6 * b * c * d^6 * g^3 * i^3 - a^7 * d^7 * g^3 * i^3 \\
&) * x^2 + 2 * (a * b^6 * c^7 * g^3 * i^3 - 4 * a^2 * b^5 * c^6 * d * g^3 * i^3 + 5 * a^3 * b^4 * c^5 * d^2 * \\
& g^3 * i^3 - 5 * a^5 * b^2 * c^3 * d^4 * g^3 * i^3 + 4 * a^6 * b * c^2 * d^5 * g^3 * i^3 - a^7 * c * d^6 * g^3 * \\
& i^3) * x) + (b^4 * c^4 - 32 * a * b^3 * c^3 * d + 32 * a^3 * b * c * d^3 - a^4 * d^4 - 60 * (b^4 * \\
& c * d^3 - a * b^3 * d^4) * x^3 - 8 * (b^4 * d^4 * x^4 + a^2 * b^2 * c^2 * d^2 + 2 * (b^4 * c * d^3 + \\
& a * b^3 * d^4) * x^3 + (b^4 * c^2 * d^2 + 4 * a * b^3 * c * d^3 + a^2 * b^2 * d^4) * x^2 + 2 * (a * b^3 * \\
& c^2 * d^2 + a^2 * b^2 * c * d^3) * x) * \log(b * x + a)^3 - 24 * (b^4 * d^4 * x^4 + a^2 * b^2 * c^2 *
\end{aligned}$$

$$\begin{aligned}
& 2*d^2 + 2*(b^4*c*d^3 + a*b^3*d^4)*x^3 + (b^4*c^2*d^2 + 4*a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 2*(a*b^3*c^2*d^2 + a^2*b^2*c*d^3)*x)*\log(b*x + a)*\log(d*x + c)^2 + 8*(b^4*d^4*x^4 + a^2*b^2*c^2*d^2 + 2*(b^4*c*d^3 + a*b^3*d^4)*x^3 + (b^4*c^2*d^2 + 4*a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 2*(a*b^3*c^2*d^2 + a^2*b^2*c*d^3)*x)*\log(d*x + c)^3 - 90*(b^4*c^2*d^2 - a^2*b^2*d^4)*x^2 - 4*(7*b^4*c^3*d + 24*a*b^3*c^2*d^2 - 24*a^2*b^2*c*d^3 - 7*a^3*b*d^4)*x - 60*(b^4*d^4*x^4 + a^2*b^2*c^2*d^2 + 2*(b^4*c*d^3 + a*b^3*d^4)*x^3 + (b^4*c^2*d^2 + 4*a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 2*(a*b^3*c^2*d^2 + a^2*b^2*c*d^3)*x)*\log(b*x + a) + 12*(5*b^4*d^4*x^4 + 5*a^2*b^2*c^2*d^2 + 10*(b^4*c*d^3 + a*b^3*d^4)*x^3 + 5*(b^4*c^2*d^2 + 4*a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 2*(b^4*d^4*x^4 + a^2*b^2*c^2*d^2 + 2*(b^4*c*d^3 + a*b^3*d^4)*x^3 + (b^4*c^2*d^2 + 4*a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 2*(a*b^3*c^2*d^2 + a^2*b^2*c*d^3)*x)*\log(b*x + a)^2 + 10*(a*b^3*c^2*d^2 + a^2*b^2*c*d^3)*x)*\log(d*x + c))/(a^2*b^5*c^7*g^3*i^3 - 5*a^3*b^4*c^6*d*g^3*i^3 + 10*a^4*b^3*c^5*d^2*g^3*i^3 - 10*a^5*b^2*c^4*d^3*g^3*i^3 + 5*a^6*b*c^3*d^4*g^3*i^3 - a^7*c^2*d^5*g^3*i^3 + (b^7*c^5*d^2*g^3*i^3 - 5*a*b^6*c^4*d^3*g^3*i^3 + 10*a^2*b^5*c^3*d^4*g^3*i^3 - 10*a^3*b^4*c^2*d^5*g^3*i^3 + 5*a^4*b^3*c*d^6*g^3*i^3 - a^5*b^2*d^7*g^3*i^3)*x^4 + 2*(b^7*c^6*d*g^3*i^3 - 4*a*b^6*c^5*d^2*g^3*i^3 + 5*a^2*b^5*c^4*d^3*g^3*i^3 - 5*a^4*b^3*c^2*d^5*g^3*i^3 + 4*a^5*b^2*c*d^6*g^3*i^3 - a^6*b*d^7*g^3*i^3)*x^3 + (b^7*c^7*g^3*i^3 - a*b^6*c^6*d*g^3*i^3 - 9*a^2*b^5*c^5*d^2*g^3*i^3 + 25*a^3*b^4*c^4*d^3*g^3*i^3 - 25*a^4*b^3*c^3*d^4*g^3*i^3 + 9*a^5*b^2*c^2*d^5*g^3*i^3 + a^6*b*c*d^6*g^3*i^3 - a^7*d^7*g^3*i^3)*x^2 + 2*(a*b^6*c^7*g^3*i^3 - 4*a^2*b^5*c^6*d*g^3*i^3 + 5*a^3*b^4*c^5*d^2*g^3*i^3 - 5*a^5*b^2*c^3*d^4*g^3*i^3 + 4*a^6*b*c^2*d^5*g^3*i^3 - a^7*c*d^6*g^3*i^3)*x) + 1/2*A^2*((12*b^3*d^3*x^3 - b^3*c^3 + 7*a*b^2*c^2*d + 7*a^2*b*c*d^2 - a^3*d^3 + 18*(b^3*c*d^2 + a*b^2*d^3)*x^2 + 4*(b^3*c^2*d + 7*a*b^2*c*d^2 + a^2*b*d^3)*x)/((b^6*c^4*d^2 - 4*a*b^5*c^3*d^3 + 6*a^2*b^4*c^2*d^4 - 4*a^3*b^3*c*d^5 + a^4*b^2*d^6)*g^3*i^3*x^4 + 2*(b^6*c^5*d - 3*a*b^5*c^4*d^2 + 2*a^2*b^4*c^3*d^3 + 2*a^3*b^3*c^2*d^4 - 3*a^4*b^2*c*d^5 + a^5*b*d^6)*g^3*i^3*x^3 + (b^6*c^6 - 9*a^2*b^4*c^4*d^2 + 16*a^3*b^3*c^3*d^3 - 9*a^4*b^2*c^2*d^4 + a^6*d^6)*g^3*i^3*x^2 + 2*(a*b^5*c^6 - 3*a^2*b^4*c^5*d + 2*a^3*b^3*c^4*d^2 + 2*a^4*b^2*c^3*d^3 - 3*a^5*b*c^2*d^4 + a^6*c*d^5)*g^3*i^3*x + (a^2*b^4*c^6 - 4*a^3*b^3*c^5*d + 6*a^4*b^2*c^4*d^2 - 4*a^5*b*c^3*d^3 + a^6*c^2*d^4)*g^3*i^3) + 12*b^2*d^2*log(b*x + a)/((b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a^3*b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5)*g^3*i^3) - 12*b^2*d^2*log(d*x + c)/((b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a^3*b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5)*g^3*i^3)) - 1/2*(b^4*c^4 - 16*a*b^3*c^3*d + 30*a^2*b^2*c^2*d^2 - 16*a^3*b*c*d^3 + a^4*d^4 - 12*(b^4*c^2*d^2 - 2*a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 12*(b^4*d^4*x^4 + a^2*b^2*c^2*d^2 + 2*(b^4*c*d^3 + a*b^3*d^4)*x^3 + (b^4*c^2*d^2 + 4*a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 2*(a*b^3*c^2*d^2 + a^2*b^2*c*d^3)*x)*\log(b*x + a)^2 - 24*(b^4*d^4*x^4 + a^2*b^2*c^2*d^2 + 2*(b^4*c*d^3 + a*b^3*d^4)*x^3 + (b^4*c^2*d^2 + 4*a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 2*(a*b^3*c^2*d^2 + a^2*b^2*c*d^3)*x)*\log(b*x + a)*\log(d*x + c) + 12*(b^4*d^4*x^4 + a^2*b^2*c^2*d^2 + 2*(b^4*c*d^3 + a*b^3*d^4)*x^3 + (b^4*c^2*d^2 + 4*a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 2*(a*b^3*c^2*d^2 + a^2*b^2*c*d^3)*x)*\log(d*x + c)^
\end{aligned}$$

$$2 - 12*(b^4*c^3*d - a*b^3*c^2*d^2 - a^2*b^2*c*d^3 + a^3*b*d^4)*x)*A*B/(a^2*b^5*c^7*g^3*i^3 - 5*a^3*b^4*c^6*d*g^3*i^3 + 10*a^4*b^3*c^5*d^2*g^3*i^3 - 10*a^5*b^2*c^4*d^3*g^3*i^3 + 5*a^6*b*c^3*d^4*g^3*i^3 - a^7*c^2*d^5*g^3*i^3 + (b^7*c^5*d^2*g^3*i^3 - 5*a*b^6*c^4*d^3*g^3*i^3 + 10*a^2*b^5*c^3*d^4*g^3*i^3 - 10*a^3*b^4*c^2*d^5*g^3*i^3 + 5*a^4*b^3*c*d^6*g^3*i^3 - a^5*b^2*d^7*g^3*i^3)*x^4 + 2*(b^7*c^6*d*g^3*i^3 - 4*a*b^6*c^5*d^2*g^3*i^3 + 5*a^2*b^5*c^4*d^3*g^3*i^3 - 5*a^4*b^3*c^2*d^5*g^3*i^3 + 4*a^5*b^2*c*d^6*g^3*i^3 - a^6*b*d^7*g^3*i^3)*x^3 + (b^7*c^7*g^3*i^3 - a*b^6*c^6*d*g^3*i^3 - 9*a^2*b^5*c^5*d^2*g^3*i^3 + 25*a^3*b^4*c^4*d^3*g^3*i^3 - 25*a^4*b^3*c^3*d^4*g^3*i^3 + 9*a^5*b^2*c^2*d^5*g^3*i^3 + a^6*b*c*d^6*g^3*i^3 - a^7*d^7*g^3*i^3)*x^2 + 2*(a*b^6*c^7*g^3*i^3 - 4*a^2*b^5*c^6*d*g^3*i^3 + 5*a^3*b^4*c^5*d^2*g^3*i^3 - 5*a^5*b^2*c^3*d^4*g^3*i^3 + 4*a^6*b*c^2*d^5*g^3*i^3 - a^7*c*d^6*g^3*i^3)*x)$$

mupad [B] time = 14.31, size = 2155, normalized size = 3.15

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{int}((A + B*\log((e*(a + b*x))/(c + d*x)))^2/((a*g + b*g*x)^3*(c*i + d*i*x)^3), x)$

[Out] $((2*x*(2*A^2*a^2*b*d^3 + 7*B^2*a^2*b*d^3 + 2*A^2*b^3*c^2*d + 7*B^2*b^3*c^2*d + 14*A^2*a*b^2*c*d^2 + 31*B^2*a*b^2*c*d^2 - 6*A*B*a^2*b*d^3 + 6*A*B*b^3*c^2*d^2))/(a*d - b*c) - (2*A^2*a^3*d^3 + 2*A^2*b^3*c^3 + B^2*a^3*d^3 + B^2*b^3*c^3 - 2*A*B*a^3*d^3 + 2*A*B*b^3*c^3 - 14*A^2*a*b^2*c^2*d - 14*A^2*a^2*b*c*d^2 - 31*B^2*a*b^2*c^2*d - 31*B^2*a^2*b*c*d^2 - 30*A*B*a*b^2*c^2*d + 30*A*B*a^2*b*c*d^2)/(2*(a*d - b*c)) + (6*x^3*(2*A^2*b^3*d^3 + 5*B^2*b^3*d^3))/(a*d - b*c) + (3*x^2*(6*A^2*a*b^2*d^3 + 15*B^2*a*b^2*d^3 + 6*A^2*b^3*c*d^2 + 15*B^2*b^3*c*d^2 - 4*A*B*a*b^2*d^3 + 4*A*B*b^3*c*d^2))/(a*d - b*c))/(x^4*(2*a^3*b^2*d^5*g^3*i^3 - 2*b^5*c^3*d^2*g^3*i^3 + 6*a*b^4*c^2*d^3*g^3*i^3 - 6*a^2*b^3*c*d^4*g^3*i^3) - x*(4*a*b^4*c^5*g^3*i^3 - 4*a^5*c*d^4*g^3*i^3 - 8*a^2*b^3*c^4*d*g^3*i^3 + 8*a^4*b*c^2*d^3*g^3*i^3) + x^3*(4*a^4*b*d^5*g^3*i^3 - 4*b^5*c^4*d*g^3*i^3 + 8*a*b^4*c^3*d^2*g^3*i^3 - 8*a^3*b^2*c*d^4*g^3*i^3) + x^2*(2*a^5*d^5*g^3*i^3 - 2*b^5*c^5*g^3*i^3 - 2*a*b^4*c^4*d*g^3*i^3 + 2*a^4*b*c*d^4*g^3*i^3 + 16*a^2*b^3*c^3*d^2*g^3*i^3 - 16*a^3*b^2*c^2*d^3*g^3*i^3) - 2*a^2*b^3*c^5*g^3*i^3 + 2*a^5*c^2*d^3*g^3*i^3 + 6*a^3*b^2*c^4*d*g^3*i^3 - 6*a^4*b*c^3*d^2*g^3*i^3) + \log((e*(a + b*x))/(c + d*x))^2*((x*((3*B^2*(a*d + b*c)^2)/(g^3*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) - B^2/(g^3*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (6*B^2*a*b*c*d)/(g^3*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2)) - (B^2*(a*d + b*c))/(2*g^3*i^3*(a^2*b*d^3 + b^3*c^2*d - 2*a*b^2*c*d^2)) + (6*B^2*b^2*d^2*x^3)/(g^3*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2) + (3*B^2*a*c*(a*d + b*c))/(g^3*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2) + (9*B^2*b*d*x^2*(a*d + b*c))/(g^3*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2))/(b*d*x^4 + (a^2*c^2)/(b*d) + (x*(2*a*b*c^2 + 2*a^2*c*d))/(b*d) + (x^2*(a^2*d^2 + b^2*c^2 + 4*a*b*c*d))/(b*d) + (x^3*(2*a*b*d^2 + 2*b^2*c*d))/(b*d)) -$

$$\begin{aligned}
& \frac{(6ABb^2d^2)}{(g^3i^3(ad - bc)^5)} + (\log((e*(a + bx))/(c + dx)))*(x \\
& ^2*((6bd*(B^2bc - B^2ad + A^2a^2d + AB^2bc))/(g^3i^3(a^2d^2 + b^2 \\
& *c^2 - 2ab*cd)^2) + (12ABbd*(ad + bc))/(g^3i^3(a^2d^2 + b^2c^2 \\
& - 2ab*cd)^2)) + x*((6(ad + bc)*(B^2bc - B^2ad + A^2a^2d + AB^2bc \\
& c))/(g^3i^3(a^2d^2 + b^2c^2 - 2ab*cd)^2) - (2AB)/(g^3i^3(a^2d^2 \\
& + b^2c^2 - 2ab*cd)) + (12A^2B^2abcd)/(g^3i^3(a^2d^2 + b^2c^2 - 2 \\
& *ab*cd)^2)) - (B^2bc - B^2ad + 2A^2a^2d + 2AB^2bc)/(2g^3i^3(a^2 \\
& *bd^3 + b^3c^2d - 2ab^2cd^2)) + (6a^2c*(B^2bc - B^2ad + A^2a^2d \\
& + AB^2bc))/(g^3i^3(a^2d^2 + b^2c^2 - 2ab*cd)^2) + (12A^2B^2b^2d^2*x \\
& ^3)/(g^3i^3(a^2d^2 + b^2c^2 - 2ab*cd)^2)))/(bd*x^4 + (a^2c^2)/(bd \\
&)) + (x*(2ab*c^2 + 2a^2*cd))/(bd) + (x^2*(a^2d^2 + b^2c^2 + 4ab*cd \\
&))/(bd) + (x^3*(2ab*d^2 + 2b^2*cd))/(bd)) - (2B^2b^2d^2*log((e*(a \\
& + bx))/(c + dx))^3)/(g^3i^3(ad - bc)^5) + (b^2d^2*atan((b^2d^2*((a^ \\
& 5d^5g^3i^3 + b^5c^5g^3i^3 - 3ab^4c^4d*g^3i^3 - 3a^4b*c*d^4g^3 \\
& *i^3 + 2a^2b^3c^3d^2g^3i^3 + 2a^3b^2c^2d^3g^3i^3)/(a^4d^4g^3i^3 + b^4c^4 \\
& *g^3i^3 - 4ab^3c^3d*g^3i^3 - 4a^3b*c*d^3g^3i^3 + 6a^ \\
& ^2b^2c^2d^2g^3i^3) + 2b*d*x)*(2A^2 + 5B^2)*(a^4d^4g^3i^3 + b^4c^ \\
& ^4g^3i^3 - 4ab^3c^3d*g^3i^3 - 4a^3b*c*d^3g^3i^3 + 6a^2b^2c^2d^2 \\
& *g^3i^3)*3i)/(g^3i^3*(6A^2b^2d^2 + 15B^2b^2d^2)*(ad - bc)^5))* \\
& (2A^2 + 5B^2)*6i)/(g^3i^3(ad - bc)^5)
\end{aligned}$$

sympy [B] time = 127.92, size = 3720, normalized size = 5.43

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```

[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))*2/(b*g*x+a*g)**3/(d*i*x+c*i)**3,x)
[Out] -2*B**2*b**2*d**2*log(e*(a + b*x)/(c + d*x))**3/(a**5*d**5*g**3*i**3 - 5*a*
**4*b*c*d**4*g**3*i**3 + 10*a**3*b**2*c**2*d**3*g**3*i**3 - 10*a**2*b**3*c**
3*d**2*g**3*i**3 + 5*a*b**4*c**4*d*g**3*i**3 - b**5*c**5*g**3*i**3) + 3*b**
2*d**2*(2*A**2 + 5*B**2)*log(x + (6*A**2*a*b**2*d**3 + 6*A**2*b**3*c*d**2 +
15*B**2*a*b**2*d**3 + 15*B**2*b**3*c*d**2 - 3*a**6*b**2*d**8*(2*A**2 + 5*B
**2)/(a*d - b*c)**5 + 18*a**5*b**3*c*d**7*(2*A**2 + 5*B**2)/(a*d - b*c)**5
- 45*a**4*b**4*c**2*d**6*(2*A**2 + 5*B**2)/(a*d - b*c)**5 + 60*a**3*b**5*c
**3*d**5*(2*A**2 + 5*B**2)/(a*d - b*c)**5 - 45*a**2*b**6*c**4*d**4*(2*A**2 +
5*B**2)/(a*d - b*c)**5 + 18*a*b**7*c**5*d**3*(2*A**2 + 5*B**2)/(a*d - b*c)
**5 - 3*b**8*c**6*d**2*(2*A**2 + 5*B**2)/(a*d - b*c)**5)/(12*A**2*b**3*d**3
+ 30*B**2*b**3*d**3))/(g**3*i**3*(a*d - b*c)**5) - 3*b**2*d**2*(2*A**2 + 5
*B**2)*log(x + (6*A**2*a*b**2*d**3 + 6*A**2*b**3*c*d**2 + 15*B**2*a*b**2*d
**3 + 15*B**2*b**3*c*d**2 + 3*a**6*b**2*d**8*(2*A**2 + 5*B**2)/(a*d - b*c)**
5 - 18*a**5*b**3*c*d**7*(2*A**2 + 5*B**2)/(a*d - b*c)**5 + 45*a**4*b**4*c**
2*d**6*(2*A**2 + 5*B**2)/(a*d - b*c)**5 - 60*a**3*b**5*c**3*d**5*(2*A**2 +
5*B**2)/(a*d - b*c)**5 + 45*a**2*b**6*c**4*d**4*(2*A**2 + 5*B**2)/(a*d - b*
c)**5 - 18*a*b**7*c**5*d**3*(2*A**2 + 5*B**2)/(a*d - b*c)**5 + 3*b**8*c**6

```

$$\begin{aligned}
& d^{**2}*(2*A^{**2} + 5*B^{**2})/(a*d - b*c)^{**5}/(12*A^{**2}*b^{**3}*d^{**3} + 30*B^{**2}*b^{**3}*d^{**3}) \\
&)/(g^{**3}*i^{**3}*(a*d - b*c)^{**5} + (-2*A*B*a^{**3}*d^{**3} + 14*A*B*a^{**2}*b*c*d^{**2} \\
& + 8*A*B*a^{**2}*b*d^{**3}*x + 14*A*B*a*b^{**2}*c^{**2}*d + 56*A*B*a*b^{**2}*c*d^{**2}*x + 36* \\
& A*B*a*b^{**2}*d^{**3}*x^{**2} - 2*A*B*b^{**3}*c^{**3} + 8*A*B*b^{**3}*c^{**2}*d*x + 36*A*B*b^{**3}* \\
& c*d^{**2}*x^{**2} + 24*A*B*b^{**3}*d^{**3}*x^{**3} + B^{**2}*a^{**3}*d^{**3} - 15*B^{**2}*a^{**2}*b*c*d^{**2} \\
& - 12*B^{**2}*a^{**2}*b*d^{**3}*x + 15*B^{**2}*a*b^{**2}*c^{**2}*d - 12*B^{**2}*a*b^{**2}*d^{**3}*x^{**2} \\
& - B^{**2}*b^{**3}*c^{**3} + 12*B^{**2}*b^{**3}*c^{**2}*d*x + 12*B^{**2}*b^{**3}*c*d^{**2}*x^{**2})*\log(\\
& e*(a + b*x)/(c + d*x))/(2*a^{**6}*c^{**2}*d^{**4}*g^{**3}*i^{**3} + 4*a^{**6}*c*d^{**5}*g^{**3}*i^{**3} \\
& *x + 2*a^{**6}*d^{**6}*g^{**3}*i^{**3}*x^{**2} - 8*a^{**5}*b*c^{**3}*d^{**3}*g^{**3}*i^{**3} - 12*a^{**5}*b \\
& *c^{**2}*d^{**4}*g^{**3}*i^{**3}*x + 4*a^{**5}*b*d^{**6}*g^{**3}*i^{**3}*x^{**3} + 12*a^{**4}*b^{**2}*c^{**4}*d \\
& **2*g^{**3}*i^{**3} + 8*a^{**4}*b^{**2}*c^{**3}*d^{**3}*g^{**3}*i^{**3}*x - 18*a^{**4}*b^{**2}*c^{**2}*d^{**4}* \\
& g^{**3}*i^{**3}*x^{**2} - 12*a^{**4}*b^{**2}*c*d^{**5}*g^{**3}*i^{**3}*x^{**3} + 2*a^{**4}*b^{**2}*d^{**6}*g^{**3} \\
& *i^{**3}*x^{**4} - 8*a^{**3}*b^{**3}*c^{**5}*d*g^{**3}*i^{**3} + 8*a^{**3}*b^{**3}*c^{**4}*d^{**2}*g^{**3}*i^{**3} \\
& *x + 32*a^{**3}*b^{**3}*c^{**3}*d^{**3}*g^{**3}*i^{**3}*x^{**2} + 8*a^{**3}*b^{**3}*c^{**2}*d^{**4}*g^{**3}*i^{**3} \\
& *x^{**3} - 8*a^{**3}*b^{**3}*c*d^{**5}*g^{**3}*i^{**3}*x^{**4} + 2*a^{**2}*b^{**4}*c^{**6}*g^{**3}*i^{**3} - 1 \\
& 2*a^{**2}*b^{**4}*c^{**5}*d*g^{**3}*i^{**3}*x - 18*a^{**2}*b^{**4}*c^{**4}*d^{**2}*g^{**3}*i^{**3}*x^{**2} + 8* \\
& a^{**2}*b^{**4}*c^{**3}*d^{**3}*g^{**3}*i^{**3}*x^{**3} + 12*a^{**2}*b^{**4}*c^{**2}*d^{**4}*g^{**3}*i^{**3}*x^{**4} \\
& + 4*a*b^{**5}*c^{**6}*g^{**3}*i^{**3}*x - 12*a*b^{**5}*c^{**4}*d^{**2}*g^{**3}*i^{**3}*x^{**3} - 8*a*b^{**5} \\
& *c^{**3}*d^{**3}*g^{**3}*i^{**3}*x^{**4} + 2*b^{**6}*c^{**6}*g^{**3}*i^{**3}*x^{**2} + 4*b^{**6}*c^{**5}*d*g^{**3} \\
& *i^{**3}*x^{**3} + 2*b^{**6}*c^{**4}*d^{**2}*g^{**3}*i^{**3}*x^{**4}) + (-12*A*B*a^{**2}*b^{**2}*c^{**2}*d^{**2} \\
& - 24*A*B*a^{**2}*b^{**2}*c*d^{**3}*x - 12*A*B*a^{**2}*b^{**2}*d^{**4}*x^{**2} - 24*A*B*a*b^{**3}* \\
& c^{**2}*d^{**2}*x - 48*A*B*a*b^{**3}*c*d^{**3}*x^{**2} - 24*A*B*a*b^{**3}*d^{**4}*x^{**3} - 12*A*B* \\
& b^{**4}*c^{**2}*d^{**2}*x^{**2} - 24*A*B*b^{**4}*c*d^{**3}*x^{**3} - 12*A*B*b^{**4}*d^{**4}*x^{**4} - B^{**2} \\
& *a^{**4}*d^{**4} + 8*B^{**2}*a^{**3}*b*c*d^{**3} + 4*B^{**2}*a^{**3}*b*d^{**4}*x + 24*B^{**2}*a^{**2}*b* \\
& *2*c*d^{**3}*x + 18*B^{**2}*a^{**2}*b^{**2}*d^{**4}*x^{**2} - 8*B^{**2}*a*b^{**3}*c^{**3}*d - 24*B^{**2}* \\
& a*b^{**3}*c^{**2}*d^{**2}*x + 12*B^{**2}*a*b^{**3}*d^{**4}*x^{**3} + B^{**2}*b^{**4}*c^{**4} - 4*B^{**2}*b^{**4} \\
& *c^{**3}*d*x - 18*B^{**2}*b^{**4}*c^{**2}*d^{**2}*x^{**2} - 12*B^{**2}*b^{**4}*c*d^{**3}*x^{**3})*\log(e* \\
& (a + b*x)/(c + d*x))^{**2}/(2*a^{**7}*c^{**2}*d^{**5}*g^{**3}*i^{**3} + 4*a^{**7}*c*d^{**6}*g^{**3}*i^{**3} \\
& *x + 2*a^{**7}*d^{**7}*g^{**3}*i^{**3}*x^{**2} - 10*a^{**6}*b*c^{**3}*d^{**4}*g^{**3}*i^{**3} - 16*a^{**6} \\
& *b*c^{**2}*d^{**5}*g^{**3}*i^{**3}*x - 2*a^{**6}*b*c*d^{**6}*g^{**3}*i^{**3}*x^{**2} + 4*a^{**6}*b*d^{**7}*g \\
& **3*i^{**3}*x^{**3} + 20*a^{**5}*b^{**2}*c^{**4}*d^{**3}*g^{**3}*i^{**3} + 20*a^{**5}*b^{**2}*c^{**3}*d^{**4}*g \\
& **3*i^{**3}*x - 18*a^{**5}*b^{**2}*c^{**2}*d^{**5}*g^{**3}*i^{**3}*x^{**2} - 16*a^{**5}*b^{**2}*c*d^{**6}*g \\
& **3*i^{**3}*x^{**3} + 2*a^{**5}*b^{**2}*d^{**7}*g^{**3}*i^{**3}*x^{**4} - 20*a^{**4}*b^{**3}*c^{**5}*d^{**2}*g \\
& **3*i^{**3} + 50*a^{**4}*b^{**3}*c^{**3}*d^{**4}*g^{**3}*i^{**3}*x^{**2} + 20*a^{**4}*b^{**3}*c^{**2}*d^{**5}*g \\
& **3*i^{**3}*x^{**3} - 10*a^{**4}*b^{**3}*c*d^{**6}*g^{**3}*i^{**3}*x^{**4} + 10*a^{**3}*b^{**4}*c^{**6}*d*g^{**3} \\
& *i^{**3} - 20*a^{**3}*b^{**4}*c^{**5}*d^{**2}*g^{**3}*i^{**3}*x - 50*a^{**3}*b^{**4}*c^{**4}*d^{**3}*g^{**3}*i \\
& **3*x^{**2} + 20*a^{**3}*b^{**4}*c^{**2}*d^{**5}*g^{**3}*i^{**3}*x^{**4} - 2*a^{**2}*b^{**5}*c^{**7}*g^{**3}*i \\
& **3 + 16*a^{**2}*b^{**5}*c^{**6}*d*g^{**3}*i^{**3}*x + 18*a^{**2}*b^{**5}*c^{**5}*d^{**2}*g^{**3}*i^{**3}*x^{**2} \\
& - 20*a^{**2}*b^{**5}*c^{**4}*d^{**3}*g^{**3}*i^{**3}*x^{**3} - 20*a^{**2}*b^{**5}*c^{**3}*d^{**4}*g^{**3}*i^{**3} \\
& *x^{**4} - 4*a*b^{**6}*c^{**7}*g^{**3}*i^{**3}*x + 2*a*b^{**6}*c^{**6}*d*g^{**3}*i^{**3}*x^{**2} + 16*a*b \\
& **6*c^{**5}*d^{**2}*g^{**3}*i^{**3}*x^{**3} + 10*a*b^{**6}*c^{**4}*d^{**3}*g^{**3}*i^{**3}*x^{**4} - 2*b^{**7}* \\
& c^{**7}*g^{**3}*i^{**3}*x^{**2} - 4*b^{**7}*c^{**6}*d*g^{**3}*i^{**3}*x^{**3} - 2*b^{**7}*c^{**5}*d^{**2}*g^{**3} \\
& *i^{**3}*x^{**4}) + (-2*A^{**2}*a^{**3}*d^{**3} + 14*A^{**2}*a^{**2}*b*c*d^{**2} + 14*A^{**2}*a*b^{**2}*c* \\
& *2*d - 2*A^{**2}*b^{**3}*c^{**3} + 2*A*B*a^{**3}*d^{**3} - 30*A*B*a^{**2}*b*c*d^{**2} + 30*A*B*a \\
& *b^{**2}*c^{**2}*d - 2*A*B*b^{**3}*c^{**3} - B^{**2}*a^{**3}*d^{**3} + 31*B^{**2}*a^{**2}*b*c*d^{**2} + 3
\end{aligned}$$

$$\begin{aligned}
& 1*B^{**2}*a*b^{**2}*c^{**2}*d - B^{**2}*b^{**3}*c^{**3} + x^{**3}*(24*A^{**2}*b^{**3}*d^{**3} + 60*B^{**2}*b^{**3}*d^{**3}) + x^{**2}*(36*A^{**2}*a*b^{**2}*d^{**3} + 36*A^{**2}*b^{**3}*c*d^{**2} - 24*A*B*a*b^{**2}*d^{**3} + 24*A*B*b^{**3}*c*d^{**2} + 90*B^{**2}*a*b^{**2}*d^{**3} + 90*B^{**2}*b^{**3}*c*d^{**2}) + x*(8*A^{**2}*a^{**2}*b*d^{**3} + 56*A^{**2}*a*b^{**2}*c*d^{**2} + 8*A^{**2}*b^{**3}*c^{**2}*d - 24*A*B*a^{**2}*b*d^{**3} + 24*A*B*b^{**3}*c^{**2}*d + 28*B^{**2}*a^{**2}*b*d^{**3} + 124*B^{**2}*a*b^{**2}*c*d^{**2} + 28*B^{**2}*b^{**3}*c^{**2}*d))/ (4*a^{**6}*c^{**2}*d^{**4}*g^{**3}*i^{**3} - 16*a^{**5}*b*c^{**3}*d^{**3}*g^{**3}*i^{**3} + 24*a^{**4}*b^{**2}*c^{**4}*d^{**2}*g^{**3}*i^{**3} - 16*a^{**3}*b^{**3}*c^{**5}*d*g^{**3}*i^{**3} + 4*a^{**2}*b^{**4}*c^{**6}*g^{**3}*i^{**3} + x^{**4}*(4*a^{**4}*b^{**2}*d^{**6}*g^{**3}*i^{**3} - 16*a^{**3}*b^{**3}*c*d^{**5}*g^{**3}*i^{**3} + 24*a^{**2}*b^{**4}*c^{**2}*d^{**4}*g^{**3}*i^{**3} - 16*a*b^{**5}*c^{**3}*d^{**3}*g^{**3}*i^{**3} + 4*b^{**6}*c^{**4}*d^{**2}*g^{**3}*i^{**3}) + x^{**3}*(8*a^{**5}*b*d^{**6}*g^{**3}*i^{**3} - 24*a^{**4}*b^{**2}*c*d^{**5}*g^{**3}*i^{**3} + 16*a^{**3}*b^{**3}*c^{**2}*d^{**4}*g^{**3}*i^{**3} + 16*a^{**2}*b^{**4}*c^{**3}*d^{**3}*g^{**3}*i^{**3} - 24*a*b^{**5}*c^{**4}*d^{**2}*g^{**3}*i^{**3} + 8*b^{**6}*c^{**5}*d*g^{**3}*i^{**3}) + x^{**2}*(4*a^{**6}*d^{**6}*g^{**3}*i^{**3} - 36*a^{**4}*b^{**2}*c^{**2}*d^{**4}*g^{**3}*i^{**3} + 64*a^{**3}*b^{**3}*c^{**3}*d^{**3}*g^{**3}*i^{**3} - 36*a^{**2}*b^{**4}*c^{**4}*d^{**2}*g^{**3}*i^{**3} + 4*b^{**6}*c^{**6}*g^{**3}*i^{**3}) + x*(8*a^{**6}*c*d^{**5}*g^{**3}*i^{**3} - 24*a^{**5}*b*c^{**2}*d^{**4}*g^{**3}*i^{**3} + 16*a^{**4}*b^{**2}*c^{**3}*d^{**3}*g^{**3}*i^{**3} + 16*a^{**3}*b^{**3}*c^{**4}*d^{**2}*g^{**3}*i^{**3} - 24*a^{**2}*b^{**4}*c^{**5}*d*g^{**3}*i^{**3} + 8*a*b^{**5}*c^{**6}*g^{**3}*i^{**3}))
\end{aligned}$$

$$3.107 \quad \int \frac{\left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^4(ci+dix)^3} dx$$

Optimal. Leaf size=851

$$\frac{2B^2(c+dx)^3b^5}{27(bc-ad)^6g^4i^3(a+bx)^3} - \frac{(c+dx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2b^5}{3(bc-ad)^6g^4i^3(a+bx)^3} - \frac{2B(c+dx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)b^5}{9(bc-ad)^6g^4i^3(a+bx)^3} + \frac{5B^2d}{4(bc-ad)}$$

[Out]
$$\begin{aligned} & -1/4*B^2*d^5*(b*x+a)^2/(-a*d+b*c)^6/g^4/i^3/(d*x+c)^2-10*A*b*B*d^4*(b*x+a)/ \\ & (-a*d+b*c)^6/g^4/i^3/(d*x+c)+10*b*B^2*d^4*(b*x+a)/(-a*d+b*c)^6/g^4/i^3/(d*x \\ & +c)-20*b^3*B^2*d^2*(d*x+c)/(-a*d+b*c)^6/g^4/i^3/(b*x+a)+5/4*b^4*B^2*d*(d*x+ \\ & c)^2/(-a*d+b*c)^6/g^4/i^3/(b*x+a)^2-2/27*b^5*B^2*(d*x+c)^3/(-a*d+b*c)^6/g^4 \\ & /i^3/(b*x+a)^3-10*b*B^2*d^4*(b*x+a)*\ln(e*(b*x+a)/(d*x+c))/(-a*d+b*c)^6/g^4/ \\ & i^3/(d*x+c)+1/2*B*d^5*(b*x+a)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^6/g^ \\ & 4/i^3/(d*x+c)^2-20*b^3*B*d^2*(d*x+c)*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c) \\ & ^6/g^4/i^3/(b*x+a)+5/2*b^4*B*d*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(-a*d+ \\ & b*c)^6/g^4/i^3/(b*x+a)^2-2/9*b^5*B*(d*x+c)^3*(A+B*\ln(e*(b*x+a)/(d*x+c)))/(- \\ & a*d+b*c)^6/g^4/i^3/(b*x+a)^3-1/2*d^5*(b*x+a)^2*(A+B*\ln(e*(b*x+a)/(d*x+c)))^ \\ & 2/(-a*d+b*c)^6/g^4/i^3/(d*x+c)^2+5*b*d^4*(b*x+a)*(A+B*\ln(e*(b*x+a)/(d*x+c)) \\ &)^2/(-a*d+b*c)^6/g^4/i^3/(d*x+c)-10*b^3*d^2*(d*x+c)*(A+B*\ln(e*(b*x+a)/(d*x+ \\ & c)))^2/(-a*d+b*c)^6/g^4/i^3/(b*x+a)+5/2*b^4*d*(d*x+c)^2*(A+B*\ln(e*(b*x+a)/(\\ & d*x+c)))^2/(-a*d+b*c)^6/g^4/i^3/(b*x+a)^2-1/3*b^5*(d*x+c)^3*(A+B*\ln(e*(b*x+ \\ & a)/(d*x+c)))^2/(-a*d+b*c)^6/g^4/i^3/(b*x+a)^3-10/3*b^2*d^3*(A+B*\ln(e*(b*x+a) \\ &)/(d*x+c)))^3/B/(-a*d+b*c)^6/g^4/i^3 \end{aligned}$$

Rubi [C] time = 10.92, antiderivative size = 2454, normalized size of antiderivative = 2.88, number of steps used = 207, number of rules used = 31, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}} = 0.738$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x]))^2/((a*g + b*g*x)^4*(c*i + d*i*x)^3), x]

[Out]
$$\begin{aligned} & (-2*b^2*B^2)/(27*(b*c - a*d)^3*g^4*i^3*(a + b*x)^3) + (37*b^2*B^2*d)/(36*(b \\ & *c - a*d)^4*g^4*i^3*(a + b*x)^2) - (319*b^2*B^2*d^2)/(18*(b*c - a*d)^5*g^4* \\ & i^3*(a + b*x)) - (B^2*d^3)/(4*(b*c - a*d)^4*g^4*i^3*(c + d*x)) - (19*b*B^ \\ & 2*d^3)/(2*(b*c - a*d)^5*g^4*i^3*(c + d*x)) - (245*b^2*B^2*d^3*Log[a + b*x]) \\ & / (9*(b*c - a*d)^6*g^4*i^3) + (10*A*b^2*B*d^3*Log[a + b*x]^2)/((b*c - a*d)^6 \\ & *g^4*i^3) + (10*b^2*B^2*d^3*Log[a + b*x]^2)/(3*(b*c - a*d)^6*g^4*i^3) - (10 \end{aligned}$$

$$\begin{aligned}
& b^2 B^2 d^3 \text{Log}[a + b*x] \text{Log}[(c + d*x)^{-1}]^2 / ((b*c - a*d)^6 g^4 i^3) + \\
& (10*b^2 B^2 d^3 \text{Log}[-((d*(a + b*x))/(b*c - a*d))] \text{Log}[(c + d*x)^{-1}]^2) / ((b*c - a*d)^6 g^4 i^3) + \\
& (10*b^2 B^2 d^3 \text{Log}[-((b*c - a*d)/(d*(a + b*x))]) \text{Log}[(e*(a + b*x))/(c + d*x)]^2) / ((b*c - a*d)^6 g^4 i^3) + \\
& (10*b^2 B^2 d^3 \text{Log}[a + b*x] \text{Log}[(e*(a + b*x))/(c + d*x)]^2) / ((b*c - a*d)^6 g^4 i^3) - (2*b^2 B^2 (A + B \text{Log}[(e*(a + b*x))/(c + d*x]))) / (9*(b*c - a*d)^3 g^4 i^3 (a + b*x)^3) + \\
& (11*b^2 B^2 d^3 (A + B \text{Log}[(e*(a + b*x))/(c + d*x]))) / (6*(b*c - a*d)^4 g^4 i^3 (a + b*x)^2) - (47*b^2 B^2 d^2 (A + B \text{Log}[(e*(a + b*x))/(c + d*x]))) / (3*(b*c - a*d)^5 g^4 i^3 (a + b*x)) + \\
& (B*d^3 (A + B \text{Log}[(e*(a + b*x))/(c + d*x]))) / (2*(b*c - a*d)^4 g^4 i^3 (c + d*x)^2) + (9*b*B*d^3 (A + B \text{Log}[(e*(a + b*x))/(c + d*x]))) / ((b*c - a*d)^5 g^4 i^3 (c + d*x)) - (20*b^2 B^2 d^3 \text{Log}[a + b*x] * (A + B \text{Log}[(e*(a + b*x))/(c + d*x])]) / (3*(b*c - a*d)^6 g^4 i^3) - (b^2 (A + B \text{Log}[(e*(a + b*x))/(c + d*x)])^2) / (3*(b*c - a*d)^3 g^4 i^3 (a + b*x)^3) + (3*b^2 d^3 (A + B \text{Log}[(e*(a + b*x))/(c + d*x)])^2) / (2*(b*c - a*d)^4 g^4 i^3 (a + b*x)^2) - (6*b^2 d^2 (A + B \text{Log}[(e*(a + b*x))/(c + d*x)])^2) / ((b*c - a*d)^5 g^4 i^3 (a + b*x)) - (d^3 (A + B \text{Log}[(e*(a + b*x))/(c + d*x)])^2) / (2*(b*c - a*d)^4 g^4 i^3 (c + d*x)^2) - (4*b*d^3 (A + B \text{Log}[(e*(a + b*x))/(c + d*x)])^2) / ((b*c - a*d)^5 g^4 i^3 (c + d*x)) - (10*b^2 d^3 \text{Log}[a + b*x] * (A + B \text{Log}[(e*(a + b*x))/(c + d*x)])^2) / ((b*c - a*d)^6 g^4 i^3) + (245*b^2 B^2 d^3 \text{Log}[c + d*x]) / (9*(b*c - a*d)^6 g^4 i^3) - (10*b^2 B^2 d^3 \text{Log}[a + b*x]^2 \text{Log}[c + d*x]) / ((b*c - a*d)^6 g^4 i^3) - (20*A*b^2 B^2 d^3 \text{Log}[-((d*(a + b*x))/(b*c - a*d))] \text{Log}[c + d*x]) / ((b*c - a*d)^6 g^4 i^3) - (20*b^2 B^2 d^3 \text{Log}[-((d*(a + b*x))/(b*c - a*d))] \text{Log}[c + d*x]) / (3*(b*c - a*d)^6 g^4 i^3) - (20*b^2 B^2 d^3 \text{Log}[a + b*x] \text{Log}[(c + d*x)^{-1}] \text{Log}[c + d*x]) / ((b*c - a*d)^6 g^4 i^3) + (20*b^2 B^2 d^3 \text{Log}[-((d*(a + b*x))/(b*c - a*d))] * (\text{Log}[a + b*x] + \text{Log}[(c + d*x)^{-1}] - \text{Log}[(e*(a + b*x))/(c + d*x]) \text{Log}[c + d*x]) / ((b*c - a*d)^6 g^4 i^3) + (20*b^2 B^2 d^3 (A + B \text{Log}[(e*(a + b*x))/(c + d*x]) \text{Log}[c + d*x]) / (3*(b*c - a*d)^6 g^4 i^3) + (10*b^2 d^3 (A + B \text{Log}[(e*(a + b*x))/(c + d*x])^2 \text{Log}[c + d*x]) / ((b*c - a*d)^6 g^4 i^3) + (10*A*b^2 B^2 d^3 \text{Log}[c + d*x]^2) / ((b*c - a*d)^6 g^4 i^3) + (10*b^2 B^2 d^3 \text{Log}[c + d*x]^2) / (3*(b*c - a*d)^6 g^4 i^3) - (10*b^2 B^2 d^3 \text{Log}[a + b*x] \text{Log}[c + d*x]^2) / ((b*c - a*d)^6 g^4 i^3) + (10*b^2 B^2 d^3 \text{Log}[(e*(a + b*x))/(c + d*x]) \text{Log}[c + d*x]^2) / ((b*c - a*d)^6 g^4 i^3) + (10*b^2 B^2 d^3 \text{Log}[c + d*x]^3) / (3*(b*c - a*d)^6 g^4 i^3) - (20*A*b^2 B^2 d^3 \text{Log}[a + b*x] \text{Log}[(b*(c + d*x))/(b*c - a*d)]) / ((b*c - a*d)^6 g^4 i^3) - (20*b^2 B^2 d^3 \text{Log}[a + b*x] \text{Log}[(b*(c + d*x))/(b*c - a*d)]) / (3*(b*c - a*d)^6 g^4 i^3) + (10*b^2 B^2 d^3 \text{Log}[a + b*x]^2 \text{Log}[(b*(c + d*x))/(b*c - a*d)]) / ((b*c - a*d)^6 g^4 i^3) - (20*A*b^2 B^2 d^3 \text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))]) / ((b*c - a*d)^6 g^4 i^3) - (20*b^2 B^2 d^3 \text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))]) / (3*(b*c - a*d)^6 g^4 i^3) + (20*b^2 B^2 d^3 \text{Log}[a + b*x] \text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))]) / ((b*c - a*d)^6 g^4 i^3) - (20*A*b^2 B^2 d^3 \text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]) / ((b*c - a*d)^6 g^4 i^3) - (20*b^2 B^2 d^3 \text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]) / (3*(b*c - a*d)^6 g^4 i^3) - (20*b^2 B^2 d^3 \text{Log}[(c + d*x)^{-1}] \text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]) / ((b*c - a*d)^6 g^4 i^3) + (20*b^2 B^2 d^3 (\text{Log}[a + b*x] + \text{Log}[(c + d*x)^{-1}] - \text{Log}[(e*(a + b*x))/(c + d
\end{aligned}$$

```
*x]])*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]/((b*c - a*d)^6*g^4*i^3) - (20*
b^2*B^2*d^3*Log[(e*(a + b*x))/(c + d*x)]*PolyLog[2, 1 + (b*c - a*d)/(d*(a +
b*x)))]/((b*c - a*d)^6*g^4*i^3) - (20*b^2*B^2*d^3*PolyLog[3, -((d*(a + b*x)
))/(b*c - a*d)]/((b*c - a*d)^6*g^4*i^3) - (20*b^2*B^2*d^3*PolyLog[3, (b*(
c + d*x))/(b*c - a*d)]/((b*c - a*d)^6*g^4*i^3) - (20*b^2*B^2*d^3*PolyLog[3
, 1 + (b*c - a*d)/(d*(a + b*x)))]/((b*c - a*d)^6*g^4*i^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 30

```
Int[(x_)^(m_), x_Symbol] := Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] := Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] := Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] := Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
x_Symbol] := Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
```

$(a + b \cdot \text{Log}[c \cdot x^n])^p / (d + e \cdot x), x, x] /;$ FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]

Rule 2374

$\text{Int}[(\text{Log}[(d \cdot) \cdot ((e \cdot) + (f \cdot) \cdot (x \cdot)^{(m \cdot)}))] \cdot ((a \cdot) + \text{Log}[(c \cdot) \cdot (x \cdot)^{(n \cdot)}]) \cdot (b \cdot)^{(p \cdot)}) / (x \cdot), x_Symbol] := -\text{Simp}[(\text{PolyLog}[2, -(d \cdot f \cdot x^m)] \cdot (a + b \cdot \text{Log}[c \cdot x^n])^p) / m, x] + \text{Dist}[(b \cdot n \cdot p) / m, \text{Int}[(\text{PolyLog}[2, -(d \cdot f \cdot x^m)] \cdot (a + b \cdot \text{Log}[c \cdot x^n])^{(p - 1)}) / x, x], x] /;$ FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0] && EqQ[d * e, 1]

Rule 2375

$\text{Int}[(\text{Log}[(d \cdot) \cdot ((e \cdot) + (f \cdot) \cdot (x \cdot)^{(m \cdot)}))]^{(r \cdot)} \cdot ((a \cdot) + \text{Log}[(c \cdot) \cdot (x \cdot)^{(n \cdot)}]) \cdot (b \cdot)^{(p \cdot)}) / (x \cdot), x_Symbol] := \text{Simp}[(\text{Log}[d \cdot (e + f \cdot x^m)^r] \cdot (a + b \cdot \text{Log}[c \cdot x^n])^{(p + 1)}) / (b \cdot n \cdot (p + 1)), x] - \text{Dist}[(f \cdot m \cdot r) / (b \cdot n \cdot (p + 1)), \text{Int}[(x \cdot)^{(m - 1)} \cdot (a + b \cdot \text{Log}[c \cdot x^n])^{(p + 1)}) / (e + f \cdot x^m), x], x] /;$ FreeQ[{a, b, c, d, e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d * e, 1]

Rule 2390

$\text{Int}[(a \cdot) + \text{Log}[(c \cdot) \cdot ((d \cdot) + (e \cdot) \cdot (x \cdot)^{(n \cdot)})] \cdot (b \cdot)^{(p \cdot)} \cdot ((f \cdot) + (g \cdot) \cdot (x \cdot)^{(q \cdot)}) / (x \cdot), x_Symbol] := \text{Dist}[1/e, \text{Subst}[\text{Int}[(f \cdot x) / d]^q \cdot (a + b \cdot \text{Log}[c \cdot x^n])^p, x], x, d + e \cdot x], x] /;$ FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e * f - d * g, 0]

Rule 2391

$\text{Int}[\text{Log}[(c \cdot) \cdot ((d \cdot) + (e \cdot) \cdot (x \cdot)^{(n \cdot)})] / (x \cdot), x_Symbol] := -\text{Simp}[\text{PolyLog}[2, -(c \cdot e \cdot x^n)] / n, x] /;$ FreeQ[{c, d, e, n}, x] && EqQ[c * d, 1]

Rule 2393

$\text{Int}[(a \cdot) + \text{Log}[(c \cdot) \cdot ((d \cdot) + (e \cdot) \cdot (x \cdot))] \cdot (b \cdot) / ((f \cdot) + (g \cdot) \cdot (x \cdot)), x_Symbol] := \text{Dist}[1/g, \text{Subst}[\text{Int}[(a + b \cdot \text{Log}[1 + (c \cdot e \cdot x) / g]] / x, x], x, f + g \cdot x], x] /;$ FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e * f - d * g, 0] && EqQ[g + c * (e * f - d * g), 0]

Rule 2394

$\text{Int}[(a \cdot) + \text{Log}[(c \cdot) \cdot ((d \cdot) + (e \cdot) \cdot (x \cdot)^{(n \cdot)})] \cdot (b \cdot) / ((f \cdot) + (g \cdot) \cdot (x \cdot)), x_Symbol] := \text{Simp}[(\text{Log}[(e \cdot (f + g \cdot x)) / (e \cdot f - d \cdot g)] \cdot (a + b \cdot \text{Log}[c \cdot (d + e \cdot x)^n]) / g, x] - \text{Dist}[(b \cdot e \cdot n) / g, \text{Int}[\text{Log}[(e \cdot (f + g \cdot x)) / (e \cdot f - d \cdot g)] / (d + e \cdot x), x], x] /;$ FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e * f - d * g, 0]

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)/((f_.) + (g_.
)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_.
)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] := Dist[1/e, Subst[Int
[(g*x)/e]^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] := Dist[1/e, Subst[Int[(k*x)/d]^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
e*i - d*j)/e + (j*x)/e]^m), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int((((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] := Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n]*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n])]/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m))]/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] :=
Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n]*(f +
```

$g*\text{Log}[h*(-((j*k - i*1)/1) + (j*x)/1)^m], x], x, k + l*x], x] /;$ $\text{FreeQ}\{a, b, c, d, e, f, g, h, i, j, k, l, m, n\}, x\}$ && $\text{IntegerQ}[r]$

Rule 2488

$\text{Int}[\text{Log}[(e_.)*((f_.)*((a_.) + (b_.)*(x_.))^{(p_.)*((c_.) + (d_.)*(x_.))^{(q_.)})^{(r_.)}]^{(s_.)}/((g_.) + (h_.)*(x_.)), x_Symbol] :>$ $-\text{Simp}[(\text{Log}[-((b*c - a*d)/(d*(a + b*x))])*\text{Log}[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/h, x] + \text{Dist}[(p*r*s*(b*c - a*d))/h, \text{Int}[(\text{Log}[-((b*c - a*d)/(d*(a + b*x))])*\text{Log}[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^{(s - 1)})/((a + b*x)*(c + d*x)), x], x] /;$ $\text{FreeQ}\{a, b, c, d, e, f, g, h, p, q, r, s\}, x\}$ && $\text{NeQ}[b*c - a*d, 0]$ && $\text{EqQ}[p + q, 0]$ && $\text{EqQ}[b*g - a*h, 0]$ && $\text{IGtQ}[s, 0]$

Rule 2499

$\text{Int}[(\text{Log}[(e_.)*((f_.)*((a_.) + (b_.)*(x_.))^{(p_.)*((c_.) + (d_.)*(x_.))^{(q_.)})^{(r_.)}]^{(s_.) + \text{Log}[(i_.)*((g_.) + (h_.)*(x_.))^{(n_.)}]^{(m_.)}/((j_.) + (k_.)*(x_.)), x_Symbol] :>$ $\text{Simp}[(s + t*\text{Log}[i*(g + h*x)^n])^{(m + 1)}*\text{Log}[e*(f*(a + b*x)^p*(c + d*x)^q]^r]/(k*n*t*(m + 1)), x] + (-\text{Dist}[(b*p*r)/(k*n*t*(m + 1)), \text{Int}[(s + t*\text{Log}[i*(g + h*x)^n])^{(m + 1)}]/(a + b*x), x], x] - \text{Dist}[(d*q*r)/(k*n*t*(m + 1)), \text{Int}[(s + t*\text{Log}[i*(g + h*x)^n])^{(m + 1)}]/(c + d*x), x], x]) /;$ $\text{FreeQ}\{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r\}, x\}$ && $\text{NeQ}[b*c - a*d, 0]$ && $\text{EqQ}[h*j - g*k, 0]$ && $\text{IGtQ}[m, 0]$

Rule 2500

$\text{Int}[(\text{Log}[(e_.)*((f_.)*((a_.) + (b_.)*(x_.))^{(p_.)*((c_.) + (d_.)*(x_.))^{(q_.)})^{(r_.)}]^{(s_.) + \text{Log}[(i_.)*((g_.) + (h_.)*(x_.))^{(n_.)}]^{(t_.)}/((j_.) + (k_.)*(x_.)), x_Symbol] :>$ $\text{Dist}[\text{Log}[e*(f*(a + b*x)^p*(c + d*x)^q]^r] - \text{Log}[(a + b*x)^{(p*r)}] - \text{Log}[(c + d*x)^{(q*r)}], \text{Int}[(s + t*\text{Log}[i*(g + h*x)^n])/(j + k*x), x], x] + (\text{Int}[(\text{Log}[(a + b*x)^{(p*r)}]*(s + t*\text{Log}[i*(g + h*x)^n)))/(j + k*x), x] + \text{Int}[(\text{Log}[(c + d*x)^{(q*r)}]*(s + t*\text{Log}[i*(g + h*x)^n)))/(j + k*x), x]) /;$ $\text{FreeQ}\{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r\}, x\}$ && $\text{NeQ}[b*c - a*d, 0]$

Rule 2506

$\text{Int}[\text{Log}[v_*]\text{Log}[(e_.)*((f_.)*((a_.) + (b_.)*(x_.))^{(p_.)*((c_.) + (d_.)*(x_.))^{(q_.)})^{(r_.)}]^{(s_.)}*(u_), x_Symbol] :>$ $\text{With}\{g = \text{Simplify}[(v - 1)*(c + d*x)/(a + b*x], h = \text{Simplify}[u*(a + b*x)*(c + d*x)]\}$, $-\text{Simp}[(h*\text{PolyLog}[2, 1 - v]*\text{Log}[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/(b*c - a*d), x] + \text{Dist}[h*p*r*s, \text{Int}[(\text{PolyLog}[2, 1 - v]*\text{Log}[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^{(s - 1)})/((a + b*x)*(c + d*x)), x], x] /;$ $\text{FreeQ}\{g, h\}, x\}$ /; $\text{FreeQ}\{a, b, c, d, e, f, p, q, r, s\}, x\}$ && $\text{NeQ}[b*c - a*d, 0]$ && $\text{IGtQ}[s, 0]$ && $\text{EqQ}[p + q, 0]$

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] :=> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^(s + 1))/(p*r*(s + 1)*(b*c
- a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q]^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :=> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :=> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :=> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunci
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :=> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :=> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /; !FalseQ[w]] /; FreeQ[n, x]
```


Rule 6688

Int[u_, x_Symbol] := With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; SimplifyIntegrandQ[v, u, x]]

Rule 6742

Int[u_, x_Symbol] := With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]]

Rubi steps

$$\int \frac{\left(A + B \log\left(\frac{e^{(a+bx)}}{c+dx}\right)\right)^2}{(107c + 107dx)^3(ag + bgx)^4} dx = -\frac{2b^2B^2}{33076161(bc - ad)^3g^4(a + bx)^3} + \frac{37b^2B^2d}{44101548(bc - ad)^4g^4(a + bx)^2} - \frac{2205}{2205}$$

Mathematica [A] time = 3.05, size = 793, normalized size = 0.93

$$\frac{18B(3a^5Bd^5 - 15a^4bBd^4(2c + dx) + 30a^3b^2d^3(2A(c + dx)^2 - Bdx(4c + 3dx)) + 30a^2b^3d^2(6Adx(c + dx)^2 + B$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x]))^2/((a*g + b*g*x)^4*(c + d*x)^3), x]

[Out] -1/108*(27*(2*A^2 - 2*A*B + B^2)*d^3*(b*c - a*d)^2*(a + b*x)^3 + 54*b*(8*A^2 - 18*A*B + 19*B^2)*d^3*(b*c - a*d)*(a + b*x)^3*(c + d*x) + 4*b^2*(9*A^2 + 6*A*B + 2*B^2)*(b*c - a*d)^3*(c + d*x)^2 - 3*b^2*(54*A^2 + 66*A*B + 37*B^2)*d*(b*c - a*d)^2*(a + b*x)*(c + d*x)^2 + 6*b^2*(108*A^2 + 282*A*B + 319*B^2)*d^2*(b*c - a*d)*(a + b*x)^2*(c + d*x)^2 + 60*b^2*(18*A^2 + 12*A*B + 49*B^2)*d^3*(a + b*x)^3*(c + d*x)^2*Log[a + b*x] + 6*B*(b*c - a*d)*(9*(2*A - B)*d^3*(b*c - a*d)*(a + b*x)^3 + 18*b*(8*A - 9*B)*d^3*(a + b*x)^3*(c + d*x) + 4*b^2*(3*A + B)*(b*c - a*d)^2*(c + d*x)^2 - 3*b^2*(18*A + 11*B)*d*(b*c - a*d)*(a + b*x)*(c + d*x)^2 + 6*b^2*(36*A + 47*B)*d^2*(a + b*x)^2*(c + d*x)^2)*Log[(e*(a + b*x))/(c + d*x)] + 18*B*(3*a^5*B*d^5 - 15*a^4*b*B*d^4*(2*c + d*x) + 30*a^3*b^2*d^3*(2*A*(c + d*x)^2 - B*d*x*(4*c + 3*d*x)) + 30*a^2*b^3*d^2*(6*A*d*x*(c + d*x)^2 + B*(2*c^3 + 6*c^2*d*x - 3*d^3*x^3)) + 15*a*b^4*d*(12*A*d^2*x^2*(c + d*x)^2 + B*c*(-c^3 + 4*c^2*d*x + 18*c*d^2*x^2 + 12*d^3*x^3)) + b^5*(60*A*d^3*x^3*(c + d*x)^2 + B*(2*c^5 - 5*c^4*d*x + 20*c^3*d^2*x^2 + 110*c^2*d^3*x^3 + 100*c*d^4*x^4 + 20*d^5*x^5))*Log[(e*(a + b*x))/(c + d*x)]^2 + 360*b^2*B^2*d^3*(a + b*x)^3*(c + d*x)^2*Log[(e*(a + b*x))/(c + d*x)]

$x)]^3 - 60*b^2*(18*A^2 + 12*A*B + 49*B^2)*d^3*(a + b*x)^3*(c + d*x)^2*\text{Log}[c + d*x]]/((b*c - a*d)^6*g^4*i^3*(a + b*x)^3*(c + d*x)^2)$

fricas [B] time = 1.07, size = 2257, normalized size = 2.65

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^4/(d*i*x+c*i)^3,x, algorithm="fricas")

[Out]
$$\begin{aligned} & -1/108*(4*(9*A^2 + 6*A*B + 2*B^2)*b^5*c^5 - 135*(2*A^2 + 2*A*B + B^2)*a*b^4 \\ & *c^4*d + 1080*(A^2 + 2*A*B + 2*B^2)*a^2*b^3*c^3*d^2 - 20*(18*A^2 + 147*A*B \\ & + 49*B^2)*a^3*b^2*c^2*d^3 - 540*(A^2 - 2*A*B + 2*B^2)*a^4*b*c*d^4 + 27*(2*A \\ & ^2 - 2*A*B + B^2)*a^5*d^5 + 60*((18*A^2 + 12*A*B + 49*B^2)*b^5*c*d^4 - (18* \\ & A^2 + 12*A*B + 49*B^2)*a*b^4*d^5)*x^4 + 30*(3*(18*A^2 + 24*A*B + 53*B^2)*b^ \\ & 5*c^2*d^3 + 2*(18*A^2 - 24*A*B + 37*B^2)*a*b^4*c*d^4 - (90*A^2 + 24*A*B + 2 \\ & 33*B^2)*a^2*b^3*d^5)*x^3 + 360*(B^2*b^5*d^5*x^5 + B^2*a^3*b^2*c^2*d^3 + (2* \\ & B^2*b^5*c*d^4 + 3*B^2*a*b^4*d^5)*x^4 + (B^2*b^5*c^2*d^3 + 6*B^2*a*b^4*c*d^4 \\ & + 3*B^2*a^2*b^3*d^5)*x^3 + (3*B^2*a*b^4*c^2*d^3 + 6*B^2*a^2*b^3*c*d^4 + B^ \\ & 2*a^3*b^2*d^5)*x^2 + (3*B^2*a^2*b^3*c^2*d^3 + 2*B^2*a^3*b^2*c*d^4)*x)*\text{log}((\\ & b*e*x + a*e)/(d*x + c))^3 + 10*(2*(18*A^2 + 66*A*B + 85*B^2)*b^5*c^3*d^2 + \\ & 3*(126*A^2 + 84*A*B + 307*B^2)*a*b^4*c^2*d^3 - 12*(18*A^2 + 39*A*B + 49*B^2 \\ &)*a^2*b^3*c*d^4 - (198*A^2 - 84*A*B + 503*B^2)*a^3*b^2*d^5)*x^2 + 18*(20*(3 \\ & *A*B + B^2)*b^5*d^5*x^5 + 2*B^2*b^5*c^5 - 15*B^2*a*b^4*c^4*d + 60*B^2*a^2*b \\ & ^3*c^3*d^2 + 60*A*B*a^3*b^2*c^2*d^3 - 30*B^2*a^4*b*c*d^4 + 3*B^2*a^5*d^5 + \\ & 20*(9*A*B*a*b^4*d^5 + (6*A*B + 5*B^2)*b^5*c*d^4)*x^4 + 10*((6*A*B + 11*B^2) \\ & *b^5*c^2*d^3 + 18*(2*A*B + B^2)*a*b^4*c*d^4 + 9*(2*A*B - B^2)*a^2*b^3*d^5)* \\ & x^3 + 10*(2*B^2*b^5*c^3*d^2 + 36*A*B*a^2*b^3*c*d^4 + 9*(2*A*B + 3*B^2)*a*b^ \\ & 4*c^2*d^3 + 3*(2*A*B - 3*B^2)*a^3*b^2*d^5)*x^2 - 5*(B^2*b^5*c^4*d - 12*B^2* \\ & a*b^4*c^3*d^2 + 3*B^2*a^4*b*d^5 - 36*(A*B + B^2)*a^2*b^3*c^2*d^3 - 24*(A*B \\ & - B^2)*a^3*b^2*c*d^4)*x)*\text{log}((b*e*x + a*e)/(d*x + c))^2 - 5*((18*A^2 + 30*A \\ & *B + 19*B^2)*b^5*c^4*d - 108*(2*A^2 + 6*A*B + 7*B^2)*a*b^4*c^3*d^2 - 12*(36 \\ & *A^2 - 39*A*B + 59*B^2)*a^2*b^3*c^2*d^3 + 8*(72*A^2 + 39*A*B + 157*B^2)*a^3 \\ & *b^2*c*d^4 + 27*(2*A^2 - 6*A*B + 7*B^2)*a^4*b*d^5)*x + 6*(10*(18*A^2 + 12*A \\ & *B + 49*B^2)*b^5*d^5*x^5 + 180*A^2*a^3*b^2*c^2*d^3 + 4*(3*A*B + B^2)*b^5*c^ \\ & 5 - 45*(2*A*B + B^2)*a*b^4*c^4*d + 360*(A*B + B^2)*a^2*b^3*c^3*d^2 - 180*(A \\ & *B - B^2)*a^4*b*c*d^4 + 9*(2*A*B - B^2)*a^5*d^5 + 10*(2*(18*A^2 + 30*A*B + \\ & 55*B^2)*b^5*c*d^4 + 27*(2*A^2 + 5*B^2)*a*b^4*d^5)*x^4 + 10*((18*A^2 + 66*A* \\ & B + 85*B^2)*b^5*c^2*d^3 + 54*(2*A^2 + 2*A*B + 5*B^2)*a*b^4*c*d^4 + 27*(2*A^ \\ & 2 - 2*A*B + 5*B^2)*a^2*b^3*d^5)*x^3 + 10*(2*(6*A*B + 11*B^2)*b^5*c^3*d^2 + \\ & 27*(2*A^2 + 6*A*B + 7*B^2)*a*b^4*c^2*d^3 + 108*(A^2 + 2*B^2)*a^2*b^3*c*d^4 \\ & + 9*(2*A^2 - 6*A*B + 7*B^2)*a^3*b^2*d^5)*x^2 - 5*((6*A*B + 5*B^2)*b^5*c^4*d \\ & - 36*(2*A*B + 3*B^2)*a*b^4*c^3*d^2 - 108*(A^2 + 2*A*B + 2*B^2)*a^2*b^3*c^2 \\ & *d^3 - 72*(A^2 - 2*A*B + 2*B^2)*a^3*b^2*c*d^4 + 9*(2*A*B - 3*B^2)*a^4*b*d^5 \end{aligned}$$

$$) * x) * \log((b * e * x + a * e) / (d * x + c)) / ((b^9 * c^6 * d^2 - 6 * a * b^8 * c^5 * d^3 + 15 * a^2 * b^7 * c^4 * d^4 - 20 * a^3 * b^6 * c^3 * d^5 + 15 * a^4 * b^5 * c^2 * d^6 - 6 * a^5 * b^4 * c * d^7 + a^6 * b^3 * d^8) * g^4 * i^3 * x^5 + (2 * b^9 * c^7 * d - 9 * a * b^8 * c^6 * d^2 + 12 * a^2 * b^7 * c^5 * d^3 + 5 * a^3 * b^6 * c^4 * d^4 - 30 * a^4 * b^5 * c^3 * d^5 + 33 * a^5 * b^4 * c^2 * d^6 - 16 * a^6 * b^3 * c * d^7 + 3 * a^7 * b^2 * d^8) * g^4 * i^3 * x^4 + (b^9 * c^8 - 18 * a^2 * b^7 * c^6 * d^2 + 52 * a^3 * b^6 * c^5 * d^3 - 60 * a^4 * b^5 * c^4 * d^4 + 24 * a^5 * b^4 * c^3 * d^5 + 10 * a^6 * b^3 * c^2 * d^6 - 12 * a^7 * b^2 * c * d^7 + 3 * a^8 * b * d^8) * g^4 * i^3 * x^3 + (3 * a * b^8 * c^8 - 12 * a^2 * b^7 * c^7 * d + 10 * a^3 * b^6 * c^6 * d^2 + 24 * a^4 * b^5 * c^5 * d^3 - 60 * a^5 * b^4 * c^4 * d^4 + 52 * a^6 * b^3 * c^3 * d^5 - 18 * a^7 * b^2 * c^2 * d^6 + a^9 * d^8) * g^4 * i^3 * x^2 + (3 * a^2 * b^7 * c^8 - 16 * a^3 * b^6 * c^7 * d + 33 * a^4 * b^5 * c^6 * d^2 - 30 * a^5 * b^4 * c^5 * d^3 + 5 * a^6 * b^3 * c^4 * d^4 + 12 * a^7 * b^2 * c^3 * d^5 - 9 * a^8 * b * c^2 * d^6 + 2 * a^9 * c * d^7) * g^4 * i^3 * x + (a^3 * b^6 * c^8 - 6 * a^4 * b^5 * c^7 * d + 15 * a^5 * b^4 * c^6 * d^2 - 20 * a^6 * b^3 * c^5 * d^3 + 15 * a^7 * b^2 * c^4 * d^4 - 6 * a^8 * b * c^3 * d^5 + a^9 * c^2 * d^6) * g^4 * i^3)$$

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^4/(d*i*x+c*i)^3,x, algorithm="giac")

[Out] Timed out

maple [B] time = 0.06, size = 5731, normalized size = 6.73

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^4/(d*i*x+c*i)^3,x)

[Out] result too large to display

maxima [B] time = 12.47, size = 9282, normalized size = 10.91

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^4/(d*i*x+c*i)^3,x, algorithm="maxima")

[Out]
$$-1/6 * B^2 * ((60 * b^4 * d^4 * x^4 + 2 * b^4 * c^4 - 13 * a * b^3 * c^3 * d + 47 * a^2 * b^2 * c^2 * d^2 + 27 * a^3 * b * c * d^3 - 3 * a^4 * d^4 + 30 * (3 * b^4 * c * d^3 + 5 * a * b^3 * d^4) * x^3 + 10 * (2 * b^4 * c^2 * d^2 + 23 * a * b^3 * c * d^3 + 11 * a^2 * b^2 * d^4) * x^2 - 5 * (b^4 * c^3 * d - 11 * a * b^3 * c^2 * d^2 + 15 * a^2 * b^2 * c * d^3 - 6 * a^3 * b * c^2 * d^4 + a^4 * d^5) * x - 5 * a^4 * d^6) * g^4 * i^3)$$

$$\begin{aligned}
& 3*c^2*d^2 - 35*a^2*b^2*c*d^3 - 3*a^3*b*d^4)*x)/((b^8*c^5*d^2 - 5*a*b^7*c^4*d^3 + 10*a^2*b^6*c^3*d^4 - 10*a^3*b^5*c^2*d^5 + 5*a^4*b^4*c*d^6 - a^5*b^3*d^7)*g^4*i^3*x^5 + (2*b^8*c^6*d - 7*a*b^7*c^5*d^2 + 5*a^2*b^6*c^4*d^3 + 10*a^3*b^5*c^3*d^4 - 20*a^4*b^4*c^2*d^5 + 13*a^5*b^3*c*d^6 - 3*a^6*b^2*d^7)*g^4*i^3*x^4 + (b^8*c^7 + a*b^7*c^6*d - 17*a^2*b^6*c^5*d^2 + 35*a^3*b^5*c^4*d^3 - 25*a^4*b^4*c^3*d^4 - a^5*b^3*c^2*d^5 + 9*a^6*b^2*c*d^6 - 3*a^7*b*d^7)*g^4*i^3*x^3 + (3*a*b^7*c^7 - 9*a^2*b^6*c^6*d + a^3*b^5*c^5*d^2 + 25*a^4*b^4*c^4*d^3 - 35*a^5*b^3*c^3*d^4 + 17*a^6*b^2*c^2*d^5 - a^7*b*c*d^6 - a^8*d^7)*g^4*i^3*x^2 + (3*a^2*b^6*c^7 - 13*a^3*b^5*c^6*d + 20*a^4*b^4*c^5*d^2 - 10*a^5*b^3*c^4*d^3 - 5*a^6*b^2*c^3*d^4 + 7*a^7*b*c^2*d^5 - 2*a^8*c*d^6)*g^4*i^3*x + (a^3*b^5*c^7 - 5*a^4*b^4*c^6*d + 10*a^5*b^3*c^5*d^2 - 10*a^6*b^2*c^4*d^3 + 5*a^7*b*c^3*d^4 - a^8*c^2*d^5)*g^4*i^3) + 60*b^2*d^3*log(b*x + a)/((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)*g^4*i^3) - 60*b^2*d^3*log(d*x + c)/((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)*g^4*i^3))*log(b*e*x/(d*x + c) + a*e/(d*x + c))^2 - 1/3*A*B*((60*b^4*d^4*x^4 + 2*b^4*c^4 - 13*a*b^3*c^3*d + 47*a^2*b^2*c^2*d^2 + 27*a^3*b*c*d^3 - 3*a^4*d^4 + 30*(3*b^4*c*d^3 + 5*a*b^3*d^4)*x^3 + 10*(2*b^4*c^2*d^2 + 23*a*b^3*c*d^3 + 11*a^2*b^2*d^4)*x^2 - 5*(b^4*c^3*d - 11*a*b^3*c^2*d^2 - 35*a^2*b^2*c*d^3 - 3*a^3*b*d^4)*x)/((b^8*c^5*d^2 - 5*a*b^7*c^4*d^3 + 10*a^2*b^6*c^3*d^4 - 10*a^3*b^5*c^2*d^5 + 5*a^4*b^4*c*d^6 - a^5*b^3*d^7)*g^4*i^3*x^5 + (2*b^8*c^6*d - 7*a*b^7*c^5*d^2 + 5*a^2*b^6*c^4*d^3 + 10*a^3*b^5*c^3*d^4 - 20*a^4*b^4*c^2*d^5 + 13*a^5*b^3*c*d^6 - 3*a^6*b^2*d^7)*g^4*i^3*x^4 + (b^8*c^7 + a*b^7*c^6*d - 17*a^2*b^6*c^5*d^2 + 35*a^3*b^5*c^4*d^3 - 25*a^4*b^4*c^3*d^4 - a^5*b^3*c^2*d^5 + 9*a^6*b^2*c*d^6 - 3*a^7*b*d^7)*g^4*i^3*x^3 + (3*a*b^7*c^7 - 9*a^2*b^6*c^6*d + a^3*b^5*c^5*d^2 + 25*a^4*b^4*c^4*d^3 - 35*a^5*b^3*c^3*d^4 + 17*a^6*b^2*c^2*d^5 - a^7*b*c*d^6 - a^8*d^7)*g^4*i^3*x^2 + (3*a^2*b^6*c^7 - 13*a^3*b^5*c^6*d + 20*a^4*b^4*c^5*d^2 - 10*a^5*b^3*c^4*d^3 - 5*a^6*b^2*c^3*d^4 + 7*a^7*b*c^2*d^5 - 2*a^8*c*d^6)*g^4*i^3*x + (a^3*b^5*c^7 - 5*a^4*b^4*c^6*d + 10*a^5*b^3*c^5*d^2 - 10*a^6*b^2*c^4*d^3 + 5*a^7*b*c^3*d^4 - a^8*c^2*d^5)*g^4*i^3) + 60*b^2*d^3*log(b*x + a)/((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)*g^4*i^3) - 60*b^2*d^3*log(d*x + c)/((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)*g^4*i^3))*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 1/108*B^2*(6*(4*b^5*c^5 - 45*a*b^4*c^4*d + 360*a^2*b^3*c^3*d^2 - 490*a^3*b^2*c^2*d^3 + 180*a^4*b*c*d^4 - 9*a^5*d^5 + 120*(b^5*c*d^4 - a*b^4*d^5)*x^4 + 120*(3*b^5*c^2*d^3 - 2*a*b^4*c*d^4 - a^2*b^3*d^5)*x^3 + 20*(11*b^5*c^3*d^2 + 21*a*b^4*c^2*d^3 - 39*a^2*b^3*c*d^4 + 7*a^3*b^2*d^5)*x^2 - 180*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x)*log(b*x + a)^2 - 180*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a
\end{aligned}$$

$$\begin{aligned}
&^3b^2c^2d^4)x) \cdot \log(dx + c)^2 - 5(5b^5c^4d - 108ab^4c^3d^2 + 78a^2b^3c^2d^3 + 52a^3b^2c^2d^4 - 27a^4b^2d^5)x + 120(b^5d^5x^5 + a^3b^2c^2d^3 + (2b^5c^2d^4 + 3a^2b^4d^5)x^4 + (b^5c^2d^3 + 6a^2b^4c^2d^4 + 3a^2b^3d^5)x^3 + (3a^2b^4c^2d^3 + 6a^2b^3c^2d^4 + a^3b^2d^5)x^2 + (3a^2b^3c^2d^3 + 2a^3b^2c^2d^4)x) \cdot \log(bx + a) - 120(b^5d^5x^5 + a^3b^2c^2d^3 + (2b^5c^2d^4 + 3a^2b^4d^5)x^4 + (b^5c^2d^3 + 6a^2b^4c^2d^4 + 3a^2b^3d^5)x^3 + (3a^2b^4c^2d^3 + 6a^2b^3c^2d^4 + a^3b^2d^5)x^2 + (3a^2b^3c^2d^3 + 2a^3b^2c^2d^4)x - 3(b^5d^5x^5 + a^3b^2c^2d^3 + (2b^5c^2d^4 + 3a^2b^4d^5)x^4 + (b^5c^2d^3 + 6a^2b^4c^2d^4 + 3a^2b^3d^5)x^3 + (3a^2b^4c^2d^3 + 6a^2b^3c^2d^4 + a^3b^2d^5)x^2 + (3a^2b^3c^2d^3 + 2a^3b^2c^2d^4)x) \cdot \log(bx + a)) \cdot \log(dx + c) \cdot \log(bex/(dx + c) + a/(dx + c)) / (a^3b^6c^8g^4i^3 - 6a^4b^5c^7d^2g^4i^3 + 15a^5b^4c^6d^2g^4i^3 - 20a^6b^3c^5d^3g^4i^3 + 15a^7b^2c^4d^4g^4i^3 - 6a^8b^2c^3d^5g^4i^3 + a^9c^2d^6g^4i^3 + (b^9c^6d^2g^4i^3 - 6a^2b^8c^5d^3g^4i^3 + 15a^2b^7c^4d^4g^4i^3 - 20a^3b^6c^3d^5g^4i^3 + 15a^4b^5c^2d^6g^4i^3 - 6a^5b^4c^2d^7g^4i^3 + a^6b^3d^8g^4i^3)x^5 + (2b^9c^7d^2g^4i^3 - 9a^2b^8c^6d^2g^4i^3 + 12a^2b^7c^5d^3g^4i^3 + 5a^3b^6c^4d^4g^4i^3 - 30a^4b^5c^3d^5g^4i^3 + 33a^5b^4c^2d^6g^4i^3 - 16a^6b^3c^2d^7g^4i^3 + 3a^7b^2d^8g^4i^3)x^4 + (b^9c^8g^4i^3 - 18a^2b^7c^6d^2g^4i^3 + 52a^3b^6c^5d^3g^4i^3 - 60a^4b^5c^4d^4g^4i^3 + 24a^5b^4c^3d^5g^4i^3 + 10a^6b^3c^2d^6g^4i^3 - 12a^7b^2c^2d^7g^4i^3 + 3a^8b^2d^8g^4i^3)x^3 + (3a^2b^8c^8g^4i^3 - 12a^2b^7c^7d^2g^4i^3 + 10a^3b^6c^6d^2g^4i^3 + 24a^4b^5c^5d^3g^4i^3 - 60a^5b^4c^4d^4g^4i^3 + 52a^6b^3c^3d^5g^4i^3 - 18a^7b^2c^2d^6g^4i^3 + a^9d^8g^4i^3)x^2 + (3a^2b^7c^8g^4i^3 - 16a^3b^6c^7d^2g^4i^3 + 33a^4b^5c^6d^2g^4i^3 - 30a^5b^4c^5d^3g^4i^3 + 5a^6b^3c^4d^4g^4i^3 + 12a^7b^2c^3d^5g^4i^3 - 9a^8b^2c^2d^6g^4i^3 + 2a^9c^2d^7g^4i^3)x) + (8b^5c^5 - 135a^2b^4c^4d + 2160a^2b^3c^3d^2 - 980a^3b^2c^2d^3 - 1080a^4b^2c^2d^4 + 27a^5d^5 + 2940(b^5c^2d^4 - ab^4d^5)x^4 + 30(159b^5c^2d^3 + 74ab^4c^2d^4 - 233a^2b^3d^5)x^3 + 360(b^5d^5x^5 + a^3b^2c^2d^3 + (2b^5c^2d^4 + 3a^2b^4d^5)x^4 + (b^5c^2d^3 + 6a^2b^4c^2d^4 + 3a^2b^3d^5)x^3 + (3a^2b^4c^2d^3 + 6a^2b^3c^2d^4 + a^3b^2d^5)x^2 + (3a^2b^3c^2d^3 + 2a^3b^2c^2d^4)x) \cdot \log(bx + a)^3 - 360(b^5d^5x^5 + a^3b^2c^2d^3 + (2b^5c^2d^4 + 3a^2b^4d^5)x^4 + (b^5c^2d^3 + 6a^2b^4c^2d^4 + 3a^2b^3d^5)x^3 + (3a^2b^4c^2d^3 + 6a^2b^3c^2d^4 + a^3b^2d^5)x^2 + (3a^2b^3c^2d^3 + 2a^3b^2c^2d^4)x) \cdot \log(dx + c)^3 + 10(170b^5c^3d^2 + 921a^2b^4c^2d^3 - 588a^2b^3c^2d^4 - 503a^3b^2d^5)x^2 - 360(b^5d^5x^5 + a^3b^2c^2d^3 + (2b^5c^2d^4 + 3a^2b^4d^5)x^4 + (b^5c^2d^3 + 6a^2b^4c^2d^4 + 3a^2b^3d^5)x^3 + (3a^2b^4c^2d^3 + 6a^2b^3c^2d^4 + a^3b^2d^5)x^2 + (3a^2b^3c^2d^3 + 2a^3b^2c^2d^4)x) \cdot \log(bx + a)^2 - 360(b^5d^5x^5 + a^3b^2c^2d^3 + (2b^5c^2d^4 + 3a^2b^4d^5)x^4 + (b^5c^2d^3 + 6a^2b^4c^2d^4 + 3a^2b^3d^5)x^3 + (3a^2b^4c^2d^3 + 6a^2b^3c^2d^4 + a^3b^2d^5)x^2 + (3a^2b^3c^2d^3 + 2a^3b^2c^2d^4)x - 3(b^5d^5x^5 + a^3b^2c^2d^3 + (2
\end{aligned}$$

$$\begin{aligned}
& *b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x) * \log(b*x + a) * \log(d*x + c)^2 - 5*(19*b^5*c^4*d - 756*a*b^4*c^3*d^2 - 708*a^2*b^3*c^2*d^3 + 1256*a^3*b^2*c*d^4 + 189*a^4*b*d^5)*x + 2940*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x) * \log(b*x + a) - 60*(49*b^5*d^5*x^5 + 49*a^3*b^2*c^2*d^3 + 49*(2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + 49*(b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + 49*(3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + 18*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x) * \log(b*x + a)^2 + 49*(3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x - 12*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x) * \log(b*x + a) * \log(d*x + c)) / (a^3*b^6*c^8*g^4*i^3 - 6*a^4*b^5*c^7*d*g^4*i^3 + 15*a^5*b^4*c^6*d^2*g^4*i^3 - 20*a^6*b^3*c^5*d^3*g^4*i^3 + 15*a^7*b^2*c^4*d^4*g^4*i^3 - 6*a^8*b*c^3*d^5*g^4*i^3 + a^9*c^2*d^6*g^4*i^3 + (b^9*c^6*d^2*g^4*i^3 - 6*a*b^8*c^5*d^3*g^4*i^3 + 15*a^2*b^7*c^4*d^4*g^4*i^3 - 20*a^3*b^6*c^3*d^5*g^4*i^3 + 15*a^4*b^5*c^2*d^6*g^4*i^3 - 6*a^5*b^4*c*d^7*g^4*i^3 + a^6*b^3*d^8*g^4*i^3)*x^5 + (2*b^9*c^7*d*g^4*i^3 - 9*a*b^8*c^6*d^2*g^4*i^3 + 12*a^2*b^7*c^5*d^3*g^4*i^3 + 5*a^3*b^6*c^4*d^4*g^4*i^3 - 30*a^4*b^5*c^3*d^5*g^4*i^3 + 33*a^5*b^4*c^2*d^6*g^4*i^3 - 16*a^6*b^3*c*d^7*g^4*i^3 + 3*a^7*b^2*d^8*g^4*i^3)*x^4 + (b^9*c^8*g^4*i^3 - 18*a^2*b^7*c^6*d^2*g^4*i^3 + 52*a^3*b^6*c^5*d^3*g^4*i^3 - 60*a^4*b^5*c^4*d^4*g^4*i^3 + 24*a^5*b^4*c^3*d^5*g^4*i^3 + 10*a^6*b^3*c^2*d^6*g^4*i^3 - 12*a^7*b^2*c*d^7*g^4*i^3 + 3*a^8*b*d^8*g^4*i^3)*x^3 + (3*a*b^8*c^8*g^4*i^3 - 12*a^2*b^7*c^7*d*g^4*i^3 + 10*a^3*b^6*c^6*d^2*g^4*i^3 + 24*a^4*b^5*c^5*d^3*g^4*i^3 - 60*a^5*b^4*c^4*d^4*g^4*i^3 + 52*a^6*b^3*c^3*d^5*g^4*i^3 - 18*a^7*b^2*c^2*d^6*g^4*i^3 + a^9*d^8*g^4*i^3)*x^2 + (3*a^2*b^7*c^8*g^4*i^3 - 16*a^3*b^6*c^7*d*g^4*i^3 + 33*a^4*b^5*c^6*d^2*g^4*i^3 - 30*a^5*b^4*c^5*d^3*g^4*i^3 + 5*a^6*b^3*c^4*d^4*g^4*i^3 + 12*a^7*b^2*c^3*d^5*g^4*i^3 - 9*a^8*b*c^2*d^6*g^4*i^3 + 2*a^9*c*d^7*g^4*i^3)*x) - 1/6*A^2*((60*b^4*d^4*x^4 + 2*b^4*c^4 - 13*a*b^3*c^3*d + 47*a^2*b^2*c^2*d^2 + 27*a^3*b*c*d^3 - 3*a^4*d^4 + 30*(3*b^4*c*d^3 + 5*a*b^3*d^4)*x^3 + 10*(2*b^4*c^2*d^2 + 23*a*b^3*c*d^3 + 11*a^2*b^2*d^4)*x^2 - 5*(b^4*c^3*d - 11*a*b^3*c^2*d^2 - 35*a^2*b^2*c*d^3 - 3*a^3*b*d^4)*x) / ((b^8*c^5*d^2 - 5*a*b^7*c^4*d^3 + 10*a^2*b^6*c^3*d^4 - 10*a^3*b^5*c^2*d^5 + 5*a^4*b^4*c*d^6 - a^5*b^3*d^7)*g^4*i^3*x^5 + (2*b^8*c^6*d - 7*a*b^7*c^5*d^2 + 5*a^2*b^6*c^4*d^3 + 10*a^3*b^5*c^3*d^4 - 20*a^4*b^4*c^2*d^5 + 13*a^5*b^3*c*d^6 - 3*a^6*b^2*d^7)*g^4*i^3*x^4 + (b^8*c^7 + a*b^7*c^6*d - 17*a^2*b^6*c^5*d^2 + 35*a^3*b^5*c^4*d^3 - 25*a^4*b^4*c^3*d^4 - a^5*b^3*c^2*d^5 + 9*a^6*b^2*c*d^6 - 3*a^7*b*d^7)*g^4*i^3*x^3 + (3*a*b^7*c^7 - 9*a^2*b^6*c^6*d + a^3*b^5*c^5*d^2 + 25*a^4*b^4*c^4*d^3 - 35*a^5*b^3*c^3*d^4 + 17*a^6*b^2*c^2*d^5 - a^7*b*c*d^6 - a^8*d^7)*g^4*i^3*x^2 + (3*a^2*b^6*c^7 - 13*
\end{aligned}$$

$$\begin{aligned}
& a^3b^5c^6d + 20a^4b^4c^5d^2 - 10a^5b^3c^4d^3 - 5a^6b^2c^3d^4 \\
& + 7a^7b^1c^2d^5 - 2a^8c^1d^6)g^4i^3x + (a^3b^5c^7 - 5a^4b^4c^6d \\
& + 10a^5b^3c^5d^2 - 10a^6b^2c^4d^3 + 5a^7b^1c^3d^4 - a^8c^2d^5) \\
&)g^4i^3) + 60b^2d^3\log(bx + a)/((b^6c^6 - 6a^1b^5c^5d + 15a^2b^4 \\
& c^4d^2 - 20a^3b^3c^3d^3 + 15a^4b^2c^2d^4 - 6a^5b^1c^1d^5 + a^6d^6) \\
&)g^4i^3) - 60b^2d^3\log(dx + c)/((b^6c^6 - 6a^1b^5c^5d + 15a^2b^4 \\
& c^4d^2 - 20a^3b^3c^3d^3 + 15a^4b^2c^2d^4 - 6a^5b^1c^1d^5 + a^6d^6) \\
&)g^4i^3)) - 1/18(4b^5c^5 - 45a^1b^4c^4d + 360a^2b^3c^3d^2 - 49 \\
& 0a^3b^2c^2d^3 + 180a^4b^1c^1d^4 - 9a^5d^5 + 120(b^5c^4d^4 - a^1b^4d^5) \\
&)x^4 + 120(3b^5c^2d^3 - 2a^1b^4c^1d^4 - a^2b^3d^5)x^3 + 20(11b^5 \\
& c^3d^2 + 21a^1b^4c^2d^3 - 39a^2b^3c^1d^4 + 7a^3b^2d^5)x^2 - 180(\\
& b^5d^5x^5 + a^3b^2c^2d^3 + (2b^5c^1d^4 + 3a^1b^4d^5)x^4 + (b^5c^2d^3 \\
& + 6a^1b^4c^1d^4 + 3a^2b^3d^5)x^3 + (3a^1b^4c^2d^3 + 6a^2b^3c^1d^4 \\
& + a^3b^2d^5)x^2 + (3a^2b^3c^2d^3 + 2a^3b^2c^1d^4)x) \log(bx + \\
& a)^2 - 180(b^5d^5x^5 + a^3b^2c^2d^3 + (2b^5c^1d^4 + 3a^1b^4d^5)x^4 \\
& + (b^5c^2d^3 + 6a^1b^4c^1d^4 + 3a^2b^3d^5)x^3 + (3a^1b^4c^2d^3 + 6 \\
& a^2b^3c^1d^4 + a^3b^2d^5)x^2 + (3a^2b^3c^2d^3 + 2a^3b^2c^1d^4)x) \\
&) \log(dx + c)^2 - 5(5b^5c^4d - 108a^1b^4c^3d^2 + 78a^2b^3c^2d^3 \\
& + 52a^3b^2c^1d^4 - 27a^4b^1d^5)x + 120(b^5d^5x^5 + a^3b^2c^2d^3 + \\
& (2b^5c^1d^4 + 3a^1b^4d^5)x^4 + (b^5c^2d^3 + 6a^1b^4c^1d^4 + 3a^2b^3 \\
& d^5)x^3 + (3a^1b^4c^2d^3 + 6a^2b^3c^1d^4 + a^3b^2d^5)x^2 + (3a^2b^3 \\
& c^2d^3 + 2a^3b^2c^1d^4)x) \log(bx + a) - 120(b^5d^5x^5 + a^3b^2 \\
& c^2d^3 + (2b^5c^1d^4 + 3a^1b^4d^5)x^4 + (b^5c^2d^3 + 6a^1b^4c^1d^4 + \\
& 3a^2b^3d^5)x^3 + (3a^1b^4c^2d^3 + 6a^2b^3c^1d^4 + a^3b^2d^5)x^2 \\
& + (3a^2b^3c^2d^3 + 2a^3b^2c^1d^4)x) - 3(b^5d^5x^5 + a^3b^2c^2d^3 \\
& + (2b^5c^1d^4 + 3a^1b^4d^5)x^4 + (b^5c^2d^3 + 6a^1b^4c^1d^4 + 3a^2 \\
& b^3d^5)x^3 + (3a^1b^4c^2d^3 + 6a^2b^3c^1d^4 + a^3b^2d^5)x^2 + (3a^2 \\
& b^3c^2d^3 + 2a^3b^2c^1d^4)x) \log(bx + a)) \log(dx + c)) \cdot A \cdot B / (a^3b^6 \\
& c^8g^4i^3 - 6a^4b^5c^7d^1g^4i^3 + 15a^5b^4c^6d^2g^4i^3 - 20 \\
& a^6b^3c^5d^3g^4i^3 + 15a^7b^2c^4d^4g^4i^3 - 6a^8b^1c^3d^5g^4i^3 - 6a^9b^0 \\
& c^2d^6g^4i^3 + a^9c^2d^6g^4i^3 + (b^9c^6d^2g^4i^3 - 6a^1b^8c^5d^3g^4i^3 \\
& + 15a^2b^7c^4d^4g^4i^3 - 20a^3b^6c^3d^5g^4i^3 + 15a^4b^5c^2 \\
& d^6g^4i^3 - 6a^5b^4c^1d^7g^4i^3 + a^6b^3d^8g^4i^3)x^5 + (2b^9c^7d^1g^4i^3 \\
& - 9a^1b^8c^6d^2g^4i^3 + 12a^2b^7c^5d^3g^4i^3 + 5a^3b^6c^4d^4g^4i^3 \\
& - 30a^4b^5c^3d^5g^4i^3 + 33a^5b^4c^2d^6g^4i^3 + 16a^6b^3c^1d^7g^4i^3 \\
& + 3a^7b^2d^8g^4i^3)x^4 + (b^9c^8g^4i^3 - 18a^2b^7c^6d^2g^4i^3 + 52a^3b^6c^5d^3 \\
& g^4i^3 - 60a^4b^5c^4d^4g^4i^3 + 24a^5b^4c^3d^5g^4i^3 + 10a^6b^3c^2d^6g^4i^3 \\
& - 12a^7b^2c^1d^7g^4i^3 + 3a^8b^1d^8g^4i^3)x^3 + (3a^1b^8c^8g^4i^3 \\
& - 12a^2b^7c^7d^1g^4i^3 + 10a^3b^6c^6d^2g^4i^3 + 24a^4b^5c^5d^3g^4i^3 \\
& - 60a^5b^4c^4d^4g^4i^3 + 52a^6b^3c^3d^5g^4i^3 - 18a^7b^2c^2d^6g^4i^3 \\
& + a^9d^8g^4i^3)x^2 + (3a^2b^7c^8g^4i^3 - 16a^3b^6c^7d^1g^4i^3 + 33a^4b^5c^6d^2 \\
& g^4i^3 - 30a^5b^4c^5d^3g^4i^3 + 5a^6b^3c^4d^4g^4i^3 + 12a^7b^2c^3d^5g^4i^3 \\
& - 9a^8b^1c^2d^6g^4i^3 + 2a^9c^1d^7g^4i^3)x)
\end{aligned}$$

mupad [B] time = 18.95, size = 3550, normalized size = 4.17

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{int}((A + B \cdot \log((e^{(a + b \cdot x)}) / (c + d \cdot x)))^2 / ((a \cdot g + b \cdot g \cdot x)^4 \cdot (c \cdot i + d \cdot i \cdot x)^3), x)$

[Out]
$$\begin{aligned} & ((36 \cdot A^2 \cdot b^4 \cdot c^4 - 54 \cdot A^2 \cdot a^4 \cdot d^4 - 27 \cdot B^2 \cdot a^4 \cdot d^4 + 8 \cdot B^2 \cdot b^4 \cdot c^4 + 54 \cdot A \cdot B \\ & \cdot a^4 \cdot d^4 + 24 \cdot A \cdot B \cdot b^4 \cdot c^4 + 846 \cdot A^2 \cdot a^2 \cdot b^2 \cdot c^2 \cdot d^2 + 2033 \cdot B^2 \cdot a^2 \cdot b^2 \cdot c^2 \cdot d^2 \\ & - 234 \cdot A^2 \cdot a \cdot b^3 \cdot c^3 \cdot d + 486 \cdot A^2 \cdot a^3 \cdot b \cdot c \cdot d^3 - 127 \cdot B^2 \cdot a \cdot b^3 \cdot c^3 \cdot d + 105 \\ & 3 \cdot B^2 \cdot a^3 \cdot b \cdot c \cdot d^3 - 246 \cdot A \cdot B \cdot a \cdot b^3 \cdot c^3 \cdot d - 1026 \cdot A \cdot B \cdot a^3 \cdot b \cdot c \cdot d^3 + 1914 \cdot A \cdot B \cdot a^2 \cdot b^2 \cdot c^2 \cdot d^2) / (6 \cdot (a \cdot d - b \cdot c)) + (10 \cdot x^4 \cdot (18 \cdot A^2 \cdot b^4 \cdot d^4 + 49 \cdot B^2 \cdot b^4 \cdot d^4 \\ & + 12 \cdot A \cdot B \cdot b^4 \cdot d^4)) / (a \cdot d - b \cdot c) + (5 \cdot x \cdot (54 \cdot A^2 \cdot a^3 \cdot b \cdot d^4 + 189 \cdot B^2 \cdot a^3 \cdot b \cdot d^4 \\ & - 18 \cdot A^2 \cdot b^4 \cdot c^3 \cdot d - 19 \cdot B^2 \cdot b^4 \cdot c^3 \cdot d + 198 \cdot A^2 \cdot a \cdot b^3 \cdot c^2 \cdot d^2 + 630 \cdot A^2 \cdot a^2 \cdot b^2 \cdot c \cdot d^3 \\ & + 737 \cdot B^2 \cdot a \cdot b^3 \cdot c^2 \cdot d^2 + 1445 \cdot B^2 \cdot a^2 \cdot b^2 \cdot c \cdot d^3 - 162 \cdot A \cdot B \cdot a^3 \cdot b \cdot d^4 - 30 \cdot A \cdot B \cdot b^4 \cdot c^3 \cdot d \\ & + 618 \cdot A \cdot B \cdot a \cdot b^3 \cdot c^2 \cdot d^2 + 150 \cdot A \cdot B \cdot a^2 \cdot b^2 \cdot c \cdot d^3)) / (6 \cdot (a \cdot d - b \cdot c)) + (5 \cdot x^2 \cdot (198 \cdot A^2 \cdot a^2 \cdot b^2 \cdot d^4 + 503 \cdot B^2 \cdot a^2 \cdot b^2 \cdot d^4 + 36 \cdot A^2 \cdot b^4 \cdot c^2 \cdot d^2 \\ & + 170 \cdot B^2 \cdot b^4 \cdot c^2 \cdot d^2 - 84 \cdot A \cdot B \cdot a^2 \cdot b^2 \cdot d^4 + 132 \cdot A \cdot B \cdot b^4 \cdot c^2 \cdot d^2 + 414 \cdot A^2 \cdot a \cdot b^3 \cdot c \cdot d^3 \\ & + 1091 \cdot B^2 \cdot a \cdot b^3 \cdot c \cdot d^3 + 384 \cdot A \cdot B \cdot a \cdot b^3 \cdot c \cdot d^3)) / (3 \cdot (a \cdot d - b \cdot c)) + (5 \cdot x^3 \cdot (90 \cdot A^2 \cdot a \cdot b^3 \cdot d^4 + 233 \cdot B^2 \cdot a \cdot b^3 \cdot d^4 + 54 \cdot A^2 \cdot b^4 \cdot c \cdot d^3 \\ & + 159 \cdot B^2 \cdot b^4 \cdot c \cdot d^3 + 24 \cdot A \cdot B \cdot a \cdot b^3 \cdot d^4 + 72 \cdot A \cdot B \cdot b^4 \cdot c \cdot d^3)) / (a \cdot d - b \cdot c) \\ &)) / (x^5 \cdot (18 \cdot a^4 \cdot b^3 \cdot d^6 \cdot g^4 \cdot i^3 + 18 \cdot b^7 \cdot c^4 \cdot d^2 \cdot g^4 \cdot i^3 - 72 \cdot a \cdot b^6 \cdot c^3 \cdot d^3 \cdot g^4 \cdot i^3 \\ & - 72 \cdot a^3 \cdot b^4 \cdot c \cdot d^5 \cdot g^4 \cdot i^3 + 108 \cdot a^2 \cdot b^5 \cdot c^2 \cdot d^4 \cdot g^4 \cdot i^3) + x \cdot (54 \cdot a^2 \cdot b^5 \cdot c^6 \cdot g^4 \cdot i^3 \\ & + 36 \cdot a^7 \cdot c \cdot d^5 \cdot g^4 \cdot i^3 - 180 \cdot a^3 \cdot b^4 \cdot c^5 \cdot d \cdot g^4 \cdot i^3 - 90 \cdot a^6 \cdot b \cdot c^2 \cdot d^4 \cdot g^4 \cdot i^3 \\ & + 180 \cdot a^4 \cdot b^3 \cdot c^4 \cdot d^2 \cdot g^4 \cdot i^3) + x^2 \cdot (18 \cdot a^7 \cdot d^6 \cdot g^4 \cdot i^3 + 54 \cdot a \cdot b^6 \cdot c^6 \cdot g^4 \cdot i^3 \\ & + 36 \cdot a^6 \cdot b \cdot c \cdot d^5 \cdot g^4 \cdot i^3 - 108 \cdot a^2 \cdot b^5 \cdot c^5 \cdot d \cdot g^4 \cdot i^3 - 90 \cdot a^3 \cdot b^4 \cdot c^4 \cdot d^2 \cdot g^4 \cdot i^3 \\ & + 360 \cdot a^4 \cdot b^3 \cdot c^3 \cdot d^3 \cdot g^4 \cdot i^3 - 270 \cdot a^5 \cdot b^2 \cdot c^2 \cdot d^4 \cdot g^4 \cdot i^3) + x^3 \cdot (18 \cdot b^7 \cdot c^6 \cdot g^4 \cdot i^3 \\ & + 54 \cdot a^6 \cdot b \cdot d^6 \cdot g^4 \cdot i^3 + 36 \cdot a \cdot b^6 \cdot c^5 \cdot d \cdot g^4 \cdot i^3 - 108 \cdot a^5 \cdot b^2 \cdot c \cdot d^5 \cdot g^4 \cdot i^3 \\ & - 270 \cdot a^2 \cdot b^5 \cdot c^4 \cdot d^2 \cdot g^4 \cdot i^3 + 360 \cdot a^3 \cdot b^4 \cdot c^3 \cdot d^3 \cdot g^4 \cdot i^3 - 90 \cdot a^4 \cdot b^3 \cdot c^2 \cdot d^4 \cdot g^4 \cdot i^3) \\ & + x^4 \cdot (54 \cdot a^5 \cdot b^2 \cdot d^6 \cdot g^4 \cdot i^3 + 36 \cdot b^7 \cdot c^5 \cdot d \cdot g^4 \cdot i^3 - 90 \cdot a \cdot b^6 \cdot c^4 \cdot d^2 \cdot g^4 \cdot i^3 - 180 \cdot a^4 \cdot b^3 \cdot c \cdot d^5 \cdot g^4 \cdot i^3 \\ & + 180 \cdot a^3 \cdot b^4 \cdot c^2 \cdot d^4 \cdot g^4 \cdot i^3) + 18 \cdot a^3 \cdot b^4 \cdot c^6 \cdot g^4 \cdot i^3 + 18 \cdot a^7 \cdot c^2 \cdot d^4 \cdot g^4 \cdot i^3 - 72 \cdot a^4 \cdot b^3 \cdot c^5 \cdot d \cdot g^4 \cdot i^3 \\ & - 72 \cdot a^6 \cdot b \cdot c^3 \cdot d^3 \cdot g^4 \cdot i^3 + 108 \cdot a^5 \cdot b^2 \cdot c^4 \cdot d^2 \cdot g^4 \cdot i^3) + \log((e^{(a + b \cdot x)}) / (c + d \cdot x))^2 \cdot ((x \cdot (5 \cdot B^2 \cdot (a \cdot d + b \cdot c) \cdot (2 \cdot a \cdot d + b \cdot c)) / (3 \cdot g^4 \cdot i^3 \cdot (a^2 \cdot d^2 + b^2 \cdot c^2 - 2 \cdot a \cdot b \cdot c \cdot d))^2) - (5 \cdot B^2) / (6 \cdot g^4 \cdot i^3 \cdot (a^2 \cdot d^2 + b^2 \cdot c^2 - 2 \cdot a \cdot b \cdot c \cdot d))) + (5 \cdot B^2 \cdot a \cdot b \cdot c \cdot d) / (g^4 \cdot i^3 \cdot (a^2 \cdot d^2 + b^2 \cdot c^2 - 2 \cdot a \cdot b \cdot c \cdot d))^2) + (20 \cdot B^2 \cdot a \cdot b \cdot c \cdot d \cdot (a \cdot d + b \cdot c)) / (g^4 \cdot i^3 \cdot (a \cdot d - b \cdot c)^3 \cdot (a^2 \cdot d^2 + b^2 \cdot c^2 - 2 \cdot a \cdot b \cdot c \cdot d))) + x^3 \cdot ((5 \cdot B^2 \cdot b^2 \cdot d^2) / (g^4 \cdot i^3 \cdot (a^2 \cdot d^2 + b^2 \cdot c^2 - 2 \cdot a \cdot b \cdot c \cdot d))^2) + (20 \cdot B^2 \cdot b^2 \cdot d^2 \cdot (a \cdot d + b \cdot c)) / (g^4 \cdot i^3 \cdot (a \cdot d - b \cdot c)^3 \cdot (a^2 \cdot d^2 + b^2 \cdot c^2 - 2 \cdot a \cdot b \cdot c \cdot d))) + x^2 \cdot ((5 \cdot B^2 \cdot b \cdot d \cdot (2 \cdot a \cdot d + b \cdot c)) / (g^4 \cdot i^3 \cdot (a^2 \cdot d^2 + b^2 \cdot c^2 - 2 \cdot a \cdot b \cdot c \cdot d))^2) + (5 \cdot B^2 \cdot b \cdot d \cdot (2 \cdot a \cdot d + b \cdot c)) / (3 \cdot g^4 \cdot i^3 \cdot (a^2 \cdot d^2 + b^2 \cdot c^2 - 2 \cdot a \cdot b \cdot c \cdot d))^2) + (10 \cdot B^2 \cdot b^2 \cdot d^3 \cdot ((2 \cdot a \cdot c \cdot (a \cdot d - b \cdot c)) / d + ((a \cdot d + b \cdot c)^2 \cdot (a \cdot d - b \cdot c)) / (b \cdot d^2))) / (g^4 \cdot i^3 \end{aligned}$$

$$\begin{aligned}
&^3*(a*d - b*c)^4*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) - (B^2*(3*a*d + 2*b*c))/ \\
&(6*g^4*i^3*(a^2*b*d^3 + b^3*c^2*d - 2*a*b^2*c*d^2)) + (5*B^2*a*c*(2*a*d + b \\
&*c))/(3*g^4*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2) + (10*B^2*b^3*d^3*x^4)/(\\
&g^4*i^3*(a*d - b*c)^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (10*B^2*a^2*b*c^2* \\
&d)/(g^4*i^3*(a*d - b*c)^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)))/(b^2*d*x^5 + (x \\
&^4*(3*a*b^2*d^2 + 2*b^3*c*d))/(b*d) + (a^3*c^2)/(b*d) + (x^2*(a^3*d^2 + 3*a \\
&*b^2*c^2 + 6*a^2*b*c*d))/(b*d) + (x^3*(b^3*c^2 + 3*a^2*b*d^2 + 6*a*b^2*c*d) \\
&)/(b*d) + (x*(3*a^2*b*c^2 + 2*a^3*c*d))/(b*d) - (10*B*b^2*d^3*(3*A + B))/(\\
&3*g^4*i^3*(a*d - b*c)^4*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (log((e*(a + b* \\
&x))/(c + d*x))*(x^2*((10*b*d*(B^2*b*c - 7*B^2*a*d + 6*A*B*a*d + 3*A*B*b*c)) \\
&/ (9*g^4*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2) - (10*(a*d + b*c)*(2*B^2*b*d \\
&- 3*A*B*b*d))/(3*g^4*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2) + (20*B*b^2*d^ \\
&3*(3*A + B)*((2*a*c*(a*d - b*c))/d + ((a*d + b*c)^2*(a*d - b*c))/(b*d^2)))/ \\
&(3*g^4*i^3*(a*d - b*c)^4*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) - x^3*((10*b*d*(\\
&2*B^2*b*d - 3*A*B*b*d))/(3*g^4*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2) - (40 \\
&*B*b^2*d^2*(3*A + B)*(a*d + b*c))/(3*g^4*i^3*(a*d - b*c)^3*(a^2*d^2 + b^2*c \\
&^2 - 2*a*b*c*d))) + x*((5*(B^2 - 6*A*B))/(18*g^4*i^3*(a^2*d^2 + b^2*c^2 - 2 \\
&*a*b*c*d)) + (10*(a*d + b*c)*(B^2*b*c - 7*B^2*a*d + 6*A*B*a*d + 3*A*B*b*c)) \\
&/ (9*g^4*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2) - (10*a*c*(2*B^2*b*d - 3*A*B \\
&*b*d))/(3*g^4*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2) + (40*B*a*b*c*d*(3*A + \\
&B)*(a*d + b*c))/(3*g^4*i^3*(a*d - b*c)^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))) \\
&- (4*B^2*b*c - 9*B^2*a*d + 18*A*B*a*d + 12*A*B*b*c)/(18*g^4*i^3*(a^2*b*d^3 \\
&+ b^3*c^2*d - 2*a*b^2*c*d^2)) + (10*a*c*(B^2*b*c - 7*B^2*a*d + 6*A*B*a*d + \\
&3*A*B*b*c))/(9*g^4*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2) + (20*B*b^3*d^3*x \\
&^4*(3*A + B))/(3*g^4*i^3*(a*d - b*c)^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + \\
&(20*B*a^2*b*c^2*d*(3*A + B))/(3*g^4*i^3*(a*d - b*c)^3*(a^2*d^2 + b^2*c^2 - \\
&2*a*b*c*d)))/(b^2*d*x^5 + (x^4*(3*a*b^2*d^2 + 2*b^3*c*d))/(b*d) + (a^3*c^2 \\
&)/(b*d) + (x^2*(a^3*d^2 + 3*a*b^2*c^2 + 6*a^2*b*c*d))/(b*d) + (x^3*(b^3*c^2 \\
&+ 3*a^2*b*d^2 + 6*a*b^2*c*d))/(b*d) + (x*(3*a^2*b*c^2 + 2*a^3*c*d))/(b*d) \\
&+ (b^2*d^3*atan((b^2*d^3*(18*A^2 + 49*B^2 + 12*A*B)*(9*a^6*d^6*g^4*i^3 - 9 \\
&*b^6*c^6*g^4*i^3 + 36*a*b^5*c^5*d*g^4*i^3 - 36*a^5*b*c*d^5*g^4*i^3 - 45*a^2 \\
&*b^4*c^4*d^2*g^4*i^3 + 45*a^4*b^2*c^2*d^4*g^4*i^3)*5i)/(9*g^4*i^3*(a*d - b* \\
&c)^6*(90*A^2*b^2*d^3 + 245*B^2*b^2*d^3 + 60*A*B*b^2*d^3)) + (b^3*d^4*x*(18* \\
&A^2 + 49*B^2 + 12*A*B)*(a^5*d^5*g^4*i^3 - b^5*c^5*g^4*i^3 + 5*a*b^4*c^4*d*g \\
&^4*i^3 - 5*a^4*b*c*d^4*g^4*i^3 - 10*a^2*b^3*c^3*d^2*g^4*i^3 + 10*a^3*b^2*c^ \\
&2*d^3*g^4*i^3)*10i)/(g^4*i^3*(a*d - b*c)^6*(90*A^2*b^2*d^3 + 245*B^2*b^2*d^ \\
&3 + 60*A*B*b^2*d^3)))*(18*A^2 + 49*B^2 + 12*A*B)*10i)/(9*g^4*i^3*(a*d - b*c \\
&)^6) - (10*B^2*b^2*d^3*log((e*(a + b*x))/(c + d*x))^3)/(3*g^4*i^3*(a*d - b* \\
&c)^4*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))
\end{aligned}$$

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)**4/(d*i*x+c*i)**3,x)
```

```
[Out] Timed out
```

$$3.108 \quad \int (ag+bgx)^3(ci+dix) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) dx$$

Optimal. Leaf size=223

$$\frac{g^3 i(a+bx)^4(bc-ad) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A - Bn \right)}{20b^2} + \frac{g^3 i(a+bx)^4(c+dx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{5b} + \frac{Bg^3 \ln(bc-ad)}{20b^2}$$

[Out] $-1/20*B*(-a*d+b*c)^4*g^3*i*n*x/b/d^3+1/40*B*(-a*d+b*c)^3*g^3*i*n*(b*x+a)^2/b^2/d^2-1/60*B*(-a*d+b*c)^2*g^3*i*n*(b*x+a)^3/b^2/d+1/5*g^3*i*(b*x+a)^4*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b+1/20*(-a*d+b*c)*g^3*i*(b*x+a)^4*(A-B*n+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^2+1/20*B*(-a*d+b*c)^5*g^3*i*n*\ln(d*x+c)/b^2/d^4$

Rubi [A] time = 0.39, antiderivative size = 243, normalized size of antiderivative = 1.09, number of steps used = 10, number of rules used = 4, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}} = 0.098$, Rules used = {2528, 2525, 12, 43}

$$\frac{g^3 i(a+bx)^4(bc-ad) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{4b^2} + \frac{dg^3 i(a+bx)^5 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{5b^2} + \frac{Bg^3 \ln(a+bx)^2(bc-ad)}{40b^2 d^2}$$

Antiderivative was successfully verified.

[In] Int[(a*g + b*g*x)^3*(c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]),x]

[Out] $-(B*(b*c - a*d)^4*g^3*i*n*x)/(20*b*d^3) + (B*(b*c - a*d)^3*g^3*i*n*(a + b*x)^2)/(40*b^2*d^2) - (B*(b*c - a*d)^2*g^3*i*n*(a + b*x)^3)/(60*b^2*d) - (B*(b*c - a*d)*g^3*i*n*(a + b*x)^4)/(20*b^2) + ((b*c - a*d)*g^3*i*(a + b*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(4*b^2) + (d*g^3*i*(a + b*x)^5*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(5*b^2) + (B*(b*c - a*d)^5*g^3*i*n*Log[c + d*x])/(20*b^2*d^4)$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 43

Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && (!IntegerQ[n] || (EqQ[c, 0] && LeQ[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])

Rule 2525

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_.))^(m_.), x_Symbol]
:> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol]
:> With[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int (108c + 108dx)(ag + bgx)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) dx &= \int \left(\frac{108(bc - ad)(ag + bgx)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b} \right) dx \\
&= \frac{(108(bc - ad)) \int (ag + bgx)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) dx}{b} \\
&= \frac{27(bc - ad)g^3(a + bx)^4 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^2} + \\
&= \frac{27(bc - ad)g^3(a + bx)^4 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^2} + \\
&= \frac{27(bc - ad)g^3(a + bx)^4 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^2} + \\
&= -\frac{27B(bc - ad)^4 g^3 n x}{5bd^3} + \frac{27B(bc - ad)^3 g^3 n (a + bx)^2}{10b^2 d^2}
\end{aligned}$$

Mathematica [A] time = 0.26, size = 269, normalized size = 1.21

$$g^3 i \left(24d(a+bx)^5 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right) + 30(a+bx)^4(bc-ad) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right) - \frac{5Bn(bc-ad)^2(3d^2(a+bx)^2)}{\dots} \right)$$

Antiderivative was successfully verified.

[In] Integrate[(a*g + b*g*x)^3*(c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]),x]

[Out] (g^3*i*(30*(b*c - a*d)*(a + b*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 24*d*(a + b*x)^5*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - (5*B*(b*c - a*d)^2*n*(6*b*d*(b*c - a*d)^2*x + 3*d^2*(-(b*c) + a*d)*(a + b*x)^2 + 2*d^3*(a + b*x)^3 - 6*(b*c - a*d)^3*Log[c + d*x]))/d^4 + (2*B*(b*c - a*d)*n*(12*b*d*(b*c - a*d)^3*x - 6*d^2*(b*c - a*d)^2*(a + b*x)^2 + 4*d^3*(b*c - a*d)*(a + b*x)^3 - 3*d^4*(a + b*x)^4 - 12*(b*c - a*d)^4*Log[c + d*x]))/d^4)/(120*b^2)

fricas [B] time = 1.07, size = 720, normalized size = 3.23

$$24 Ab^5 d^5 g^3 i x^5 + 6 (5 Ba^4 bcd^4 - Ba^5 d^5) g^3 i n \log (bx + a) + 6 (Bb^5 c^5 - 5 Bab^4 c^4 d + 10 Ba^2 b^3 c^3 d^2 - 10 Ba^3 b^2 c^2 d^3)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="fricas")

[Out] 1/120*(24*A*b^5*d^5*g^3*i*x^5 + 6*(5*B*a^4*b*c*d^4 - B*a^5*d^5)*g^3*i*n*log(b*x + a) + 6*(B*b^5*c^5 - 5*B*a*b^4*c^4*d + 10*B*a^2*b^3*c^3*d^2 - 10*B*a^3*b^2*c^2*d^3)*g^3*i*n*log(d*x + c) - 6*((B*b^5*c*d^4 - B*a*b^4*d^5)*g^3*i*n - 5*(A*b^5*c*d^4 + 3*A*a*b^4*d^5)*g^3*i)*x^4 - 2*((B*b^5*c^2*d^3 + 10*B*a*b^4*c*d^4 - 11*B*a^2*b^3*d^5)*g^3*i*n - 60*(A*a*b^4*c*d^4 + A*a^2*b^3*d^5)*g^3*i)*x^3 + 3*((B*b^5*c^3*d^2 - 5*B*a*b^4*c^2*d^3 - 5*B*a^2*b^3*c*d^4 + 9*B*a^3*b^2*d^5)*g^3*i*n + 20*(3*A*a^2*b^3*c*d^4 + A*a^3*b^2*d^5)*g^3*i)*x^2 + 6*(20*A*a^3*b^2*c*d^4*g^3*i - (B*b^5*c^4*d - 5*B*a*b^4*c^3*d^2 + 10*B*a^2*b^3*c^2*d^3 - 5*B*a^3*b^2*c*d^4 - B*a^4*b*d^5)*g^3*i*n)*x + 6*(4*B*b^5*d^5*g^3*i*x^5 + 20*B*a^3*b^2*c*d^4*g^3*i*x + 5*(B*b^5*c*d^4 + 3*B*a*b^4*d^5)*g^3*i*x^4 + 20*(B*a*b^4*c*d^4 + B*a^2*b^3*d^5)*g^3*i*x^3 + 10*(3*B*a^2*b^3*c*d^4 + B*a^3*b^2*d^5)*g^3*i*x^2)*log(e) + 6*(4*B*b^5*d^5*g^3*i*n*x^5 + 20*B*a^3*b^2*c*d^4*g^3*i*n*x + 5*(B*b^5*c*d^4 + 3*B*a*b^4*d^5)*g^3*i*n*x^4 + 20*(B*a*b^4*c*d^4 + B*a^2*b^3*d^5)*g^3*i*n*x^3 + 10*(3*B*a^2*b^3*c*d^4 + B*a^3*b^2*d^5)*g^3*i*n*x^2)*log((b*x + a)/(d*x + c)))/(b^2*d^4)

giac [B] time = 6.40, size = 3889, normalized size = 17.44

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="giac")

[Out]
$$\begin{aligned} & -1/120*(6*(B*b^9*c^6*g^3*i^n - 6*B*a*b^8*c^5*d*g^3*i^n - 5*(b*x + a)*B*b^8*c^6*d*g^3*i^n/(d*x + c) + 15*B*a^2*b^7*c^4*d^2*g^3*i^n + 30*(b*x + a)*B*a*b^7*c^5*d^2*g^3*i^n/(d*x + c) + 10*(b*x + a)^2*B*b^7*c^6*d^2*g^3*i^n/(d*x + c)^2 - 20*B*a^3*b^6*c^3*d^3*g^3*i^n - 75*(b*x + a)*B*a^2*b^6*c^4*d^3*g^3*i^n/(d*x + c) - 60*(b*x + a)^2*B*a*b^6*c^5*d^3*g^3*i^n/(d*x + c)^2 - 10*(b*x + a)^3*B*b^6*c^6*d^3*g^3*i^n/(d*x + c)^3 + 15*B*a^4*b^5*c^2*d^4*g^3*i^n + 100*(b*x + a)*B*a^3*b^5*c^3*d^4*g^3*i^n/(d*x + c) + 150*(b*x + a)^2*B*a^2*b^5*c^4*d^4*g^3*i^n/(d*x + c)^2 + 60*(b*x + a)^3*B*a*b^5*c^5*d^4*g^3*i^n/(d*x + c)^3 - 6*B*a^5*b^4*c*d^5*g^3*i^n - 75*(b*x + a)*B*a^4*b^4*c^2*d^5*g^3*i^n/(d*x + c) - 200*(b*x + a)^2*B*a^3*b^4*c^3*d^5*g^3*i^n/(d*x + c)^2 - 150*(b*x + a)^3*B*a^2*b^4*c^4*d^5*g^3*i^n/(d*x + c)^3 + B*a^6*b^3*d^6*g^3*i^n + 30*(b*x + a)*B*a^5*b^3*c*d^6*g^3*i^n/(d*x + c) + 150*(b*x + a)^2*B*a^4*b^3*c^2*d^6*g^3*i^n/(d*x + c)^2 + 200*(b*x + a)^3*B*a^3*b^3*c^3*d^6*g^3*i^n/(d*x + c)^3 - 5*(b*x + a)*B*a^6*b^2*d^7*g^3*i^n/(d*x + c) - 60*(b*x + a)^2*B*a^5*b^2*c*d^7*g^3*i^n/(d*x + c)^2 - 150*(b*x + a)^3*B*a^4*b^2*c^2*d^7*g^3*i^n/(d*x + c)^3 + 10*(b*x + a)^2*B*a^6*b*d^8*g^3*i^n/(d*x + c)^2 + 60*(b*x + a)^3*B*a^5*b*c*d^8*g^3*i^n/(d*x + c)^3 - 10*(b*x + a)^3*B*a^6*d^9*g^3*i^n/(d*x + c)^3)*log((b*x + a)/(d*x + c))/(b^5*d^4 - 5*(b*x + a)*b^4*d^5/(d*x + c) + 10*(b*x + a)^2*b^3*d^6/(d*x + c)^2 - 10*(b*x + a)^3*b^2*d^7/(d*x + c)^3 + 5*(b*x + a)^4*b*d^8/(d*x + c)^4 - (b*x + a)^5*d^9/(d*x + c)^5) + (5*B*b^10*c^6*g^3*i^n - 30*B*a*b^9*c^5*d*g^3*i^n - 19*(b*x + a)*B*b^9*c^6*d*g^3*i^n/(d*x + c) + 75*B*a^2*b^8*c^4*d^2*g^3*i^n + 114*(b*x + a)*B*a*b^8*c^5*d^2*g^3*i^n/(d*x + c) + 23*(b*x + a)^2*B*b^8*c^6*d^2*g^3*i^n/(d*x + c)^2 - 100*B*a^3*b^7*c^3*d^3*g^3*i^n - 285*(b*x + a)*B*a^2*b^7*c^4*d^3*g^3*i^n/(d*x + c) - 138*(b*x + a)^2*B*a*b^7*c^5*d^3*g^3*i^n/(d*x + c)^2 - 3*(b*x + a)^3*B*b^7*c^6*d^3*g^3*i^n/(d*x + c)^3 + 75*B*a^4*b^6*c^2*d^4*g^3*i^n + 380*(b*x + a)*B*a^3*b^6*c^3*d^4*g^3*i^n/(d*x + c) + 345*(b*x + a)^2*B*a^2*b^6*c^4*d^4*g^3*i^n/(d*x + c)^2 + 18*(b*x + a)^3*B*a*b^6*c^5*d^4*g^3*i^n/(d*x + c)^3 - 6*(b*x + a)^4*B*b^6*c^6*d^4*g^3*i^n/(d*x + c)^4 - 30*B*a^5*b^5*c*d^5*g^3*i^n - 285*(b*x + a)*B*a^4*b^5*c^2*d^5*g^3*i^n/(d*x + c) - 460*(b*x + a)^2*B*a^3*b^5*c^3*d^5*g^3*i^n/(d*x + c)^2 - 45*(b*x + a)^3*B*a^2*b^5*c^4*d^5*g^3*i^n/(d*x + c)^3 + 36*(b*x + a)^4*B*a*b^5*c^5*d^5*g^3*i^n/(d*x + c)^4 + 5*B*a^6*b^4*d^6*g^3*i^n + 114*(b*x + a)*B*a^5*b^4*c*d^6*g^3*i^n/(d*x + c) + 345*(b*x + a)^2*B*a^4*b^4*c^2*d^6*g^3*i^n/(d*x + c)^2 + 60*(b*x + a)^3*B*a^3*b^4*c^3*d^6*g^3*i^n/(d*x + c)^3 - 90*(b*x + a)^4*B*a^2*b^4*c^4*d^6*g^3*i^n/(d*x + c)^4 - 19*(b*x + a)*B*a^6*b^3*d^7*g^3*i^n/(d*x + c) - 138*(b*x + a)^2*B*a^5*b^3*c*d^7*g^3*i^n/(d*x + c)^2 - 45*(b*x + a)^3*B*a^4*b^3*c^2*d^7*g^3*i^n/(d*x + c)^3 + 120*(b*x + a)^4*B*a^3*b^3*c^3*d^7*g^3*i^n/(d*x + c)^4 + 23*(b*x + a)^2*B*a^6*b^2*d^8*g^3*i^n/(d*x + c)^2 + 18*(b*x + a)^3*B*a^5*b^2*c*d^8*g^3*i^n/(d*x + c)^3 - 90*(b*x + a)^4*B*a^4*b^2*c^2*d^8*g^3*i^n/(d*x + c)^4 \end{aligned}$$

$$\begin{aligned}
& + c)^4 - 3*(b*x + a)^3*B*a^6*b*d^9*g^3*i^n/(d*x + c)^3 + 36*(b*x + a)^4*B* \\
& a^5*b*c*d^9*g^3*i^n/(d*x + c)^4 - 6*(b*x + a)^4*B*a^6*d^10*g^3*i^n/(d*x + c \\
&)^4 + 6*A*b^10*c^6*g^3*i + 6*B*b^10*c^6*g^3*i - 36*A*a*b^9*c^5*d*g^3*i - 36 \\
& *B*a*b^9*c^5*d*g^3*i - 30*(b*x + a)*A*b^9*c^6*d*g^3*i/(d*x + c) - 30*(b*x + \\
& a)*B*b^9*c^6*d*g^3*i/(d*x + c) + 90*A*a^2*b^8*c^4*d^2*g^3*i + 90*B*a^2*b^8 \\
& *c^4*d^2*g^3*i + 180*(b*x + a)*A*a*b^8*c^5*d^2*g^3*i/(d*x + c) + 180*(b*x + \\
& a)*B*a*b^8*c^5*d^2*g^3*i/(d*x + c) + 60*(b*x + a)^2*A*b^8*c^6*d^2*g^3*i/(d \\
& *x + c)^2 + 60*(b*x + a)^2*B*b^8*c^6*d^2*g^3*i/(d*x + c)^2 - 120*A*a^3*b^7*c \\
& ^3*d^3*g^3*i - 120*B*a^3*b^7*c^3*d^3*g^3*i - 450*(b*x + a)*A*a^2*b^7*c^4*d \\
& ^3*g^3*i/(d*x + c) - 450*(b*x + a)*B*a^2*b^7*c^4*d^3*g^3*i/(d*x + c) - 360* \\
& (b*x + a)^2*A*a*b^7*c^5*d^3*g^3*i/(d*x + c)^2 - 360*(b*x + a)^2*B*a*b^7*c^5 \\
& *d^3*g^3*i/(d*x + c)^2 - 60*(b*x + a)^3*A*b^7*c^6*d^3*g^3*i/(d*x + c)^3 - 6 \\
& 0*(b*x + a)^3*B*b^7*c^6*d^3*g^3*i/(d*x + c)^3 + 90*A*a^4*b^6*c^2*d^4*g^3*i \\
& + 90*B*a^4*b^6*c^2*d^4*g^3*i + 600*(b*x + a)*A*a^3*b^6*c^3*d^4*g^3*i/(d*x + \\
& c) + 600*(b*x + a)*B*a^3*b^6*c^3*d^4*g^3*i/(d*x + c) + 900*(b*x + a)^2*A*a \\
& ^2*b^6*c^4*d^4*g^3*i/(d*x + c)^2 + 900*(b*x + a)^2*B*a^2*b^6*c^4*d^4*g^3*i/ \\
& (d*x + c)^2 + 360*(b*x + a)^3*A*a*b^6*c^5*d^4*g^3*i/(d*x + c)^3 + 360*(b*x \\
& + a)^3*B*a*b^6*c^5*d^4*g^3*i/(d*x + c)^3 - 36*A*a^5*b^5*c*d^5*g^3*i - 36*B* \\
& a^5*b^5*c*d^5*g^3*i - 450*(b*x + a)*A*a^4*b^5*c^2*d^5*g^3*i/(d*x + c) - 450 \\
& *(b*x + a)*B*a^4*b^5*c^2*d^5*g^3*i/(d*x + c) - 1200*(b*x + a)^2*A*a^3*b^5*c \\
& ^3*d^5*g^3*i/(d*x + c)^2 - 1200*(b*x + a)^2*B*a^3*b^5*c^3*d^5*g^3*i/(d*x + \\
& c)^2 - 900*(b*x + a)^3*A*a^2*b^5*c^4*d^5*g^3*i/(d*x + c)^3 - 900*(b*x + a)^ \\
& 3*B*a^2*b^5*c^4*d^5*g^3*i/(d*x + c)^3 + 6*A*a^6*b^4*d^6*g^3*i + 6*B*a^6*b^4 \\
& *d^6*g^3*i + 180*(b*x + a)*A*a^5*b^4*c*d^6*g^3*i/(d*x + c) + 180*(b*x + a)* \\
& B*a^5*b^4*c*d^6*g^3*i/(d*x + c) + 900*(b*x + a)^2*A*a^4*b^4*c^2*d^6*g^3*i/(\\
& d*x + c)^2 + 900*(b*x + a)^2*B*a^4*b^4*c^2*d^6*g^3*i/(d*x + c)^2 + 1200*(b* \\
& x + a)^3*A*a^3*b^4*c^3*d^6*g^3*i/(d*x + c)^3 + 1200*(b*x + a)^3*B*a^3*b^4*c \\
& ^3*d^6*g^3*i/(d*x + c)^3 - 30*(b*x + a)*A*a^6*b^3*d^7*g^3*i/(d*x + c) - 30* \\
& (b*x + a)*B*a^6*b^3*d^7*g^3*i/(d*x + c) - 360*(b*x + a)^2*A*a^5*b^3*c*d^7*g \\
& ^3*i/(d*x + c)^2 - 360*(b*x + a)^2*B*a^5*b^3*c*d^7*g^3*i/(d*x + c)^2 - 900* \\
& (b*x + a)^3*A*a^4*b^3*c^2*d^7*g^3*i/(d*x + c)^3 - 900*(b*x + a)^3*B*a^4*b^3 \\
& *c^2*d^7*g^3*i/(d*x + c)^3 + 60*(b*x + a)^2*A*a^6*b^2*d^8*g^3*i/(d*x + c)^2 \\
& + 60*(b*x + a)^2*B*a^6*b^2*d^8*g^3*i/(d*x + c)^2 + 360*(b*x + a)^3*A*a^5*b \\
& ^2*c*d^8*g^3*i/(d*x + c)^3 + 360*(b*x + a)^3*B*a^5*b^2*c*d^8*g^3*i/(d*x + c \\
&)^3 - 60*(b*x + a)^3*A*a^6*b*d^9*g^3*i/(d*x + c)^3 - 60*(b*x + a)^3*B*a^6*b \\
& *d^9*g^3*i/(d*x + c)^3/(b^6*d^4 - 5*(b*x + a)*b^5*d^5/(d*x + c) + 10*(b*x \\
& + a)^2*b^4*d^6/(d*x + c)^2 - 10*(b*x + a)^3*b^3*d^7/(d*x + c)^3 + 5*(b*x + \\
& a)^4*b^2*d^8/(d*x + c)^4 - (b*x + a)^5*b*d^9/(d*x + c)^5) + 6*(B*b^6*c^6*g^ \\
& 3*i^n - 6*B*a*b^5*c^5*d*g^3*i^n + 15*B*a^2*b^4*c^4*d^2*g^3*i^n - 20*B*a^3*b \\
& ^3*c^3*d^3*g^3*i^n + 15*B*a^4*b^2*c^2*d^4*g^3*i^n - 6*B*a^5*b*c*d^5*g^3*i^n \\
& + B*a^6*d^6*g^3*i^n)*log(b - (b*x + a)*d/(d*x + c))/(b^2*d^4) - 6*(B*b^6*c \\
& ^6*g^3*i^n - 6*B*a*b^5*c^5*d*g^3*i^n + 15*B*a^2*b^4*c^4*d^2*g^3*i^n - 20*B* \\
& a^3*b^3*c^3*d^3*g^3*i^n + 15*B*a^4*b^2*c^2*d^4*g^3*i^n - 6*B*a^5*b*c*d^5*g^ \\
& 3*i^n + B*a^6*d^6*g^3*i^n)*log((b*x + a)/(d*x + c))/(b^2*d^4)*(b*c/(b*c - \\
& a*d)^2 - a*d/(b*c - a*d)^2)
\end{aligned}$$

maple [F] time = 0.35, size = 0, normalized size = 0.00

$$\int (bgx + ag)^3 (dix + ci) \left(B \ln \left(e \left(\frac{bx + a}{dx + c} \right)^n \right) + A \right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)^3*(d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)

[Out] int((b*g*x+a*g)^3*(d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)

maxima [B] time = 1.51, size = 1118, normalized size = 5.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="maxima")

[Out] $\frac{1}{5}Bb^3d^3g^3ix^5 \log(e(bx/(dx+c) + a/(dx+c))^n) + \frac{1}{5}Aab^3d^3g^3ix^5 + \frac{1}{4}Bb^3c^3g^3ix^4 \log(e(bx/(dx+c) + a/(dx+c))^n) + \frac{3}{4}Bab^2d^3g^3ix^4 \log(e(bx/(dx+c) + a/(dx+c))^n) + \frac{1}{4}Aab^3c^3g^3ix^4 + \frac{3}{4}Aab^2d^3g^3ix^4 + B^2ab^2c^3g^3ix^3 \log(e(bx/(dx+c) + a/(dx+c))^n) + B^2ab^2c^3g^3ix^3 \log(e(bx/(dx+c) + a/(dx+c))^n) + A^2ab^2c^3g^3ix^3 + A^2ab^2c^3g^3ix^3 + \frac{3}{2}B^2a^2b^2c^3g^3ix^2 \log(e(bx/(dx+c) + a/(dx+c))^n) + \frac{1}{2}B^2a^3d^3g^3ix^2 \log(e(bx/(dx+c) + a/(dx+c))^n) + \frac{3}{2}A^2a^2b^2c^3g^3ix^2 + \frac{1}{2}A^2a^3d^3g^3ix^2 + \frac{1}{60}Bb^3d^3g^3ix^n(12a^5 \log(bx+a)/b^5 - 12c^5 \log(dx+c)/d^5 - (3(b^4c^3d^3 - ab^3d^4)x^4 - 4(b^4c^2d^2 - a^2b^2d^4)x^3 + 6(b^4c^3d - a^3bd^4)x^2 - 12(b^4c^4 - a^4d^4)x)/(b^4d^4)) - \frac{1}{24}Bb^3c^3g^3ix^n(6a^4 \log(bx+a)/b^4 - 6c^4 \log(dx+c)/d^4 + (2(b^3c^2d^2 - ab^2d^3)x^3 - 3(b^3c^2d - a^2bd^3)x^2 + 6(b^3c^3 - a^3d^3)x)/(b^3d^3)) - \frac{1}{8}Bab^2d^3g^3ix^n(6a^4 \log(bx+a)/b^4 - 6c^4 \log(dx+c)/d^4 + (2(b^3c^2d^2 - ab^2d^3)x^3 - 3(b^3c^2d - a^2bd^3)x^2 + 6(b^3c^3 - a^3d^3)x)/(b^3d^3)) + \frac{1}{2}B^2a^2b^2c^3g^3ix^n(2a^3 \log(bx+a)/b^3 - 2c^3 \log(dx+c)/d^3 - ((b^2cd - abd^2)x^2 - 2(b^2c^2 - a^2d^2)x)/(b^2d^2)) + \frac{1}{2}B^2a^2b^2d^3g^3ix^n(2a^3 \log(bx+a)/b^3 - 2c^3 \log(dx+c)/d^3 - ((b^2cd - abd^2)x^2 - 2(b^2c^2 - a^2d^2)x)/(b^2d^2)) - \frac{3}{2}B^2a^2b^2c^3g^3ix^n(a^2 \log(bx+a)/b^2 - c^2 \log(dx+c)/d^2 + (bc - ad)x/(bd)) - \frac{1}{2}B^2a^3d^3g^3ix^n(a^2 \log(bx+a)/b^2 - c^2 \log(dx+c)/d^2 + (bc - ad)x/(bd)) + B^2a^3c^3g^3ix^n(a \log(bx+a)/b - c \log(dx+c)/d) + B^2a^3c^3g^3ix \log(e(bx/(dx+c) + a/(dx+c))^n) + A^2a^3c^3g^3ix$

mupad [B] time = 5.62, size = 1237, normalized size = 5.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{int}((a*g + b*g*x)^3*(c*i + d*i*x)*(A + B*\log(e*((a + b*x)/(c + d*x))^n)),x)$

[Out] $x*((a*c*((20*a*d + 20*b*c))*((b^2*g^3*i*(20*A*a*d + 10*A*b*c + B*a*d*n - B*b*c*n))/5 - (A*b^2*g^3*i*(20*a*d + 20*b*c))/20))/(20*b*d) - (b*g^3*i*(24*A*a^2*d^2 + 4*A*b^2*c^2 + 3*B*a^2*d^2*n - B*b^2*c^2*n + 32*A*a*b*c*d - 2*B*a*b*c*d*n))/(4*d) + A*a*b^2*c*g^3*i)/(b*d) - ((20*a*d + 20*b*c)*(((20*a*d + 20*b*c)*((20*a*d + 20*b*c))*((b^2*g^3*i*(20*A*a*d + 10*A*b*c + B*a*d*n - B*b*c*n))/5 - (A*b^2*g^3*i*(20*a*d + 20*b*c))/20))/(20*b*d) - (b*g^3*i*(24*A*a^2*d^2 + 4*A*b^2*c^2 + 3*B*a^2*d^2*n - B*b^2*c^2*n + 32*A*a*b*c*d - 2*B*a*b*c*d*n))/(4*d) + A*a*b^2*c*g^3*i))/(20*b*d) - (a*c*((b^2*g^3*i*(20*A*a*d + 10*A*b*c + B*a*d*n - B*b*c*n))/5 - (A*b^2*g^3*i*(20*a*d + 20*b*c))/20))/(b*d) + (a*g^3*i*(4*A*a^2*d^2 + 4*A*b^2*c^2 + B*a^2*d^2*n - B*b^2*c^2*n + 12*A*a*b*c*d))/d)/(20*b*d) + (a^2*g^3*i*(2*A*a^2*d^2 + 12*A*b^2*c^2 + B*a^2*d^2*n - 3*B*b^2*c^2*n + 16*A*a*b*c*d + 2*B*a*b*c*d*n))/(2*b*d) + x^2*((20*a*d + 20*b*c)*(((20*a*d + 20*b*c)*((b^2*g^3*i*(20*A*a*d + 10*A*b*c + B*a*d*n - B*b*c*n))/5 - (A*b^2*g^3*i*(20*a*d + 20*b*c))/20))/(20*b*d) - (b*g^3*i*(24*A*a^2*d^2 + 4*A*b^2*c^2 + 3*B*a^2*d^2*n - B*b^2*c^2*n + 32*A*a*b*c*d - 2*B*a*b*c*d*n))/(4*d) + A*a*b^2*c*g^3*i))/(40*b*d) - (a*c*((b^2*g^3*i*(20*A*a*d + 10*A*b*c + B*a*d*n - B*b*c*n))/5 - (A*b^2*g^3*i*(20*a*d + 20*b*c))/20))/(2*b*d) + (a*g^3*i*(4*A*a^2*d^2 + 4*A*b^2*c^2 + B*a^2*d^2*n - B*b^2*c^2*n + 12*A*a*b*c*d))/(2*d) - x^3*((20*a*d + 20*b*c)*((b^2*g^3*i*(20*A*a*d + 10*A*b*c + B*a*d*n - B*b*c*n))/5 - (A*b^2*g^3*i*(20*a*d + 20*b*c))/20))/(60*b*d) - (b*g^3*i*(24*A*a^2*d^2 + 4*A*b^2*c^2 + 3*B*a^2*d^2*n - B*b^2*c^2*n + 32*A*a*b*c*d - 2*B*a*b*c*d*n))/(12*d) + (A*a*b^2*c*g^3*i)/3) + \log(e*((a + b*x)/(c + d*x))^n)*((B*a^2*g^3*i*x^2*(a*d + 3*b*c))/2 + (B*b^2*g^3*i*x^4*(3*a*d + b*c))/4 + B*a^3*c*g^3*i*x + (B*b^3*d*g^3*i*x^5)/5 + B*a*b*g^3*i*x^3*(a*d + b*c)) + x^4*((b^2*g^3*i*(20*A*a*d + 10*A*b*c + B*a*d*n - B*b*c*n))/20 - (A*b^2*g^3*i*(20*a*d + 20*b*c))/80) - (\log(a + b*x)*(B*a^5*d*g^3*i*n - 5*B*a^4*b*c*g^3*i*n))/(20*b^2) + (\log(c + d*x)*(B*b^3*c^5*g^3*i*n - 10*B*a^3*c^2*d^3*g^3*i*n - 5*B*a*b^2*c^4*d*g^3*i*n + 10*B*a^2*b*c^3*d^2*g^3*i*n))/(20*d^4) + (A*b^3*d*g^3*i*x^5)/5$

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{integrate}((b*g*x+a*g)**3*(d*i*x+c*i)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n)),x)$

[Out] Timed out

$$3.109 \quad \int (ag+bgx)^2(ci+dix) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) dx$$

Optimal. Leaf size=190

$$\frac{g^2 i(a+bx)^3 (bc-ad) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A - Bn \right)}{12b^2} + \frac{g^2 i(a+bx)^3 (c+dx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{4b} - \frac{Bg^2 in(bc-ad)}{12b^2}$$

[Out] $\frac{1}{12} B (-a*d+b*c)^3 g^{2*i*n*x}/b/d^{2-1}/24 B (-a*d+b*c)^2 g^{2*i*n*(b*x+a)^2/b^2/d+1/4 g^{2*i*(b*x+a)^3*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b+1/12*(-a*d+b*c)*g^{2*i*(b*x+a)^3*(A-B*n+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^2-1/12*B*(-a*d+b*c)^4 g^{2*i*n*\ln(d*x+c)}/b^2/d^3$

Rubi [A] time = 0.32, antiderivative size = 210, normalized size of antiderivative = 1.11, number of steps used = 10, number of rules used = 4, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}} = 0.098$, Rules used = {2528, 2525, 12, 43}

$$\frac{g^2 i(a+bx)^3 (bc-ad) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{3b^2} + \frac{dg^2 i(a+bx)^4 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{4b^2} - \frac{Bg^2 in(bc-ad)^4 \log(c+dx)}{12b^2 d^3}$$

Antiderivative was successfully verified.

[In] `Int[(a*g + b*g*x)^2*(c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]),x]`

[Out] $(B*(b*c - a*d)^3 g^{2*i*n*x})/(12*b*d^2) - (B*(b*c - a*d)^2 g^{2*i*n*(a + b*x)^2}/(24*b^2*d) - (B*(b*c - a*d)*g^{2*i*n*(a + b*x)^3}/(12*b^2) + ((b*c - a*d)*g^{2*i*(a + b*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(3*b^2) + (d*g^{2*i*(a + b*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(4*b^2) - (B*(b*c - a*d)^4 g^{2*i*n*\Log[c + d*x]})/(12*b^2*d^3)$

Rule 12

`Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]`

Rule 43

`Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && (!IntegerQ[n] || (EqQ[c, 0] && LeQ[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])`

Rule 2525

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_.))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
 \int (109c + 109dx)(ag + bgx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) dx &= \int \left(\frac{109(bc - ad)(ag + bgx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b} \right) dx \\
 &= \frac{(109(bc - ad)) \int (ag + bgx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) dx}{b} \\
 &= \frac{109(bc - ad)g^2(a + bx)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{3b^2} \\
 &= \frac{109(bc - ad)g^2(a + bx)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{3b^2} \\
 &= \frac{109(bc - ad)g^2(a + bx)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{3b^2} \\
 &= \frac{109B(bc - ad)^3 g^2 n x}{12bd^2} - \frac{109B(bc - ad)^2 g^2 n (a + bx)}{24b^2 d}
 \end{aligned}$$

Mathematica [A] time = 0.18, size = 225, normalized size = 1.18

$$\frac{g^{2i} \left(6d(a+bx)^4 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right) + 8(a+bx)^3(bc-ad) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right) + \frac{4Bn(bc-ad)^2(2bdx(bc-ad)-2(b^2d^2+cd^2))}{d^3} \right)}{24b^2}$$

Antiderivative was successfully verified.

[In] Integrate[(a*g + b*g*x)^2*(c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]), x]

[Out] (g^2*i*(8*(b*c - a*d)*(a + b*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 6*d*(a + b*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + (4*B*(b*c - a*d)^2*n*(2*b*d*(b*c - a*d)*x - d^2*(a + b*x)^2 - 2*(b*c - a*d)^2*Log[c + d*x]))/d^3 - (B*(b*c - a*d)*n*(6*b*d*(b*c - a*d)^2*x + 3*d^2*(-(b*c) + a*d)*(a + b*x)^2 + 2*d^3*(a + b*x)^3 - 6*(b*c - a*d)^3*Log[c + d*x]))/d^3)/(24*b^2)

fricas [B] time = 1.10, size = 529, normalized size = 2.78

$$\frac{6Ab^4d^4g^2ix^4 + 2(4Ba^3bcd^3 - Ba^4d^4)g^2in \log(bx + a) - 2(Bb^4c^4 - 4Bab^3c^3d + 6Ba^2b^2c^2d^2)g^2in \log(dx + c) - \dots}{\dots}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n)), x, algorithm="fricas")

[Out] 1/24*(6*A*b^4*d^4*g^2*i*x^4 + 2*(4*B*a^3*b*c*d^3 - B*a^4*d^4)*g^2*i*n*log(b*x + a) - 2*(B*b^4*c^4 - 4*B*a*b^3*c^3*d + 6*B*a^2*b^2*c^2*d^2)*g^2*i*n*log(d*x + c) - 2*((B*b^4*c*d^3 - B*a*b^3*d^4)*g^2*i*n - 4*(A*b^4*c*d^3 + 2*A*a*b^3*d^4)*g^2*i)*x^3 - ((B*b^4*c^2*d^2 + 4*B*a*b^3*c*d^3 - 5*B*a^2*b^2*d^4)*g^2*i*n - 12*(2*A*a*b^3*c*d^3 + A*a^2*b^2*d^4)*g^2*i)*x^2 + 2*(12*A*a^2*b^2*c*d^3*g^2*i + (B*b^4*c^3*d - 4*B*a*b^3*c^2*d^2 + 2*B*a^2*b^2*c*d^3 + B*a^3*b*d^4)*g^2*i*n)*x + 2*(3*B*b^4*d^4*g^2*i*x^4 + 12*B*a^2*b^2*c*d^3*g^2*i*x + 4*(B*b^4*c*d^3 + 2*B*a*b^3*d^4)*g^2*i*x^3 + 6*(2*B*a*b^3*c*d^3 + B*a^2*b^2*d^4)*g^2*i*x^2)*log(e) + 2*(3*B*b^4*d^4*g^2*i*n*x^4 + 12*B*a^2*b^2*c*d^3*g^2*i*n*x + 4*(B*b^4*c*d^3 + 2*B*a*b^3*d^4)*g^2*i*n*x^3 + 6*(2*B*a*b^3*c*d^3 + B*a^2*b^2*d^4)*g^2*i*n*x^2)*log((b*x + a)/(d*x + c)))/(b^2*d^3)

giac [B] time = 3.60, size = 2535, normalized size = 13.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n)), x, algorithm="giac")

$$\begin{aligned} & x + c)^2 - 12*(b*x + a)^2*A*a^5*b*d^7*g^2*i/(d*x + c)^2 - 12*(b*x + a)^2*B* \\ & a^5*b*d^7*g^2*i/(d*x + c)^2)/(b^5*d^3 - 4*(b*x + a)*b^4*d^4/(d*x + c) + 6*(\\ & b*x + a)^2*b^3*d^5/(d*x + c)^2 - 4*(b*x + a)^3*b^2*d^6/(d*x + c)^3 + (b*x + \\ & a)^4*b*d^7/(d*x + c)^4) + 2*(B*b^5*c^5*g^2*i*n - 5*B*a*b^4*c^4*d*g^2*i*n + \\ & 10*B*a^2*b^3*c^3*d^2*g^2*i*n - 10*B*a^3*b^2*c^2*d^3*g^2*i*n + 5*B*a^4*b*c* \\ & d^4*g^2*i*n - B*a^5*d^5*g^2*i*n)*\log(-b + (b*x + a)*d/(d*x + c))/(b^2*d^3) \\ & - 2*(B*b^5*c^5*g^2*i*n - 5*B*a*b^4*c^4*d*g^2*i*n + 10*B*a^2*b^3*c^3*d^2*g^2 \\ & *i*n - 10*B*a^3*b^2*c^2*d^3*g^2*i*n + 5*B*a^4*b*c*d^4*g^2*i*n - B*a^5*d^5*g^2 \\ & ^2*i*n)*\log((b*x + a)/(d*x + c))/(b^2*d^3))*(b*c/(b*c - a*d)^2 - a*d/(b*c - \\ & a*d)^2) \end{aligned}$$

maple [F] time = 0.30, size = 0, normalized size = 0.00

$$\int (bgx + ag)^2 (dix + ci) \left(B \ln \left(e \left(\frac{bx + a}{dx + c} \right)^n \right) + A \right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)^2*(d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)

[Out] int((b*g*x+a*g)^2*(d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)

maxima [B] time = 1.38, size = 740, normalized size = 3.89

$$\frac{1}{4} B b^2 d g^2 i x^4 \log \left(e \left(\frac{b x}{d x + c} + \frac{a}{d x + c} \right)^n \right) + \frac{1}{4} A b^2 d g^2 i x^4 + \frac{1}{3} B b^2 c g^2 i x^3 \log \left(e \left(\frac{b x}{d x + c} + \frac{a}{d x + c} \right)^n \right) + \frac{2}{3} B a b d g^2 i x^3 \log$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="maxima")

[Out] $\frac{1}{4} B b^2 d g^2 i x^4 \log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + \frac{1}{4} A b^2 d g^2 i x^4 + \frac{1}{3} B b^2 c g^2 i x^3 \log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + \frac{2}{3} B a b d g^2 i x^3 \log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + \frac{1}{3} A b^2 c g^2 i x^3 + \frac{2}{3} A a b d g^2 i x^3 + B a b c g^2 i x^2 \log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + \frac{1}{2} B a^2 d g^2 i x^2 \log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A a b c g^2 i x^2 + \frac{1}{2} A a^2 d g^2 i x^2 - \frac{1}{24} B b^2 d g^2 i n * (6 a^4 \log(b*x + a)/b^4 - 6 c^4 \log(d*x + c)/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3) * x^3 - 3*(b^3*c^2*d - a^2*b*d^3) * x^2 + 6*(b^3*c^3 - a^3*d^3) * x)/(b^3*d^3)) + \frac{1}{6} B b^2 c g^2 i n * (2*a^3 \log(b*x + a)/b^3 - 2*c^3 \log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2) * x^2 - 2*(b^2*c^2 - a^2*d^2) * x)/(b^2*d^2)) + \frac{1}{3} B a b d g^2 i n * (2*a^3 \log(b*x + a)/b^3 - 2*c^3 \log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2) * x^2 - 2*(b^2*c^2 - a^2*d^2) * x)/(b^2*d^2)) - B a b c g^2 i n * (a^2 \log(b*x + a)/b^2 - c^2 \log(d*x + c)/d^2 + (b*c - a*d) * x/(b*d)) - \frac{1}{2} B a^2 d g^2 i n * (a^2 \log(b*x + a)/b^2 - c^2 \log(d*x + c)/d^2 + (b*c - a*d) * x/(b*d)) +$

$B*a^2*c*g^{2*i}*n*(a*\log(b*x + a)/b - c*\log(d*x + c)/d) + B*a^2*c*g^{2*i}*x*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A*a^2*c*g^{2*i}*x$

mupad [B] time = 5.02, size = 663, normalized size = 3.49

$$\ln\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\left(Ba^2cg^2ix + \frac{Bag^2ix^2(ad+2bc)}{2} + \frac{Bbg^2ix^3(2ad+bc)}{3} + \frac{Bb^2dg^2ix^4}{4}\right) + x^3\left(\frac{bg^2i(12Aa^2d+8Abc+B*ad*n-B*b*c*n)}{12} - \frac{A*b*g^{2*i}*(12*a*d+12*b*c)}{36} + x*\left(\frac{(12*a*d+12*b*c)*((12*a*d+12*b*c)*((b*g^{2*i}*(12*A*a*d+8*A*b*c+B*a*d*n-B*b*c*n))/4 - (A*b*g^{2*i}*(12*a*d+12*b*c))/12)}{(12*b*d)} - \frac{g^{2*i}*(9*A*a^2*d^2+3*A*b^2*c^2+2*B*a^2*d^2*n-B*b^2*c^2*n+18*A*a*b*c*d-B*a*b*c*d*n)}{(3*d)} + \frac{A*a*b*c*g^{2*i}}{(12*b*d)} - \frac{a*c*((b*g^{2*i}*(12*A*a*d+8*A*b*c+B*a*d*n-B*b*c*n))/4 - (A*b*g^{2*i}*(12*a*d+12*b*c))/12)}{(b*d)} + \frac{a*g^{2*i}*(2*A*a^2*d^2+6*A*b^2*c^2+B*a^2*d^2*n-2*B*b^2*c^2*n+12*A*a*b*c*d+B*a*b*c*d*n)}{(2*b*d)} - x^2*\left(\frac{(12*a*d+12*b*c)*((b*g^{2*i}*(12*A*a*d+8*A*b*c+B*a*d*n-B*b*c*n))/4 - (A*b*g^{2*i}*(12*a*d+12*b*c))/12)}{(24*b*d)} - \frac{g^{2*i}*(9*A*a^2*d^2+3*A*b^2*c^2+2*B*a^2*d^2*n-B*b^2*c^2*n+18*A*a*b*c*d-B*a*b*c*d*n)}{(6*d)} + \frac{A*a*b*c*g^{2*i}}{2} - \frac{(\log(a+bx)*(B*a^4*d*g^{2*i}*n-4*B*a^3*b*c*g^{2*i}*n))}{(12*b^2)} - \frac{(\log(c+dx)*(B*b^2*c^4*g^{2*i}*n+6*B*a^2*c^2*d^2*g^{2*i}*n-4*B*a*b*c^3*d*g^{2*i}*n))}{(12*d^3)} + \frac{A*b^2*d*g^{2*i}*x^4}{4}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a*g + b*g*x)^2*(c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n)),x)

[Out] log(e*((a + b*x)/(c + d*x))^n)*(B*a^2*c*g^2*i*x + (B*a*g^2*i*x^2*(a*d + 2*b*c))/2 + (B*b*g^2*i*x^3*(2*a*d + b*c))/3 + (B*b^2*d*g^2*i*x^4)/4) + x^3*((b*g^2*i*(12*A*a*d + 8*A*b*c + B*a*d*n - B*b*c*n))/12 - (A*b*g^2*i*(12*a*d + 12*b*c))/36) + x*(((12*a*d + 12*b*c)*((12*a*d + 12*b*c)*((b*g^2*i*(12*A*a*d + 8*A*b*c + B*a*d*n - B*b*c*n))/4 - (A*b*g^2*i*(12*a*d + 12*b*c))/12)))/(12*b*d) - (g^2*i*(9*A*a^2*d^2 + 3*A*b^2*c^2 + 2*B*a^2*d^2*n - B*b^2*c^2*n + 18*A*a*b*c*d - B*a*b*c*d*n))/(3*d) + A*a*b*c*g^2*i)/(12*b*d) - (a*c*((b*g^2*i*(12*A*a*d + 8*A*b*c + B*a*d*n - B*b*c*n))/4 - (A*b*g^2*i*(12*a*d + 12*b*c))/12))/(b*d) + (a*g^2*i*(2*A*a^2*d^2 + 6*A*b^2*c^2 + B*a^2*d^2*n - 2*B*b^2*c^2*n + 12*A*a*b*c*d + B*a*b*c*d*n))/(2*b*d) - x^2*(((12*a*d + 12*b*c)*((b*g^2*i*(12*A*a*d + 8*A*b*c + B*a*d*n - B*b*c*n))/4 - (A*b*g^2*i*(12*a*d + 12*b*c))/12))/(24*b*d) - (g^2*i*(9*A*a^2*d^2 + 3*A*b^2*c^2 + 2*B*a^2*d^2*n - B*b^2*c^2*n + 18*A*a*b*c*d - B*a*b*c*d*n))/(6*d) + (A*a*b*c*g^2*i)/2 - (log(a + b*x)*(B*a^4*d*g^2*i*n - 4*B*a^3*b*c*g^2*i*n))/(12*b^2) - (log(c + d*x)*(B*b^2*c^4*g^2*i*n + 6*B*a^2*c^2*d^2*g^2*i*n - 4*B*a*b*c^3*d*g^2*i*n))/(12*d^3) + (A*b^2*d*g^2*i*x^4)/4

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)**2*(d*i*x+c*i)*(A+B*ln(e*((b*x+a)/(d*x+c))^n)),x)

[Out] Timed out

$$3.110 \quad \int (ag+bgx)(ci+dix) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) dx$$

Optimal. Leaf size=149

$$\frac{gi(a+bx)^2(bc-ad) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A - Bn \right)}{6b^2} + \frac{gi(a+bx)^2(c+dx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{3b} + \frac{Bgin(bc-ad)^3}{6b^2d}$$

[Out] $-1/6*B*(-a*d+b*c)^2*g*i*n*x/b/d+1/3*g*i*(b*x+a)^2*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b+1/6*(-a*d+b*c)*g*i*(b*x+a)^2*(A-B*n+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^2+1/6*B*(-a*d+b*c)^3*g*i*n*\ln(d*x+c)/b^2/d^2$

Rubi [B] time = 0.37, antiderivative size = 311, normalized size of antiderivative = 2.09, number of steps used = 13, number of rules used = 6, integrand size = 39, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$, Rules used = {2528, 2486, 31, 2525, 12, 72}

$$-\frac{1}{3}bBdginx \left(\frac{a^2}{b^2} - \frac{c^2}{d^2} \right) - \frac{a^2Bgin(ad+bc) \log(a+bx)}{2b^2} + \frac{a^3Bdgin \log(a+bx)}{3b^2} + \frac{1}{3}bdgix^3 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right) +$$

Antiderivative was successfully verified.

[In] Int[(a*g + b*g*x)*(c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]),x]

[Out] $a*A*c*g*i*x - (b*B*(a^2/b^2 - c^2/d^2)*d*g*i*n*x)/3 - (B*(b*c - a*d)*(b*c + a*d)*g*i*n*x)/(2*b*d) - (B*(b*c - a*d)*g*i*n*x^2)/6 + (a^3*B*d*g*i*n*Log[a + b*x])/(3*b^2) - (a^2*B*(b*c + a*d)*g*i*n*Log[a + b*x])/(2*b^2) + (a*B*c*g*i*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n])/b + ((b*c + a*d)*g*i*x^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/2 + (b*d*g*i*x^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/3 - (b*B*c^3*g*i*n*Log[c + d*x])/(3*d^2) - (a*B*c*(b*c - a*d)*g*i*n*Log[c + d*x])/(b*d) + (B*c^2*(b*c + a*d)*g*i*n*Log[c + d*x])/(2*d^2)$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_) /; FreeQ[b, x]]

Rule 31

Int[((a_) + (b_.)*(x_))^(n-1), x_Symbol] := Simp[Log[RemoveContent[a + b*x, x]]/b, x] /; FreeQ[{a, b}, x]

Rule 72


```
Int[((e_.) + (f_.)*(x_))^(p_.)/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))),
  x_Symbol] := Int[ExpandIntegrand[(e + f*x)^p/((a + b*x)*(c + d*x)), x], x]
  /; FreeQ[{a, b, c, d, e, f}, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.))
  ^((r_.))^(s_.), x_Symbol] := Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
  q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
  d*x)^q]^r]^((s - 1)/(c + d*x), x), x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
  }, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
  ), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
  , x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
  a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
  , e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
  IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
  [{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
  ]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int (110c + 110dx)(ag + bgx) \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right) dx &= \int \left(110acg \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right) + 110(bc + ad)g \right) dx \\
&= (110acg) \int \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right) dx + (110bdg) \int x \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right) dx \\
&= 110aAcgx + 55(bc + ad)gx^2 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right) \\
&= 110aAcgx + \frac{110aBcg(a + bx) \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right)}{b} + 55(bc + ad)gx^2 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right) \\
&= 110aAcgx + \frac{110aBcg(a + bx) \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right)}{b} + 55(bc + ad)gx^2 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right) \\
&= 110aAcgx - \frac{55B(bc - ad)(bc + ad)gnx}{3bd} - \frac{55}{3}B(bc - ad)gx^2 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)
\end{aligned}$$

Mathematica [A] time = 0.28, size = 189, normalized size = 1.27

$$\frac{gi \left(b \left(dx \left(a^2 B d^2 n + abd(6Ac + 3Adx + Bdnx) + Ab^2 dx(3c + 2dx) + b^2(-B)cn(c + dx) \right) + Bcn \left(6a^2 d^2 - 3abcd + b^2 c^2 \right) \right) \right)}{6b^2}$$

Antiderivative was successfully verified.

[In] Integrate[(a*g + b*g*x)*(c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]),x]

[Out] (g*i*(-(a^2*B*d^2*(3*b*c + a*d)*n*Log[a + b*x]) + b*(d*x*(a^2*B*d^2*n - b^2*B*c*n*(c + d*x) + A*b^2*d*x*(3*c + 2*d*x) + a*b*d*(6*A*c + 3*A*d*x + B*d*n*x)) + B*d^2*(6*a^2*c + 3*a*b*x*(2*c + d*x) + b^2*x^2*(3*c + 2*d*x))*Log[e*((a + b*x)/(c + d*x))^n] + B*c*(b^2*c^2 - 3*a*b*c*d + 6*a^2*d^2)*n*Log[c + d*x]))/(6*b^2*d^2)

fricas [B] time = 0.97, size = 309, normalized size = 2.07

$$\frac{2Ab^3d^3gix^3 + (3Ba^2bcd^2 - Ba^3d^3)gin \log(bx + a) + (Bb^3c^3 - 3Bab^2c^2d)gin \log(dx + c) - ((Bb^3cd^2 - Bab^2d^3)g)}{6b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="fricas")

[Out] $\frac{1}{6}*(2*A*b^3*d^3*g*i*x^3 + (3*B*a^2*b*c*d^2 - B*a^3*d^3)*g*i*n*\log(b*x + a) + (B*b^3*c^3 - 3*B*a*b^2*c^2*d)*g*i*n*\log(d*x + c) - ((B*b^3*c*d^2 - B*a*b^2*d^3)*g*i*n - 3*(A*b^3*c*d^2 + A*a*b^2*d^3)*g*i)*x^2 + (6*A*a*b^2*c*d^2*g*i - (B*b^3*c^2*d - B*a^2*b*d^3)*g*i*n)*x + (2*B*b^3*d^3*g*i*x^3 + 6*B*a*b^2*c*d^2*g*i*x + 3*(B*b^3*c*d^2 + B*a*b^2*d^3)*g*i*x^2)*\log(e) + (2*B*b^3*d^3*g*i*n*x^3 + 6*B*a*b^2*c*d^2*g*i*n*x + 3*(B*b^3*c*d^2 + B*a*b^2*d^3)*g*i*n*x^2)*\log((b*x + a)/(d*x + c)))/(b^2*d^2)$

giac [B] time = 1.95, size = 1256, normalized size = 8.43

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="giac")

[Out] $-\frac{1}{6}*((B*b^5*c^4*g*i*n - 4*B*a*b^4*c^3*d*g*i*n - 3*(b*x + a)*B*b^4*c^4*d*g*i*n)/(d*x + c) + 6*B*a^2*b^3*c^2*d^2*g*i*n + 12*(b*x + a)*B*a*b^3*c^3*d^2*g*i*n)/(d*x + c) - 4*B*a^3*b^2*c*d^3*g*i*n - 18*(b*x + a)*B*a^2*b^2*c^2*d^3*g*i*n)/(d*x + c) + B*a^4*b*d^4*g*i*n + 12*(b*x + a)*B*a^3*b*c*d^4*g*i*n)/(d*x + c) - 3*(b*x + a)*B*a^4*d^5*g*i*n)/(d*x + c))*\log((b*x + a)/(d*x + c))/(b^3*d^2 - 3*(b*x + a)*b^2*d^3/(d*x + c) + 3*(b*x + a)^2*b*d^4/(d*x + c)^2 - (b*x + a)^3*d^5/(d*x + c)^3) + ((b*x + a)*B*b^5*c^4*d*g*i*n)/(d*x + c) - 4*(b*x + a)*B*a*b^4*c^3*d^2*g*i*n)/(d*x + c) - (b*x + a)^2*B*b^4*c^4*d^2*g*i*n)/(d*x + c)^2 + 6*(b*x + a)*B*a^2*b^3*c^2*d^3*g*i*n)/(d*x + c) + 4*(b*x + a)^2*B*a*b^3*c^3*d^3*g*i*n)/(d*x + c)^2 - 4*(b*x + a)*B*a^3*b^2*c*d^4*g*i*n)/(d*x + c) - 6*(b*x + a)^2*B*a^2*b^2*c^2*d^4*g*i*n)/(d*x + c)^2 + (b*x + a)*B*a^4*b*d^5*g*i*n)/(d*x + c) + 4*(b*x + a)^2*B*a^3*b*c*d^5*g*i*n)/(d*x + c)^2 - (b*x + a)^2*B*a^4*d^6*g*i*n)/(d*x + c)^2 + A*b^6*c^4*g*i + B*b^6*c^4*g*i - 4*A*a*b^5*c^3*d*g*i - 4*B*a*b^5*c^3*d*g*i - 3*(b*x + a)*A*b^5*c^4*d*g*i/(d*x + c) - 3*(b*x + a)*B*b^5*c^4*d*g*i/(d*x + c) + 6*A*a^2*b^4*c^2*d^2*g*i + 6*B*a^2*b^4*c^2*d^2*g*i + 12*(b*x + a)*A*a*b^4*c^3*d^2*g*i/(d*x + c) + 12*(b*x + a)*B*a*b^4*c^3*d^2*g*i/(d*x + c) - 4*A*a^3*b^3*c*d^3*g*i - 4*B*a^3*b^3*c*d^3*g*i - 18*(b*x + a)*A*a^2*b^3*c^2*d^3*g*i/(d*x + c) - 18*(b*x + a)*B*a^2*b^3*c^2*d^3*g*i/(d*x + c) + A*a^4*b^2*d^4*g*i + B*a^4*b^2*d^4*g*i + 12*(b*x + a)*A*a^3*b^2*c*d^4*g*i/(d*x + c) + 12*(b*x + a)*B*a^3*b^2*c*d^4*g*i/(d*x + c) - 3*(b*x + a)*A*a^4*b*d^5*g*i/(d*x + c) - 3*(b*x + a)*B*a^4*b*d^5*g*i/(d*x + c))/((b^4*d^2 - 3*(b*x + a)*b^3*d^3/(d*x + c) + 3*(b*x + a)^2*b^2*d^4/(d*x + c)^2 - (b*x + a)^3*b*d^5/(d*x + c)^3) + (B*b^4*c^4*g*i*n - 4*B*a*b^3*c^3*d*g*i*n + 6*B*a^2*b^2*c^2*d^2*g*i*n - 4*B*a^3*b*c*d^3*g*i*n + B*a^4*d^4*g*i*n)*\log(b - (b*x + a)*d/(d*x + c))/(b^2*d^2) - (B*b^4*c^4*g*i*n - 4*B*a*b^3*c^3*d*g*i*n + 6*B*a^2*b^2*c^2*d^2*g*i*n - 4*B*a^3*b*c*d^3*g*i*n + B*$

$a^4 d^4 g^{i n} \log((b x + a)/(d x + c))/(b^2 d^2) * (b c / (b c - a d)^2 - a d / (b c - a d)^2)$

maple [F] time = 0.13, size = 0, normalized size = 0.00

$$\int (b g x + a g) (d i x + c i) \left(B \ln \left(e \left(\frac{b x + a}{d x + c} \right)^n \right) + A \right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((b*g*x+a*g)*(d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)`

[Out] `int((b*g*x+a*g)*(d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)`

maxima [B] time = 1.21, size = 393, normalized size = 2.64

$$\frac{1}{3} B b d g i x^3 \log \left(e \left(\frac{b x}{d x + c} + \frac{a}{d x + c} \right)^n \right) + \frac{1}{3} A b d g i x^3 + \frac{1}{2} B b c g i x^2 \log \left(e \left(\frac{b x}{d x + c} + \frac{a}{d x + c} \right)^n \right) + \frac{1}{2} B a d g i x^2 \log \left(e \left(\frac{b x}{d x + c} + \frac{a}{d x + c} \right)^n \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((b*g*x+a*g)*(d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="maxima")`

[Out] `1/3*B*b*d*g*i*x^3*log(e*(b*x/(d*x+c)+a/(d*x+c))^n)+1/3*A*b*d*g*i*x^3+1/2*B*b*c*g*i*x^2*log(e*(b*x/(d*x+c)+a/(d*x+c))^n)+1/2*B*a*d*g*i*x^2*log(e*(b*x/(d*x+c)+a/(d*x+c))^n)+1/2*A*b*c*g*i*x^2+1/2*A*a*d*g*i*x^2+1/6*B*b*d*g*i*x^n*(2*a^3*log(b*x+a)/b^3-2*c^3*log(d*x+c)/d^3-((b^2*c*d-a*b*d^2)*x^2-2*(b^2*c^2-a^2*d^2)*x)/(b^2*d^2))-1/2*B*b*c*g*i*x^n*(a^2*log(b*x+a)/b^2-c^2*log(d*x+c)/d^2+(b*c-a*d)*x/(b*d))-1/2*B*a*d*g*i*x^n*(a^2*log(b*x+a)/b^2-c^2*log(d*x+c)/d^2+(b*c-a*d)*x/(b*d))+B*a*c*g*i*x^n*(a*log(b*x+a)/b-c*log(d*x+c)/d)+B*a*c*g*i*x^n*log(e*(b*x/(d*x+c)+a/(d*x+c))^n)+A*a*c*g*i*x^n`

mupad [B] time = 4.84, size = 295, normalized size = 1.98

$$\ln \left(e \left(\frac{a + b x}{c + d x} \right)^n \right) \left(\frac{B b d g i x^3}{3} + \frac{B g i (a d + b c) x^2}{2} + B a c g i x \right) - x \left(\frac{\left(\frac{g i (6 A a d + 6 A b c + B a d n - B b c n)}{3} - \frac{A g i (6 a d + 6 b c)}{6} \right)}{6 b d} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((a*g+b*g*x)*(c+i+d*i*x)*(A+B*log(e*((a+b*x)/(c+d*x))^n)),x)`

[Out] `log(e*((a+b*x)/(c+d*x))^n)*((B*g*i*x^2*(a*d+b*c))/2+(B*b*d*g*i*x^3)/3+B*a*c*g*i*x)-x*(((g*i*(6*A*a*d+6*A*b*c+B*a*d*n-B*b*c*n))/3-`

$$\begin{aligned} & (A*g*i*(6*a*d + 6*b*c))/6*(6*a*d + 6*b*c))/(6*b*d) + A*a*c*g*i - (g*i*(2*A \\ & *a^2*d^2 + 2*A*b^2*c^2 + B*a^2*d^2*n - B*b^2*c^2*n + 8*A*a*b*c*d))/(2*b*d)) \\ & + x^2*((g*i*(6*A*a*d + 6*A*b*c + B*a*d*n - B*b*c*n))/6 - (A*g*i*(6*a*d + 6 \\ & *b*c))/12) - (\log(a + b*x)*(B*a^3*d*g*i*n - 3*B*a^2*b*c*g*i*n))/(6*b^2) + (\\ & \log(c + d*x)*(B*b*c^3*g*i*n - 3*B*a*c^2*d*g*i*n))/(6*d^2) + (A*b*d*g*i*x^3) \\ & /3 \end{aligned}$$

sympy [A] time = 60.84, size = 756, normalized size = 5.07

$$\left\{ \begin{array}{l} acgix \left(A + B \log \left(e \left(\frac{a}{c} \right)^n \right) \right) \\ ag \left(Acix + \frac{Adix^2}{2} - \frac{Bc^2in \log(c+dx)}{2d} + Bcinx \log(a) - Bcinx \log(c + dx) + \frac{Bcinx}{2} + Bcix \log(e) + \frac{Bdinx^2 \log(a)}{2} - \frac{Bdinx^2 \log(c+dx)}{2} \right) \\ ci \left(Aagx + \frac{Abgx^2}{2} + \frac{Ba^2gn \log\left(\frac{a}{c} + \frac{bx}{c}\right)}{2b} + Bagnx \log\left(\frac{a}{c} + \frac{bx}{c}\right) - \frac{Bagnx}{2} + Bagx \log(e) + \frac{Bbgnx^2 \log\left(\frac{a}{c} + \frac{bx}{c}\right)}{2} - \frac{Bbgnx^2}{4} + \frac{Bbgnx^2 \log(c+dx)}{4} \right) \\ Aacgix + \frac{Aadgix^2}{2} + \frac{Abcgix^2}{2} + \frac{Abdgix^3}{3} - \frac{Ba^3dgin \log\left(\frac{a}{c+dx} + \frac{bx}{c+dx}\right)}{6b^2} - \frac{Ba^3dgin \log\left(\frac{c}{d} + x\right)}{6b^2} + \frac{Ba^2cgin \log\left(\frac{a}{c+dx} + \frac{bx}{c+dx}\right)}{2b} + \frac{Ba^2cgin \log(c+dx)}{2b} \end{array} \right.$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(d*i*x+c*i)*(A+B*ln(e*((b*x+a)/(d*x+c)**n))),x)

[Out] Piecewise((a*c*g*i*x*(A + B*log(e*(a/c)**n)), Eq(b, 0) & Eq(d, 0)), (a*g*(A*c*i*x + A*d*i*x**2/2 - B*c**2*i*n*log(c + d*x)/(2*d) + B*c*i*n*x*log(a) - B*c*i*n*x*log(c + d*x) + B*c*i*n*x/2 + B*c*i*x*log(e) + B*d*i*n*x**2*log(a)/2 - B*d*i*n*x**2*log(c + d*x)/2 + B*d*i*n*x**2/4 + B*d*i*x**2*log(e)/2), Eq(b, 0)), (c*i*(A*a*g*x + A*b*g*x**2/2 + B*a**2*g*n*log(a/c + b*x/c)/(2*b) + B*a*g*n*x*log(a/c + b*x/c) - B*a*g*n*x/2 + B*a*g*x*log(e) + B*b*g*n*x**2*log(a/c + b*x/c)/2 - B*b*g*n*x**2/4 + B*b*g*x**2*log(e)/2), Eq(d, 0)), (A*a*c*g*i*x + A*a*d*g*i*x**2/2 + A*b*c*g*i*x**2/2 + A*b*d*g*i*x**3/3 - B*a**3*d*g*i*n*log(a/(c + d*x) + b*x/(c + d*x))/(6*b**2) - B*a**3*d*g*i*n*log(c/d + x)/(6*b**2) + B*a**2*c*g*i*n*log(a/(c + d*x) + b*x/(c + d*x))/(2*b) + B*a**2*c*g*i*n*log(c/d + x)/(2*b) + B*a**2*d*g*i*n*x/(6*b) - B*a*c**2*g*i*n*log(c/d + x)/(2*d) + B*a*c*g*i*n*x*log(a/(c + d*x) + b*x/(c + d*x)) + B*a*c*g*i*x*log(e) + B*a*d*g*i*n*x**2*log(a/(c + d*x) + b*x/(c + d*x))/2 + B*a*d*g*i*n*x**2/6 + B*a*d*g*i*x**2*log(e)/2 + B*b*c**3*g*i*n*log(c/d + x)/(6*d**2) - B*b*c**2*g*i*n*x/(6*d) + B*b*c*g*i*n*x**2*log(a/(c + d*x) + b*x/(c + d*x))/2 - B*b*c*g*i*n*x**2/6 + B*b*c*g*i*x**2*log(e)/2 + B*b*d*g*i*n*x**3*log(a/(c + d*x) + b*x/(c + d*x))/3 + B*b*d*g*i*x**3*log(e)/3, True))

$$3.111 \quad \int (ci + dix) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) dx$$

Optimal. Leaf size=86

$$\frac{i(c+dx)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{2d} - \frac{Bin(bc-ad)^2 \log(a+bx)}{2b^2d} - \frac{Binx(bc-ad)}{2b}$$

[Out] $-1/2*B*(-a*d+b*c)*i*n*x/b-1/2*B*(-a*d+b*c)^2*i*n*\ln(b*x+a)/b^2/d+1/2*i*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/d$

Rubi [A] time = 0.06, antiderivative size = 86, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.097$, Rules used = {2525, 12, 43}

$$\frac{i(c+dx)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{2d} - \frac{Bin(bc-ad)^2 \log(a+bx)}{2b^2d} - \frac{Binx(bc-ad)}{2b}$$

Antiderivative was successfully verified.

[In] `Int[(c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]),x]`

[Out] $-(B*(b*c - a*d)*i*n*x)/(2*b) - (B*(b*c - a*d)^2*i*n*Log[a + b*x])/(2*b^2*d) + (i*(c + d*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(2*d)$

Rule 12

`Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]`

Rule 43

`Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && (!IntegerQ[n] || (EqQ[c, 0] && LeQ[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])`

Rule 2525

`Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||`

IntegerQ[m]) && NeQ[m, -1]

Rubi steps

$$\begin{aligned}
 \int (111c + 111dx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) dx &= \frac{111(c+dx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{2d} - \frac{(Bn) \int \frac{12321(bc-ad)(c+dx)}{a+bx}}{222d} \\
 &= \frac{111(c+dx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{2d} - \frac{(111B(bc-ad)n) \int \frac{c+dx}{a+bx}}{2d} \\
 &= \frac{111(c+dx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{2d} - \frac{(111B(bc-ad)n) \int \left(\frac{c+dx}{a+bx} \right)}{2d} \\
 &= -\frac{111B(bc-ad)nx}{2b} - \frac{111B(bc-ad)^2 n \log(a+bx)}{2b^2 d} + \frac{111(c+dx)^2}{2d}
 \end{aligned}$$

Mathematica [A] time = 0.04, size = 74, normalized size = 0.86

$$\frac{i \left((c+dx)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right) - \frac{Bn(bc-ad)((bc-ad) \log(a+bx)+bdx)}{b^2} \right)}{2d}$$

Antiderivative was successfully verified.

[In] Integrate[(c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]),x]

[Out] (i*(-((B*(b*c - a*d)*n*(b*d*x + (b*c - a*d)*Log[a + b*x]))/b^2) + (c + d*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(2*d)

fricas [B] time = 0.82, size = 162, normalized size = 1.88

$$\frac{Ab^2d^2ix^2 - Bb^2c^2in \log(dx + c) + (2Babcd - Ba^2d^2)in \log(bx + a) + (2Ab^2cdi - (Bb^2cd - Babd^2)in)x + (Bb^2c^2 - B^2cd^2)}{2b^2d}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="fricas")

[Out] 1/2*(A*b^2*d^2*i*x^2 - B*b^2*c^2*i*n*log(d*x + c) + (2*B*a*b*c*d - B*a^2*d^2)*i*n*log(b*x + a) + (2*A*b^2*c*d*i - (B*b^2*c*d - B*a*b*d^2)*i*n)*x + (B*

$b^2 d^2 i x^2 + 2 B b^2 c d i x) \log(e) + (B b^2 d^2 i n x^2 + 2 B b^2 c d i n x) \log((b x + a)/(d x + c)) / (b^2 d)$

giac [B] time = 0.78, size = 572, normalized size = 6.65

$$\frac{1}{2} \left(\frac{(B b^3 c^3 i n - 3 B a b^2 c^2 d i n + 3 B a^2 b c d^2 i n - B a^3 d^3 i n) \log\left(\frac{b x + a}{d x + c}\right)}{b^2 d - \frac{2(b x + a) b d^2}{d x + c} + \frac{(b x + a)^2 d^3}{(d x + c)^2}} - \frac{B b^4 c^3 i n - 3 B a b^3 c^2 d i n - \frac{(b x + a) B b^3 c^3 d i n}{d x + c} + 3 B a^2 b c^3 d i n}{b^2 d - \frac{2(b x + a) b d^2}{d x + c} + \frac{(b x + a)^2 d^3}{(d x + c)^2}} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="giac")

[Out] $\frac{1}{2} * ((B b^3 c^3 i n - 3 B a b^2 c^2 d i n + 3 B a^2 b c d^2 i n - B a^3 d^3 i n) * \log((b x + a)/(d x + c)) / (b^2 d - 2 * (b x + a) * b d^2 / (d x + c) + (b x + a)^2 d^3 / (d x + c)^2) - (B b^4 c^3 i n - 3 B a b^3 c^2 d i n - (b x + a) * B b^3 c^3 d i n / (d x + c) + 3 B a^2 b c d^2 i n + 3 * (b x + a) * B a^2 b^2 c^2 d^2 i n / (d x + c) - B a^3 b d^3 i n - 3 * (b x + a) * B a^2 b c d^3 i n / (d x + c) + (b x + a) * B a^3 d^4 i n / (d x + c) - A * b^4 c^3 i - B b^4 c^3 i + 3 A * a * b^3 c^2 d i + 3 B a * b^3 c^2 d i - 3 A * a^2 b^2 c d^2 i - 3 B a^2 b^2 c d^2 i + A * a^3 b d^3 i + B a^3 b d^3 i) / (b^3 d - 2 * (b x + a) * b^2 d^2 / (d x + c) + (b x + a)^2 b d^3 / (d x + c)^2) + (B b^3 c^3 i n - 3 B a b^2 c^2 d i n + 3 B a^2 b c d^2 i n - B a^3 d^3 i n) * \log(-b + (b x + a) * d / (d x + c)) / (b^2 d) - (B b^3 c^3 i n - 3 B a b^2 c^2 d i n + 3 B a^2 b c d^2 i n - B a^3 d^3 i n) * \log((b x + a)/(d x + c)) / (b^2 d) * (b c / (b c - a d)^2 - a d / (b c - a d)^2)$

maple [F] time = 0.18, size = 0, normalized size = 0.00

$$\int (d i x + c i) \left(B \ln \left(e \left(\frac{b x + a}{d x + c} \right)^n \right) + A \right) d x$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)

[Out] int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)

maxima [A] time = 1.20, size = 156, normalized size = 1.81

$$\frac{1}{2} B d i x^2 \log \left(e \left(\frac{b x}{d x + c} + \frac{a}{d x + c} \right)^n \right) + \frac{1}{2} A d i x^2 - \frac{1}{2} B d i n \left(\frac{a^2 \log(b x + a)}{b^2} - \frac{c^2 \log(d x + c)}{d^2} + \frac{(b c - a d) x}{b d} \right) + B c i n \left(\frac{a \log(b x + a)}{b} - \frac{c \log(d x + c)}{d} + \frac{(b c - a d) x}{b d} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="maxima")

[Out] $\frac{1}{2}B*d*i*x^2*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + \frac{1}{2}A*d*i*x^2 - \frac{1}{2}B*d*i*n*(a^2*\log(b*x + a)/b^2 - c^2*\log(d*x + c)/d^2 + (b*c - a*d)*x/(b*d)) + B*c*i*n*(a*\log(b*x + a)/b - c*\log(d*x + c)/d) + B*c*i*x*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A*c*i*x$

mupad [B] time = 4.34, size = 134, normalized size = 1.56

$$x \left(\frac{i(2Aad + 4Abc + Badn - Bbcn)}{2b} - \frac{Ai(2ad + 2bc)}{2b} \right) + \ln \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \left(\frac{Bdix^2}{2} + Bcix \right) - \frac{\ln(a + bx)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n)),x)

[Out] $x*((i*(2*A*a*d + 4*A*b*c + B*a*d*n - B*b*c*n))/(2*b) - (A*i*(2*a*d + 2*b*c))/(2*b)) + \log(e*((a + b*x)/(c + d*x))^n)*((B*d*i*x^2)/2 + B*c*i*x) - (\log(a + b*x)*(B*a^2*d*i*n - 2*B*a*b*c*i*n))/(2*b^2) + (A*d*i*x^2)/2 - (B*c^2*i*n*\log(c + d*x))/(2*d)$

sympy [A] time = 39.91, size = 444, normalized size = 5.16

$$\left\{ \begin{array}{l} cix \left(A + B \log \left(e \left(\frac{a}{c} \right)^n \right) \right) \\ Acix + \frac{Adix^2}{2} - \frac{Bc^2in \log(c+dx)}{2d} + Bcix \log(a) - Bcix \log(c + dx) + \frac{Bcixn}{2} + Bcix \log(e) + \frac{Bdinx^2 \log(a)}{2} - \frac{Bdinx^2 \log(c+dx)}{2d} \\ ci \left(Ax + \frac{Ban \log\left(\frac{a}{c} + \frac{bx}{c}\right)}{b} + Bnx \log\left(\frac{a}{c} + \frac{bx}{c}\right) - Bnx + Bx \log(e) \right) \\ Acix + \frac{Adix^2}{2} - \frac{Ba^2din \log\left(\frac{a}{c+dx} + \frac{bx}{c+dx}\right)}{2b^2} - \frac{Ba^2din \log\left(\frac{c}{d} + x\right)}{2b^2} + \frac{Bacin \log\left(\frac{a}{c+dx} + \frac{bx}{c+dx}\right)}{b} + \frac{Bacin \log\left(\frac{c}{d} + x\right)}{b} + \frac{Badinx}{2b} - \frac{Bc^2in \log\left(\frac{c}{d} + x\right)}{2d} \end{array} \right.$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*ln(e*((b*x+a)/(d*x+c))**n)),x)

[Out] Piecewise((c*i*x*(A + B*log(e*(a/c)**n)), Eq(b, 0) & Eq(d, 0)), (A*c*i*x + A*d*i*x**2/2 - B*c**2*i*n*log(c + d*x)/(2*d) + B*c*i*n*x*log(a) - B*c*i*n*x*log(c + d*x) + B*c*i*n*x/2 + B*c*i*x*log(e) + B*d*i*n*x**2*log(a)/2 - B*d*i*n*x**2*log(c + d*x)/2 + B*d*i*n*x**2/4 + B*d*i*x**2*log(e)/2, Eq(b, 0)), (c*i*(A*x + B*a*n*log(a/c + b*x/c)/b + B*n*x*log(a/c + b*x/c) - B*n*x + B*x*log(e)), Eq(d, 0)), (A*c*i*x + A*d*i*x**2/2 - B*a**2*d*i*n*log(a/(c + d*x) + b*x/(c + d*x))/(2*b**2) - B*a**2*d*i*n*log(c/d + x)/(2*b**2) + B*a*c*i*n

```

*log(a/(c + d*x) + b*x/(c + d*x))/b + B*a*c*i*n*log(c/d + x)/b + B*a*d*i*n*
x/(2*b) - B*c**2*i*n*log(c/d + x)/(2*d) + B*c*i*n*x*log(a/(c + d*x) + b*x/(
c + d*x)) - B*c*i*n*x/2 + B*c*i*x*log(e) + B*d*i*n*x**2*log(a/(c + d*x) + b
*x/(c + d*x))/2 + B*d*i*x**2*log(e)/2, True))

```

$$3.112 \quad \int \frac{(ci+dx) \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{ag+bgx} dx$$

Optimal. Leaf size=141

$$\frac{i(bc-ad) \log \left(-\frac{bc-ad}{d(a+bx)} \right) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A - Bn \right)}{b^2g} + \frac{i(c+dx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{bg} + \frac{Bin(bc-ad) \text{Li}_2 \left(\frac{1}{d} \right)}{b^2g}$$

[Out] $i*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b/g - (-a*d+b*c)*i*\ln((a*d-b*c)/d/(b*x+a))*(A-B*n+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^2/g + B*(-a*d+b*c)*i*n*\text{polylog}(2, 1+(-a*d+b*c)/d/(b*x+a))/b^2/g$

Rubi [A] time = 0.34, antiderivative size = 223, normalized size of antiderivative = 1.58, number of steps used = 13, number of rules used = 10, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}} = 0.244$, Rules used = {2528, 2486, 31, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{Bin(bc-ad) \text{PolyLog} \left(2, -\frac{d(a+bx)}{bc-ad} \right)}{b^2g} + \frac{i(bc-ad) \log(a+bx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{b^2g} + \frac{Bdi(a+bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^2g}$$

Antiderivative was successfully verified.

[In] $\text{Int}[\frac{(c*i + d*i*x)*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])}{(a*g + b*g*x)}, x]$

[Out] $(A*d*i*x)/(b*g) - (B*(b*c - a*d)*i*n*\text{Log}[a + b*x]^2)/(2*b^2*g) + (B*d*i*(a + b*x)*\text{Log}[e*((a + b*x)/(c + d*x))^n])/(b^2*g) + ((b*c - a*d)*i*\text{Log}[a + b*x]*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(b^2*g) - (B*(b*c - a*d)*i*n*\text{Log}[c + d*x])/(b^2*g) + (B*(b*c - a*d)*i*n*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)])/(b^2*g) + (B*(b*c - a*d)*i*n*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))])/(b^2*g)$

Rule 31

$\text{Int}[\frac{(a_) + (b_)*(x_)^{-1}}{x}, x_Symbol] \rightarrow \text{Simp}[\text{Log}[\text{RemoveContent}[a + b*x, x]]/b, x] /;$ FreeQ[{a, b}, x]

Rule 2301

$\text{Int}[\frac{(a_.) + \text{Log}[(c_.)*(x_)^{(n_.)}]*(b_.)}{(x_)}, x_Symbol] \rightarrow \text{Simp}[(a + b*\text{Log}[c*x^n])^2/(2*b*n), x] /;$ FreeQ[{a, b, c, n}, x]

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.)
)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]/(x_), x_Symbol] := -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x
), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)
^(r_.)]^(s_.), x_Symbol] := Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q]^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
```

FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]

Rule 2528

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]

Rubi steps

$$\begin{aligned}
 \int \frac{(112c + 112dx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{ag + bgx} dx &= \int \left(\frac{112d \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{bg} + \frac{112(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{bg(a + bx)} \right) dx \\
 &= \frac{(112d) \int \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) dx}{bg} + \frac{(112(bc - ad)) \int \frac{A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{a + bx} dx}{bg} \\
 &= \frac{112Adx}{bg} + \frac{112(bc - ad) \log(a + bx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^2g} + \frac{112Bd(a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^2g} + \frac{112(bc - ad) \log(a + bx)}{b^2g} \\
 &= \frac{112Adx}{bg} + \frac{112Bd(a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^2g} + \frac{112(bc - ad) \log(a + bx)}{b^2g} \\
 &= \frac{112Adx}{bg} + \frac{112Bd(a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^2g} + \frac{112(bc - ad) \log(a + bx)}{b^2g} \\
 &= \frac{112Adx}{bg} + \frac{112Bd(a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^2g} + \frac{112(bc - ad) \log(a + bx)}{b^2g} \\
 &= \frac{112Adx}{bg} - \frac{56B(bc - ad)n \log^2(a + bx)}{b^2g} + \frac{112Bd(a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^2g} \\
 &= \frac{112Adx}{bg} - \frac{56B(bc - ad)n \log^2(a + bx)}{b^2g} + \frac{112Bd(a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^2g}
 \end{aligned}$$

Mathematica [A] time = 0.13, size = 172, normalized size = 1.22

$$\frac{i \left(2(bc - ad) \log(a + bx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + Bn \log \left(\frac{b(c+dx)}{bc-ad} \right) + A \right) + 2 \left(Bd(a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + Bn(ad - bc) \right) \right)}{2b^2g}$$

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b*g*x), x]

[Out] (i*(B*(-(b*c) + a*d)*n*Log[a + b*x]^2 + 2*(A*b*d*x + B*d*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n] + B*(-(b*c) + a*d)*n*Log[c + d*x]) + 2*(b*c - a*d)*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n] + B*n*Log[(b*(c + d*x))/(b*c - a*d)]) + 2*B*(b*c - a*d)*n*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)])/(2*b^2*g)

fricas [F] time = 0.81, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{Adix + Aci + (Bdix + Bci) \log \left(e \left(\frac{bx+a}{dx+c} \right)^n \right)}{bgx + ag}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g), x, algorithm="fricas")

[Out] integral((A*d*i*x + A*c*i + (B*d*i*x + B*c*i)*log(e*((b*x + a)/(d*x + c))^n))/(b*g*x + a*g), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g), x, algorithm="giac")

[Out] Timed out

maple [F] time = 0.41, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci) \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)}{bgx + ag} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g),x)`

[Out] `int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g),x)`

maxima [A] time = 4.58, size = 276, normalized size = 1.96

$$Adi \left(\frac{x}{bg} - \frac{a \log(bx + a)}{b^2g} \right) - \frac{Bcin \log(dx + c)}{bg} + \frac{Aci \log(bgx + ag)}{bg} + \frac{(bcin - adin) \left(\log(bx + a) \log\left(\frac{bdx+ad}{bc-ad} + 1\right) \right)}{b^2g}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g),x, algorithm="maxima")`

[Out] `A*d*i*(x/(b*g) - a*log(b*x + a)/(b^2*g)) - B*c*i*n*log(d*x + c)/(b*g) + A*c*i*log(b*g*x + a*g)/(b*g) + (b*c*i*n - a*d*i*n)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d)))*B/(b^2*g) + 1/2*(2*B*b*d*i*x*log(e) - (b*c*i*n - a*d*i*n)*B*log(b*x + a)^2 + 2*(b*c*i*log(e) + (i*n - i*log(e))*a*d)*B*log(b*x + a) + 2*(B*b*d*i*x + (b*c*i - a*d*i)*B*log(b*x + a))*log((b*x + a)^n) - 2*(B*b*d*i*x + (b*c*i - a*d*i)*B*log(b*x + a))*log((d*x + c)^n))/(b^2*g)`

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(ci + dix) \left(A + B \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{ag + bgx} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int(((c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x),x)`

[Out] `int(((c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x),x)`

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{i \left(\int \frac{Ac}{a+bx} dx + \int \frac{Adx}{a+bx} dx + \int \frac{Bc \log \left(e \left(\frac{a}{c+dx} + \frac{bx}{c+dx} \right)^n \right)}{a+bx} dx + \int \frac{Bdx \log \left(e \left(\frac{a}{c+dx} + \frac{bx}{c+dx} \right)^n \right)}{a+bx} dx \right)}{g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*ln(e*((b*x+a)/(d*x+c))**n)))/(b*g*x+a*g),x)
```

```
[Out] i*(Integral(A*c/(a + b*x), x) + Integral(A*d*x/(a + b*x), x) + Integral(B*c  
*log(e*(a/(c + d*x) + b*x/(c + d*x))**n)/(a + b*x), x) + Integral(B*d*x*log  
(e*(a/(c + d*x) + b*x/(c + d*x))**n)/(a + b*x), x))/g
```


$$3.113 \quad \int \frac{(ci+dx) \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ag+bgx)^2} dx$$

Optimal. Leaf size=150

$$\frac{di \log \left(1 - \frac{b(c+dx)}{d(a+bx)} \right) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{b^2 g^2} - \frac{i(c+dx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{bg^2(a+bx)} + \frac{B \operatorname{dinLi}_2 \left(\frac{b(c+dx)}{d(a+bx)} \right)}{b^2 g^2} - \frac{Bin(c+dx)}{bg^2(a+bx)}$$

[Out] $-B*i*n*(d*x+c)/b/g^2/(b*x+a)-i*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b/g^2/(b*x+a)-d*i*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))*\ln(1-b*(d*x+c)/d/(b*x+a))/b^2/g^2+B*d*i*n*polylog(2,b*(d*x+c)/d/(b*x+a))/b^2/g^2$

Rubi [A] time = 0.38, antiderivative size = 233, normalized size of antiderivative = 1.55, number of steps used = 14, number of rules used = 11, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}} = 0.268$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{B \operatorname{dinPolyLog} \left(2, -\frac{d(a+bx)}{bc-ad} \right)}{b^2 g^2} + \frac{di \log(a+bx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{b^2 g^2} - \frac{i(bc-ad) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{b^2 g^2(a+bx)} - \frac{Bin(bc-ad)}{b^2 g^2(a+bx)}$$

Antiderivative was successfully verified.

[In] $\operatorname{Int}[\frac{(c*i + d*i*x)*(A + B*\operatorname{Log}[e*((a + b*x)/(c + d*x))^n])}{(a*g + b*g*x)^2}, x]$

[Out] $-\frac{(B*(b*c - a*d)*i*n)}{b^2*g^2*(a + b*x)} - \frac{(B*d*i*n*\operatorname{Log}[a + b*x])}{b^2*g^2} - \frac{(B*d*i*n*\operatorname{Log}[a + b*x]^2)}{(2*b^2*g^2)} - \frac{((b*c - a*d)*i*(A + B*\operatorname{Log}[e*((a + b*x)/(c + d*x))^n])}{b^2*g^2*(a + b*x)} + \frac{(d*i*\operatorname{Log}[a + b*x]*(A + B*\operatorname{Log}[e*((a + b*x)/(c + d*x))^n])}{b^2*g^2} + \frac{(B*d*i*n*\operatorname{Log}[c + d*x])}{b^2*g^2} + \frac{(B*d*i*n*\operatorname{Log}[a + b*x]*\operatorname{Log}[\frac{(b*(c + d*x))}{(b*c - a*d)}])}{b^2*g^2} + \frac{(B*d*i*n*\operatorname{PolyLog}[2, -\frac{(d*(a + b*x))}{(b*c - a*d)}])}{b^2*g^2}$

Rule 12

$\operatorname{Int}[(a_*)(u_), x_Symbol] \rightarrow \operatorname{Dist}[a, \operatorname{Int}[u, x], x] /;$ FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 44

$\operatorname{Int}[(a_*) + (b_*)(x_)^m_*)((c_*) + (d_*)(x_)^n_), x_Symbol] \rightarrow \operatorname{Int}[\operatorname{ExpandIntegrand}[(a + b*x)^m*(c + d*x)^n, x], x] /;$ FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m

+ n + 2, 0])

Rule 2301

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*((f_) + (g_.)*(x_)^(q_.)), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2418

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]

Rule 2524

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;

FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]

Rule 2525

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]

Rule 2528

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]

Rubi steps

$$\begin{aligned}
\int \frac{(113c + 113dx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ag + bgx)^2} dx &= \int \left(\frac{113(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{bg^2(a + bx)^2} + \frac{113d \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{bg^2(a + bx)} \right) dx \\
&= \frac{(113d) \int \frac{A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{a+bx} dx}{bg^2} + \frac{(113(bc - ad)) \int \frac{A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{(a+bx)^2} dx}{bg^2} \\
&= -\frac{113(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^2 g^2 (a + bx)} + \frac{113d \log(a + bx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^2 g^2} \\
&= -\frac{113(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^2 g^2 (a + bx)} + \frac{113d \log(a + bx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^2 g^2} \\
&= -\frac{113(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^2 g^2 (a + bx)} + \frac{113d \log(a + bx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^2 g^2} \\
&= -\frac{113B(bc - ad)n}{b^2 g^2 (a + bx)} - \frac{113Bdn \log(a + bx)}{b^2 g^2} - \frac{113(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^2 g^2 (a + bx)} \\
&= -\frac{113B(bc - ad)n}{b^2 g^2 (a + bx)} - \frac{113Bdn \log(a + bx)}{b^2 g^2} - \frac{113Bdn \log^2(a + bx)}{2b^2 g^2} \\
&= -\frac{113B(bc - ad)n}{b^2 g^2 (a + bx)} - \frac{113Bdn \log(a + bx)}{b^2 g^2} - \frac{113Bdn \log^2(a + bx)}{2b^2 g^2}
\end{aligned}$$

Mathematica [A] time = 0.19, size = 189, normalized size = 1.26

$$\frac{i \left(\frac{d \log(a+bx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{b^2} - \frac{(bc-ad) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{b^2(a+bx)} - \frac{Bdn \left(-2 \operatorname{Li}_2 \left(-\frac{d(a+bx)}{bc-ad} \right) - 2 \log(a+bx) \log \left(\frac{b(c+dx)}{bc-ad} \right) + \log^2(a+bx) \right)}{2b^2} - \frac{Bn \left(\frac{bc-ad}{a+bx} \right)}{b^2} \right)}{g^2}$$

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b*g*x)^2,x]

[Out] $(i * (-(((b*c - a*d)*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])))/(b^2*(a + b*x))) + (d*\text{Log}[a + b*x]*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/b^2 - (B*n*((b*c - a*d)/(a + b*x) + d*\text{Log}[a + b*x] - d*\text{Log}[c + d*x]))/b^2 - (B*d*n*(\text{Log}[a + b*x]^2 - 2*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d]) - 2*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))]))/(2*b^2)))/g^2$

fricas [F] time = 0.98, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{Adix + Aci + (Bdix + Bci) \log \left(e \left(\frac{bx+a}{dx+c} \right)^n \right)}{b^2 g^2 x^2 + 2 abg^2 x + a^2 g^2}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^2,x, algorithm="fricas")`

[Out] `integral((A*d*i*x + A*c*i + (B*d*i*x + B*c*i)*log(e*((b*x + a)/(d*x + c))^n))/(b^2*g^2*x^2 + 2*a*b*g^2*x + a^2*g^2), x)`

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^2,x, algorithm="giac")`

[Out] Timed out

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci) \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)}{(bgx + ag)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^2,x)`

[Out] `int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^2,x)`

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-Bcin \left(\frac{1}{b^2 g^2 x + abg^2} + \frac{d \log(bx + a)}{(b^2 c - abd) g^2} - \frac{d \log(dx + c)}{(b^2 c - abd) g^2} \right) + Bdi \left(\frac{((bx + a) \log(bx + a) + a) \log((bx + a)^n) - ((bx + a) \log(bx + a) + a) \log(dx + c)}{b^3 g^2 x + ab^2 g^2} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^2,x, algorithm="maxima")

[Out] -B*c*i*n*(1/(b^2*g^2*x + a*b*g^2) + d*log(b*x + a)/((b^2*c - a*b*d)*g^2) - d*log(d*x + c)/((b^2*c - a*b*d)*g^2)) + B*d*i*(((b*x + a)*log(b*x + a) + a)*log((b*x + a)^n) - ((b*x + a)*log(b*x + a) + a)*log((d*x + c)^n))/(b^3*g^2*x + a*b^2*g^2) + integrate((b^2*d*x^2*log(e) + b^2*c*x*log(e) - a*b*c*n + a^2*d*n - (a*b*c*n - a^2*d*n + (b^2*c*n - a*b*d*n)*x)*log(b*x + a))/(b^4*d*g^2*x^3 + a^2*b^2*c*g^2 + (b^4*c*g^2 + 2*a*b^3*d*g^2)*x^2 + (2*a*b^3*c*g^2 + a^2*b^2*d*g^2)*x), x) + A*d*i*(a/(b^3*g^2*x + a*b^2*g^2) + log(b*x + a)/(b^2*g^2)) - B*c*i*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^2*g^2*x + a*b*g^2) - A*c*i/(b^2*g^2*x + a*b*g^2)

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(ci + dix) \left(A + B \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ag + bgx)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x)^2, x)

[Out] int(((c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x)^2, x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)**2,x)

[Out] Timed out

$$3.114 \quad \int \frac{(ci+dx) \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ag+bgx)^3} dx$$

Optimal. Leaf size=89

$$-\frac{i(c+dx)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{2g^3(a+bx)^2(bc-ad)} - \frac{Bin(c+dx)^2}{4g^3(a+bx)^2(bc-ad)}$$

[Out] $-1/4*B*i*n*(d*x+c)^2/(-a*d+b*c)/g^3/(b*x+a)^2-1/2*i*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)/g^3/(b*x+a)^2$

Rubi [B] time = 0.29, antiderivative size = 201, normalized size of antiderivative = 2.26, number of steps used = 10, number of rules used = 4, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}} = 0.098$, Rules used = {2528, 2525, 12, 44}

$$-\frac{di \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{b^2g^3(a+bx)} - \frac{i(bc-ad) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{2b^2g^3(a+bx)^2} - \frac{Bd^2in \log(a+bx)}{2b^2g^3(bc-ad)} + \frac{Bd^2in \log(c+dx)}{2b^2g^3(bc-ad)} - \frac{Bin(c+dx)^2}{4b^2g^3}$$

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b*g*x)^3, x]

[Out] $-(B*(b*c - a*d)*i*n)/(4*b^2*g^3*(a + b*x)^2) - (B*d*i*n)/(2*b^2*g^3*(a + b*x)) - (B*d^2*i*n*Log[a + b*x])/(2*b^2*(b*c - a*d)*g^3) - ((b*c - a*d)*i*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(2*b^2*g^3*(a + b*x)^2) - (d*i*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(b^2*g^3*(a + b*x)) + (B*d^2*i*n*Log[c + d*x])/(2*b^2*(b*c - a*d)*g^3)$

Rule 12

Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 44

Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])

Rule 2525

```

Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_.))^(m_.
), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFX^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*
a + b*Log[c*RFX^p])^(n - 1)*D[RFX, x])/RFX, x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFX, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]

```

Rule 2528

```

Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*RFX^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFX, x] && RationalFunci
onQ[RGx, x] && IGtQ[n, 0]

```

Rubi steps

$$\begin{aligned}
\int \frac{(114c + 114dx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ag + bgx)^3} dx &= \int \left(\frac{114(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{bg^3(a + bx)^3} + \frac{114d \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{bg^3(a + bx)^2} \right) dx \\
&= \frac{(114d) \int \frac{A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{(a+bx)^2} dx}{bg^3} + \frac{(114(bc - ad)) \int \frac{A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{(a+bx)^3} dx}{bg^3} \\
&= -\frac{57(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^2g^3(a + bx)^2} - \frac{114d \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^2g^3(a + bx)} \\
&= -\frac{57(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^2g^3(a + bx)^2} - \frac{114d \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^2g^3(a + bx)} \\
&= -\frac{57(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^2g^3(a + bx)^2} - \frac{114d \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^2g^3(a + bx)} \\
&= -\frac{57B(bc - ad)n}{2b^2g^3(a + bx)^2} - \frac{57Bdn}{b^2g^3(a + bx)} - \frac{57Bd^2n \log(a + bx)}{b^2(bc - ad)g^3} - \frac{57(bc - ad)d}{b^2g^3(a + bx)}
\end{aligned}$$

Mathematica [B] time = 0.17, size = 216, normalized size = 2.43

$$i \left(\frac{d \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{b^2(a+bx)} - \frac{(bc-ad) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{2b^2(a+bx)^2} - \frac{Bn \left(-\frac{2d^2 \log(a+bx)}{bc-ad} + \frac{2d^2 \log(c+dx)}{bc-ad} + \frac{bc-ad}{(a+bx)^2} - \frac{2d}{a+bx} \right)}{4b^2} - \frac{Bdn \left(\frac{d \log(a+bx)}{bc-ad} - \frac{d \log(c+dx)}{bc-ad} \right)}{b^2} \right) \frac{1}{g^3}$$

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b*x)^3,x]

[Out] (i*(-1/2*((b*c - a*d)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(b^2*(a + b*x)^2) - (d*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(b^2*(a + b*x)) - (B*d*n*((a + b*x)^(-1) + (d*Log[a + b*x])/(b*c - a*d) - (d*Log[c + d*x])/(b*c - a*d)))/b^2 - (B*n*((b*c - a*d)/(a + b*x)^2 - (2*d)/(a + b*x) - (2*d^2*Log[a + b*x])/(b*c - a*d) + (2*d^2*Log[c + d*x])/(b*c - a*d)))/(4*b^2))/g^3

fricas [B] time = 0.86, size = 250, normalized size = 2.81

$$\frac{(Bb^2c^2 - Ba^2d^2)in + 2(Ab^2c^2 - Aa^2d^2)i + 2((Bb^2cd - Babd^2)in + 2(Ab^2cd - Aabd^2)i)x + 2(2(Bb^2cd - Babd^2)in + 2(Ab^2cd - Aabd^2)i)x^2 + 4((b^5c - ab^4d)g^3x^2 + 2(ab^4c - a^2b^3d)g^3x + (a^2b^3c - a^3b^2d)g^3)}{4((b^5c - ab^4d)g^3x^2 + 2(ab^4c - a^2b^3d)g^3x + (a^2b^3c - a^3b^2d)g^3)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^3,x, algorithm="fricas")

[Out] -1/4*((B*b^2*c^2 - B*a^2*d^2)*i*n + 2*(A*b^2*c^2 - A*a^2*d^2)*i + 2*((B*b^2*c*d - B*a*b*d^2)*i*n + 2*(A*b^2*c*d - A*a*b*d^2)*i)*x + 2*(2*(B*b^2*c*d - B*a*b*d^2)*i*x + (B*b^2*c^2 - B*a^2*d^2)*i)*log(e) + 2*(B*b^2*d^2*i*n*x^2 + 2*B*b^2*c*d*i*n*x + B*b^2*c^2*i*n)*log((b*x + a)/(d*x + c)))/((b^5*c - a*b^4*d)*g^3*x^2 + 2*(a*b^4*c - a^2*b^3*d)*g^3*x + (a^2*b^3*c - a^3*b^2*d)*g^3)

giac [A] time = 7.18, size = 98, normalized size = 1.10

$$-\frac{1}{4} \left(\frac{2(dx+c)^2 Bin \log\left(\frac{bx+a}{dx+c}\right)}{(bx+a)^2 g^3} + \frac{(Bin + 2Ai + 2Bi)(dx+c)^2}{(bx+a)^2 g^3} \right) \left(\frac{bc}{(bc-ad)^2} - \frac{ad}{(bc-ad)^2} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^3,x, algorithm="giac")

[Out] $-1/4*(2*(d*x + c)^2*B*i*n*\log((b*x + a)/(d*x + c))/((b*x + a)^2*g^3) + (B*i*n + 2*A*i + 2*B*i)*(d*x + c)^2/((b*x + a)^2*g^3))*(b*c/(b*c - a*d)^2 - a*d/(b*c - a*d)^2)$

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci) \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)}{(bgx + ag)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^3,x)`

[Out] `int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^3,x)`

maxima [B] time = 1.25, size = 582, normalized size = 6.54

$$-\frac{1}{4} Bdin \left(\frac{3abc - a^2d + 2(2b^2c - abd)x}{(b^5c - ab^4d)g^3x^2 + 2(ab^4c - a^2b^3d)g^3x + (a^2b^3c - a^3b^2d)g^3} + \frac{2(2bcd - ad^2) \log(bx + a)}{(b^4c^2 - 2ab^3cd + a^2b^2d^2)g^3} - \frac{2(2bcd - ad^2) \log(dx + c)}{(b^4c^2 - 2ab^3cd + a^2b^2d^2)g^3} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^3,x, algorithm="maxima")`

[Out] $-1/4*B*d*i*n*((3*a*b*c - a^2*d + 2*(2*b^2*c - a*b*d)*x)/((b^5*c - a*b^4*d)*g^3*x^2 + 2*(a*b^4*c - a^2*b^3*d)*g^3*x + (a^2*b^3*c - a^3*b^2*d)*g^3) + 2*(2*b*c*d - a*d^2)*\log(b*x + a)/((b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)*g^3) - 2*(2*b*c*d - a*d^2)*\log(d*x + c)/((b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)*g^3) + 1/4*B*c*i*n*((2*b*d*x - b*c + 3*a*d)/((b^4*c - a*b^3*d)*g^3*x^2 + 2*(a*b^3*c - a^2*b^2*d)*g^3*x + (a^2*b^2*c - a^3*b*d)*g^3) + 2*d^2*\log(b*x + a)/((b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*g^3) - 2*d^2*\log(d*x + c)/((b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*g^3) - 1/2*(2*b*x + a)*B*d*i*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^4*g^3*x^2 + 2*a*b^3*g^3*x + a^2*b^2*g^3) - 1/2*B*c*i*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^3*g^3*x^2 + 2*a*b^2*g^3*x + a^2*b*g^3) - 1/2*A*c*i/(b^3*g^3*x^2 + 2*a*b^2*g^3*x + a^2*b*g^3)$

mupad [B] time = 5.25, size = 204, normalized size = 2.29

$$\frac{x(2Abdi + Bbdin) + Aadi + Abci + \frac{Badin}{2} + \frac{Bbcin}{2}}{2a^2b^2g^3 + 4ab^3g^3x + 2b^4g^3x^2} - \frac{\ln\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\left(\frac{Bci}{2b} + \frac{Badi}{2b^2} + \frac{Bdix}{b}\right)}{a^2g^3 + 2abg^3x + b^2g^3x^2} - \frac{Bd^2in \operatorname{atan}\left(\frac{a+bx}{c+dx}\right)}{b^2g^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x)^3,
x)
```

```
[Out] - (x*(2*A*b*d*i + B*b*d*i*n) + A*a*d*i + A*b*c*i + (B*a*d*i*n)/2 + (B*b*c*i
*n)/2)/(2*a^2*b^2*g^3 + 2*b^4*g^3*x^2 + 4*a*b^3*g^3*x) - (log(e*((a + b*x)/
(c + d*x))^n)*((B*c*i)/(2*b) + (B*a*d*i)/(2*b^2) + (B*d*i*x)/b))/(a^2*g^3 +
b^2*g^3*x^2 + 2*a*b*g^3*x) - (B*d^2*i*n*atan((b*c*2i + b*d*x*2i)/(a*d - b*
c) + 1i)*1i)/(b^2*g^3*(a*d - b*c))
```

```
sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00
```

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*ln(e*((b*x+a)/(d*x+c))^n)))/(b*g*x+a*g)**3,x)
```

```
[Out] Exception raised: NotImplementedError
```

$$3.115 \quad \int \frac{(ci+dx) \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ag+bgx)^4} dx$$

Optimal. Leaf size=181

$$\frac{bi(c+dx)^3 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{3g^4(a+bx)^3(bc-ad)^2} + \frac{di(c+dx)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{2g^4(a+bx)^2(bc-ad)^2} - \frac{bBin(c+dx)^3}{9g^4(a+bx)^3(bc-ad)^2} + \frac{Bdin(c+dx)^3}{4g^4(a+bx)^2}$$

[Out] $\frac{1}{4} B d i n (d x+c)^2 /(-a d+b c)^2 / g^4 / (b x+a)^2 - 1 / 9 b B i n (d x+c)^3 /(-a d+b c)^2 / g^4 / (b x+a)^3 + 1 / 2 d i (d x+c)^2 (A+B \ln (e((b x+a) / (d x+c))^n)) /(-a d+b c)^2 / g^4 / (b x+a)^2 - 1 / 3 b i (d x+c)^3 (A+B \ln (e((b x+a) / (d x+c))^n)) /(-a d+b c)^2 / g^4 / (b x+a)^3$

Rubi [A] time = 0.34, antiderivative size = 236, normalized size of antiderivative = 1.30, number of steps used = 10, number of rules used = 4, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}} = 0.098$, Rules used = {2528, 2525, 12, 44}

$$\frac{di \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{2b^2g^4(a+bx)^2} - \frac{i(bc-ad) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{3b^2g^4(a+bx)^3} + \frac{Bd^2in}{6b^2g^4(a+bx)(bc-ad)} + \frac{Bd^3in \log(a+bx)}{6b^2g^4(bc-ad)^2} - \frac{Ba^3in}{6b^2g^4}$$

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b*g*x)^4, x]

[Out] $-(B*(b*c - a*d)*i*n)/(9*b^2*g^4*(a + b*x)^3) - (B*d*i*n)/(12*b^2*g^4*(a + b*x)^2) + (B*d^2*i*n)/(6*b^2*(b*c - a*d)*g^4*(a + b*x)) + (B*d^3*i*n*Log[a + b*x])/(6*b^2*(b*c - a*d)^2*g^4) - ((b*c - a*d)*i*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(3*b^2*g^4*(a + b*x)^3) - (d*i*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(2*b^2*g^4*(a + b*x)^2) - (B*d^3*i*n*Log[c + d*x])/(6*b^2*(b*c - a*d)^2*g^4)$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 44

Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m

+ n + 2, 0])

Rule 2525

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_.))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
 \int \frac{(115c + 115dx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ag + bgx)^4} dx &= \int \left(\frac{115(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{bg^4(a + bx)^4} + \frac{115d \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{bg^4(a + bx)^4} \right) dx \\
 &= \frac{(115d) \int \frac{A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{(a+bx)^3} dx}{bg^4} + \frac{(115(bc - ad)) \int \frac{A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{(a+bx)^4} dx}{bg^4} \\
 &= -\frac{115(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{3b^2g^4(a + bx)^3} - \frac{115d \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{2b^2g^4(a + bx)^2} \\
 &= -\frac{115(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{3b^2g^4(a + bx)^3} - \frac{115d \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{2b^2g^4(a + bx)^2} \\
 &= -\frac{115(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{3b^2g^4(a + bx)^3} - \frac{115d \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{2b^2g^4(a + bx)^2} \\
 &= -\frac{115B(bc - ad)n}{9b^2g^4(a + bx)^3} - \frac{115Bdn}{12b^2g^4(a + bx)^2} + \frac{115Bd^2n}{6b^2(bc - ad)g^4(a + bx)}
 \end{aligned}$$

Mathematica [A] time = 0.45, size = 196, normalized size = 1.08

$$i \left(\frac{12Abc}{(a+bx)^3} + \frac{18Ad}{(a+bx)^2} - \frac{12aAd}{(a+bx)^3} - \frac{6Bd^3n \log(a+bx)}{(bc-ad)^2} + \frac{6Bd^3n \log(c+dx)}{(bc-ad)^2} - \frac{6Bd^2n}{(a+bx)(bc-ad)} + \frac{6B(ad+2bc+3bdx) \log\left(e^{\left(\frac{a+bx}{c+dx}\right)^n}\right)}{(a+bx)^3} + \frac{4bBcn}{(a+bx)^3} + \dots \right) / 36b^2g^4$$

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b*g*x)^4,x]

[Out] -1/36*(i*((12*A*b*c)/(a + b*x)^3 - (12*a*A*d)/(a + b*x)^3 + (4*b*B*c*n)/(a + b*x)^3 - (4*a*B*d*n)/(a + b*x)^3 + (18*A*d)/(a + b*x)^2 + (3*B*d*n)/(a + b*x)^2 - (6*B*d^2*n)/((b*c - a*d)*(a + b*x)) - (6*B*d^3*n*Log[a + b*x])/(b*c - a*d)^2 + (6*B*(2*b*c + a*d + 3*b*d*x)*Log[e*((a + b*x)/(c + d*x))^n])/(a + b*x)^3 + (6*B*d^3*n*Log[c + d*x])/(b*c - a*d)^2))/(b^2*g^4)

fricas [B] time = 0.63, size = 478, normalized size = 2.64

$$6(Bb^3cd^2 - Bab^2d^3)inx^2 - (4Bb^3c^3 - 9Bab^2c^2d + 5Ba^3d^3)in - 6(2Ab^3c^3 - 3Aab^2c^2d + Aa^3d^3)i - 3((Bb^3c^2d - \dots) / 36)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^4,x, algorithm="fricas")

[Out] 1/36*(6*(B*b^3*c*d^2 - B*a*b^2*d^3)*i*n*x^2 - (4*B*b^3*c^3 - 9*B*a*b^2*c^2*d + 5*B*a^3*d^3)*i*n - 6*(2*A*b^3*c^3 - 3*A*a*b^2*c^2*d + A*a^3*d^3)*i - 3*((B*b^3*c^2*d - 6*B*a*b^2*c*d^2 + 5*B*a^2*b*d^3)*i*n + 6*(A*b^3*c^2*d - 2*A*a*b^2*c*d^2 + A*a^2*b*d^3)*i)*x - 6*(3*(B*b^3*c^2*d - 2*B*a*b^2*c*d^2 + B*a^2*b*d^3)*i*x + (2*B*b^3*c^3 - 3*B*a*b^2*c^2*d + B*a^3*d^3)*i)*log(e) + 6*(B*b^3*d^3*i*n*x^3 + 3*B*a*b^2*d^3*i*n*x^2 - 3*(B*b^3*c^2*d - 2*B*a*b^2*c*d^2)*i*n*x - (2*B*b^3*c^3 - 3*B*a*b^2*c^2*d)*i*n)*log((b*x + a)/(d*x + c)))/((b^7*c^2 - 2*a*b^6*c*d + a^2*b^5*d^2)*g^4*x^3 + 3*(a*b^6*c^2 - 2*a^2*b^5*c*d + a^3*b^4*d^2)*g^4*x^2 + 3*(a^2*b^5*c^2 - 2*a^3*b^4*c*d + a^4*b^3*d^2)*g^4*x + (a^3*b^4*c^2 - 2*a^4*b^3*c*d + a^5*b^2*d^2)*g^4)

giac [A] time = 11.76, size = 230, normalized size = 1.27

$$-\frac{1}{36} \left(\frac{6 \left(2Bbin - \frac{3(bx+a)Bdin}{dx+c} \right) \log\left(\frac{bx+a}{dx+c}\right)}{\frac{(bx+a)^3bcg^4}{(dx+c)^3} - \frac{(bx+a)^3adg^4}{(dx+c)^3}} + \frac{4Bbin - \frac{9(bx+a)Bdin}{dx+c} + 12Abi + 12Bbi - \frac{18(bx+a)Adi}{dx+c} - \frac{18(bx+a)Bdi}{dx+c}}{\frac{(bx+a)^3bcg^4}{(dx+c)^3} - \frac{(bx+a)^3adg^4}{(dx+c)^3}} \right) \left(\frac{\dots}{(bc)} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^4,x, algorithm="giac")

[Out]
$$-1/36*(6*(2*B*b*i*n - 3*(b*x + a)*B*d*i*n/(d*x + c))*\log((b*x + a)/(d*x + c)))/((b*x + a)^3*b*c*g^4/(d*x + c)^3 - (b*x + a)^3*a*d*g^4/(d*x + c)^3) + (4*B*b*i*n - 9*(b*x + a)*B*d*i*n/(d*x + c) + 12*A*b*i + 12*B*b*i - 18*(b*x + a)*A*d*i/(d*x + c) - 18*(b*x + a)*B*d*i/(d*x + c))/((b*x + a)^3*b*c*g^4/(d*x + c)^3 - (b*x + a)^3*a*d*g^4/(d*x + c)^3)*(b*c/(b*c - a*d)^2 - a*d/(b*c - a*d)^2)$$

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci) \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)}{(bgx + ag)^4} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^4,x)

[Out] int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^4,x)

maxima [B] time = 2.12, size = 945, normalized size = 5.22

$$-\frac{1}{18} Bcin \left(\frac{6b^2d^2x^2 + 2b^2c^2 - 7abcd + 11a^2d^2 - 3(b^2cd - 5abd^2)x}{(b^6c^2 - 2ab^5cd + a^2b^4d^2)g^4x^3 + 3(ab^5c^2 - 2a^2b^4cd + a^3b^3d^2)g^4x^2 + 3(a^2b^4c^2 - 2a^3b^3cd + a^4b^2d^2)g^4x + (a^3b^3c^2 - 2a^4b^2cd + a^5b^2d^2)g^4} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^4,x, algorithm="maxima")

[Out]
$$-1/18*B*c*i*n*((6*b^2*d^2*x^2 + 2*b^2*c^2 - 7*a*b*c*d + 11*a^2*d^2 - 3*(b^2*c*d - 5*a*b*d^2)*x)/((b^6*c^2 - 2*a*b^5*c*d + a^2*b^4*d^2)*g^4*x^3 + 3*(a*b^5*c^2 - 2*a^2*b^4*c*d + a^3*b^3*d^2)*g^4*x^2 + 3*(a^2*b^4*c^2 - 2*a^3*b^3*c*d + a^4*b^2*d^2)*g^4*x + (a^3*b^3*c^2 - 2*a^4*b^2*c*d + a^5*b^2*d^2)*g^4) + 6*d^3*log(b*x + a)/((b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^3)*g^4) - 6*d^3*log(d*x + c)/((b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^3)*g^4)) - 1/36*B*d*i*n*((5*a*b^2*c^2 - 22*a^2*b*c*d + 5*a^3*d^2 - 6*(3*b^3*c*d - a*b^2*d^2)*x^2 + 3*(3*b^3*c^2 - 16*a*b^2*c*d + 5*a^2*b*d^2)*x)/((b^7*c^2 - 2*a*b^6*c*d + a^2*b^5*d^2)*g^4*x^3 + 3*(a*b^6*c^2 - 2*a^2*b^5*c*d + a^3*b^4*d^2)*g^4*x^2 + 3*(a^2*b^5*c^2 - 2*a^3*b^4*c*d + a^4*b^3*d^2)*g^4*x + (a^3*b^4*c^2 - 2*a^4*b^3*c*d + a^5*b^2*d^2)*g^4) - 6*(3*b*c*d^2 -$$

$$a*d^3)*\log(b*x + a)/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*g^4) + 6*(3*b*c*d^2 - a*d^3)*\log(d*x + c)/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*g^4) - 1/6*(3*b*x + a)*B*d*i*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^5*g^4*x^3 + 3*a*b^4*g^4*x^2 + 3*a^2*b^3*g^4*x + a^3*b^2*g^4) - 1/6*(3*b*x + a)*A*d*i/(b^5*g^4*x^3 + 3*a*b^4*g^4*x^2 + 3*a^2*b^3*g^4*x + a^3*b^2*g^4) - 1/3*B*c*i*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^4*g^4*x^3 + 3*a*b^3*g^4*x^2 + 3*a^2*b^2*g^4*x + a^3*b*g^4) - 1/3*A*c*i/(b^4*g^4*x^3 + 3*a*b^3*g^4*x^2 + 3*a^2*b^2*g^4*x + a^3*b*g^4)$$

mupad [B] time = 5.28, size = 374, normalized size = 2.07

$$\frac{\frac{6Aa^2d^2i-12Ab^2c^2i+5Ba^2d^2in-4Bb^2c^2in+6Aabcdi+5Babcdin}{6(ad-bc)} + \frac{x(6Aabd^2i-6Ab^2cdi-Bb^2cdin+5Babd^2in)}{2(ad-bc)} + \frac{Bb^2d^2inx^2}{ad-bc}}{6a^3b^2g^4 + 18a^2b^3g^4x + 18ab^4g^4x^2 + 6b^5g^4x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x)^4, x)

[Out] - ((6*A*a^2*d^2*i - 12*A*b^2*c^2*i + 5*B*a^2*d^2*i*n - 4*B*b^2*c^2*i*n + 6*A*a*b*c*d*i + 5*B*a*b*c*d*i*n)/(6*(a*d - b*c)) + (x*(6*A*a*b*d^2*i - 6*A*b^2*c*d*i - B*b^2*c*d*i*n + 5*B*a*b*d^2*i*n))/(2*(a*d - b*c)) + (B*b^2*d^2*i*n*x^2)/(a*d - b*c))/(6*a^3*b^2*g^4 + 6*b^5*g^4*x^3 + 18*a^2*b^3*g^4*x + 18*a*b^4*g^4*x^2) - (log(e*((a + b*x)/(c + d*x))^n)*((B*c*i)/(3*b) + (B*a*d*i)/(6*b^2) + (B*d*i*x)/(2*b)))/(a^3*g^4 + b^3*g^4*x^3 + 3*a*b^2*g^4*x^2 + 3*a^2*b*g^4*x) - (B*d^3*i*n*atanh((6*b^4*c^2*g^4 - 6*a^2*b^2*d^2*g^4)/(6*b^2*g^4*(a*d - b*c)^2) - (2*b*d*x)/(a*d - b*c)))/(3*b^2*g^4*(a*d - b*c)^2)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)**4,x)

[Out] Timed out

$$3.116 \quad \int \frac{(ci+dx) \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ag+bgx)^5} dx$$

Optimal. Leaf size=281

$$\frac{b^2 i(c+dx)^4 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{4g^5(a+bx)^4(bc-ad)^3} - \frac{d^2 i(c+dx)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{2g^5(a+bx)^2(bc-ad)^3} + \frac{2bdi(c+dx)^3 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{3g^5(a+bx)^3(bc-ad)^3}$$

[Out] $-1/4*B*d^2*i*n*(d*x+c)^2/(-a*d+b*c)^3/g^5/(b*x+a)^2+2/9*b*B*d*i*n*(d*x+c)^3/(-a*d+b*c)^3/g^5/(b*x+a)^3-1/16*b^2*B*i*n*(d*x+c)^4/(-a*d+b*c)^3/g^5/(b*x+a)^4-1/2*d^2*i*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^3/g^5/(b*x+a)^2+2/3*b*d*i*(d*x+c)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^3/g^5/(b*x+a)^3-1/4*b^2*i*(d*x+c)^4*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^3/g^5/(b*x+a)^4$

Rubi [A] time = 0.41, antiderivative size = 269, normalized size of antiderivative = 0.96, number of steps used = 10, number of rules used = 4, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}} = 0.098$, Rules used = {2528, 2525, 12, 44}

$$\frac{di \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{3b^2g^5(a+bx)^3} - \frac{i(bc-ad) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{4b^2g^5(a+bx)^4} - \frac{Bd^3in}{12b^2g^5(a+bx)(bc-ad)^2} + \frac{Bd^2in}{24b^2g^5(a+bx)^2(bc-ad)}$$

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b*g*x)^5, x]

[Out] $-(B*(b*c - a*d)*i*n)/(16*b^2*g^5*(a + b*x)^4) - (B*d*i*n)/(36*b^2*g^5*(a + b*x)^3) + (B*d^2*i*n)/(24*b^2*(b*c - a*d)*g^5*(a + b*x)^2) - (B*d^3*i*n)/(12*b^2*(b*c - a*d)^2*g^5*(a + b*x)) - (B*d^4*i*n*Log[a + b*x])/(12*b^2*(b*c - a*d)^3*g^5) - ((b*c - a*d)*i*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(4*b^2*g^5*(a + b*x)^4) - (d*i*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(3*b^2*g^5*(a + b*x)^3) + (B*d^4*i*n*Log[c + d*x])/(12*b^2*(b*c - a*d)^3*g^5)$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 44

Int[((a_) + (b_)*(x_))^(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &

& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])

Rule 2525

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(116c + 116dx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ag + bgx)^5} dx &= \int \left(\frac{116(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{bg^5(a + bx)^5} + \frac{116d \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{bg^5(a + bx)^5} \right) dx \\
&= \frac{(116d) \int \frac{A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{(a+bx)^4} dx}{bg^5} + \frac{(116(bc - ad)) \int \frac{A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{(a+bx)^5} dx}{bg^5} \\
&= -\frac{29(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^2g^5(a + bx)^4} - \frac{116d \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{3b^2g^5(a + bx)^3} \\
&= -\frac{29(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^2g^5(a + bx)^4} - \frac{116d \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{3b^2g^5(a + bx)^3} \\
&= -\frac{29(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^2g^5(a + bx)^4} - \frac{116d \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{3b^2g^5(a + bx)^3} \\
&= -\frac{29B(bc - ad)n}{4b^2g^5(a + bx)^4} - \frac{29Bdn}{9b^2g^5(a + bx)^3} + \frac{29Bd^2n}{6b^2(bc - ad)g^5(a + bx)^2}
\end{aligned}$$

Mathematica [A] time = 0.50, size = 220, normalized size = 0.78

$$i \left(\frac{36Abc}{(a+bx)^4} + \frac{48Ad}{(a+bx)^3} - \frac{36aAd}{(a+bx)^4} + \frac{12Bd^4n \log(a+bx)}{(bc-ad)^3} - \frac{12Bd^4n \log(c+dx)}{(bc-ad)^3} + \frac{12Bd^3n}{(a+bx)(bc-ad)^2} - \frac{6Bd^2n}{(a+bx)^2(bc-ad)} + \frac{12B(ad+3bc+4bdx) \log\left(\frac{a+bx}{c+dx}\right)^n}{(a+bx)^4} \right)$$

$$144b^2g^5$$

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b*g*x)^5,x]

[Out] -1/144*(i*((36*A*b*c)/(a + b*x)^4 - (36*a*A*d)/(a + b*x)^4 + (9*b*B*c*n)/(a + b*x)^4 - (9*a*B*d*n)/(a + b*x)^4 + (48*A*d)/(a + b*x)^3 + (4*B*d*n)/(a + b*x)^3 - (6*B*d^2*n)/((b*c - a*d)*(a + b*x)^2) + (12*B*d^3*n)/((b*c - a*d)^2*(a + b*x)) + (12*B*d^4*n*Log[a + b*x])/((b*c - a*d)^3 + (12*B*(3*b*c + a*d + 4*b*d*x)*Log[e*((a + b*x)/(c + d*x))^n])/((a + b*x)^4 - (12*B*d^4*n*Log[c + d*x])/((b*c - a*d)^3)))/(b^2*g^5)

fricas [B] time = 0.65, size = 773, normalized size = 2.75

$$12(Bb^4cd^3 - Bab^3d^4)inx^3 - 6(Bb^4c^2d^2 - 8Bab^3cd^3 + 7Ba^2b^2d^4)inx^2 + (9Bb^4c^4 - 32Bab^3c^3d + 36Ba^2b^2c^2d^2 - \dots)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^5,x, algorithm="fricas")

[Out]
$$-1/144*(12*(B*b^4*c*d^3 - B*a*b^3*d^4)*i*n*x^3 - 6*(B*b^4*c^2*d^2 - 8*B*a*b^3*c*d^3 + 7*B*a^2*b^2*d^4)*i*n*x^2 + (9*B*b^4*c^4 - 32*B*a*b^3*c^3*d + 36*B*a^2*b^2*c^2*d^2 - 13*B*a^4*d^4)*i*n + 12*(3*A*b^4*c^4 - 8*A*a*b^3*c^3*d + 6*A*a^2*b^2*c^2*d^2 - A*a^4*d^4)*i + 4*((B*b^4*c^3*d - 6*B*a*b^3*c^2*d^2 + 18*B*a^2*b^2*c*d^3 - 13*B*a^3*b*d^4)*i*n + 12*(A*b^4*c^3*d - 3*A*a*b^3*c^2*d^2 + 3*A*a^2*b^2*c*d^3 - A*a^3*b*d^4)*i)*x + 12*(4*(B*b^4*c^3*d - 3*B*a*b^3*c^2*d^2 + 3*B*a^2*b^2*c*d^3 - B*a^3*b*d^4)*i*x + (3*B*b^4*c^4 - 8*B*a*b^3*c^3*d + 6*B*a^2*b^2*c^2*d^2 - B*a^4*d^4)*i)*log(e) + 12*(B*b^4*d^4*i*n*x^4 + 4*B*a*b^3*d^4*i*n*x^3 + 6*B*a^2*b^2*d^4*i*n*x^2 + 4*(B*b^4*c^3*d - 3*B*a*b^3*c^2*d^2 + 3*B*a^2*b^2*c*d^3)*i*n*x + (3*B*b^4*c^4 - 8*B*a*b^3*c^3*d + 6*B*a^2*b^2*c^2*d^2)*i*n)*log((b*x + a)/(d*x + c)))/((b^9*c^3 - 3*a*b^8*c^2*d + 3*a^2*b^7*c*d^2 - a^3*b^6*d^3)*g^5*x^4 + 4*(a*b^8*c^3 - 3*a^2*b^7*c^2*d + 3*a^3*b^6*c*d^2 - a^4*b^5*d^3)*g^5*x^3 + 6*(a^2*b^7*c^3 - 3*a^3*b^6*c^2*d + 3*a^4*b^5*c*d^2 - a^5*b^4*d^3)*g^5*x^2 + 4*(a^3*b^6*c^3 - 3*a^4*b^5*c^2*d + 3*a^5*b^4*c*d^2 - a^6*b^3*d^3)*g^5*x + (a^4*b^5*c^3 - 3*a^5*b^4*c^2*d + 3*a^6*b^3*c*d^2 - a^7*b^2*d^3)*g^5)$$

giac [A] time = 17.57, size = 388, normalized size = 1.38

$$-\frac{1}{144} \left(\frac{12 \left(3Bb^2in - \frac{8(bx+a)Bbdin}{dx+c} + \frac{6(bx+a)^2Bd^2in}{(dx+c)^2} \right) \log\left(\frac{bx+a}{dx+c}\right)}{\frac{(bx+a)^4b^2c^2g^5}{(dx+c)^4} - \frac{2(bx+a)^4abcdg^5}{(dx+c)^4} + \frac{(bx+a)^4a^2d^2g^5}{(dx+c)^4}} + \frac{9Bb^2in - \frac{32(bx+a)Bbdin}{dx+c} + \frac{36(bx+a)^2Bd^2in}{(dx+c)^2} + 36Ab^2i}{\frac{(bx+a)^4b^2c^2g^5}{(dx+c)^4}} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^5,x, algorithm="giac")

[Out]
$$-1/144*(12*(3*B*b^2*i*n - 8*(b*x + a)*B*b*d*i*n/(d*x + c) + 6*(b*x + a)^2*B*d^2*i*n/(d*x + c)^2)*log((b*x + a)/(d*x + c))/((b*x + a)^4*b^2*c^2*g^5/(d*x + c)^4 - 2*(b*x + a)^4*a*b*c*d*g^5/(d*x + c)^4 + (b*x + a)^4*a^2*d^2*g^5/(d*x + c)^4) + (9*B*b^2*i*n - 32*(b*x + a)*B*b*d*i*n/(d*x + c) + 36*(b*x + a)^2*B*d^2*i*n/(d*x + c)^2 + 36*A*b^2*i + 36*B*b^2*i - 96*(b*x + a)*A*b*d*i/(d*x + c) - 96*(b*x + a)*B*b*d*i/(d*x + c) + 72*(b*x + a)^2*A*d^2*i/(d*x + c)$$

$c)^2 + 72*(b*x + a)^2*B*d^2*i/(d*x + c)^2)/((b*x + a)^4*b^2*c^2*g^5/(d*x + c)^4 - 2*(b*x + a)^4*a*b*c*d*g^5/(d*x + c)^4 + (b*x + a)^4*a^2*d^2*g^5/(d*x + c)^4)*(b*c/(b*c - a*d)^2 - a*d/(b*c - a*d)^2)$

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci) \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)}{(bgx + ag)^5} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^5,x)

[Out] int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^5,x)

maxima [B] time = 1.89, size = 1398, normalized size = 4.98

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^5,x, algorithm="maxima")

[Out] $1/48*B*c*i*n*((12*b^3*d^3*x^3 - 3*b^3*c^3 + 13*a*b^2*c^2*d - 23*a^2*b*c*d^2 + 25*a^3*d^3 - 6*(b^3*c*d^2 - 7*a*b^2*d^3)*x^2 + 4*(b^3*c^2*d - 5*a*b^2*c*d^2 + 13*a^2*b*d^3)*x)/((b^8*c^3 - 3*a*b^7*c^2*d + 3*a^2*b^6*c*d^2 - a^3*b^5*d^3)*g^5*x^4 + 4*(a*b^7*c^3 - 3*a^2*b^6*c^2*d + 3*a^3*b^5*c*d^2 - a^4*b^4*d^3)*g^5*x^3 + 6*(a^2*b^6*c^3 - 3*a^3*b^5*c^2*d + 3*a^4*b^4*c*d^2 - a^5*b^3*d^3)*g^5*x^2 + 4*(a^3*b^5*c^3 - 3*a^4*b^4*c^2*d + 3*a^5*b^3*c*d^2 - a^6*b^2*d^3)*g^5*x + (a^4*b^4*c^3 - 3*a^5*b^3*c^2*d + 3*a^6*b^2*c*d^2 - a^7*b*d^3)*g^5) + 12*d^4*log(b*x + a)/((b^5*c^4 - 4*a*b^4*c^3*d + 6*a^2*b^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)*g^5) - 12*d^4*log(d*x + c)/((b^5*c^4 - 4*a*b^4*c^3*d + 6*a^2*b^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)*g^5) - 1/144*B*d*i*n*((7*a*b^3*c^3 - 33*a^2*b^2*c^2*d + 75*a^3*b*c*d^2 - 13*a^4*d^3 + 12*(4*b^4*c*d^2 - a*b^3*d^3)*x^3 - 6*(4*b^4*c^2*d - 29*a*b^3*c*d^2 + 7*a^2*b^2*d^3)*x^2 + 4*(4*b^4*c^3 - 21*a*b^3*c^2*d + 57*a^2*b^2*c*d^2 - 13*a^3*b*d^3)*x)/((b^9*c^3 - 3*a*b^8*c^2*d + 3*a^2*b^7*c*d^2 - a^3*b^6*d^3)*g^5*x^4 + 4*(a*b^8*c^3 - 3*a^2*b^7*c^2*d + 3*a^3*b^6*c*d^2 - a^4*b^5*d^3)*g^5*x^3 + 6*(a^2*b^7*c^3 - 3*a^3*b^6*c^2*d + 3*a^4*b^5*c*d^2 - a^5*b^4*d^3)*g^5*x^2 + 4*(a^3*b^6*c^3 - 3*a^4*b^5*c^2*d + 3*a^5*b^4*c*d^2 - a^6*b^3*d^3)*g^5*x + (a^4*b^5*c^3 - 3*a^5*b^4*c^2*d + 3*a^6*b^3*c*d^2 - a^7*b^2*d^3)*g^5) + 12*(4*b*c*d^3 - a*d^4)*log(b*x + a)/((b^6*c^4 - 4*a*b^5*c^3*d + 6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*g^5) - 12*(4*b*c*d^3 - a*d^4)*log(d*x + c)/((b^6*c^4 - 4*a*b^5*c^3*d + 6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*g^5)$

$$2*d^4*g^5) - 1/12*(4*b*x + a)*B*d*i*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) / (b^6*g^5*x^4 + 4*a*b^5*g^5*x^3 + 6*a^2*b^4*g^5*x^2 + 4*a^3*b^3*g^5*x + a^4*b^2*g^5) - 1/12*(4*b*x + a)*A*d*i / (b^6*g^5*x^4 + 4*a*b^5*g^5*x^3 + 6*a^2*b^4*g^5*x^2 + 4*a^3*b^3*g^5*x + a^4*b^2*g^5) - 1/4*B*c*i*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) / (b^5*g^5*x^4 + 4*a*b^4*g^5*x^3 + 6*a^2*b^3*g^5*x^2 + 4*a^3*b^2*g^5*x + a^4*b*g^5) - 1/4*A*c*i / (b^5*g^5*x^4 + 4*a*b^4*g^5*x^3 + 6*a^2*b^3*g^5*x^2 + 4*a^3*b^2*g^5*x + a^4*b*g^5)$$

mupad [B] time = 5.87, size = 610, normalized size = 2.17

$$\frac{B d^4 i n \operatorname{atanh}\left(\frac{12 a^3 b^2 d^3 g^5 - 12 a^2 b^3 c d^2 g^5 - 12 a b^4 c^2 d g^5 + 12 b^5 c^3 g^5}{12 b^2 g^5 (a d - b c)^3} + \frac{2 b d x (a^2 d^2 - 2 a b c d + b^2 c^2)}{(a d - b c)^3}\right)}{6 b^2 g^5 (a d - b c)^3} \frac{\ln\left(e\left(\frac{a+b x}{c+d x}\right)^n\right)}{a^4 g^5 + 4 a^3 b g^5 x + 6 a^2 b^2 g^5 x^2 + \dots}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x)^5, x)

[Out] (B*d^4*i*n*atanh((12*b^5*c^3*g^5 + 12*a^3*b^2*d^3*g^5 - 12*a*b^4*c^2*d*g^5 - 12*a^2*b^3*c*d^2*g^5)/(12*b^2*g^5*(a*d - b*c)^3) + (2*b*d*x*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))/(a*d - b*c)^3))/(6*b^2*g^5*(a*d - b*c)^3) - (log(e*((a + b*x)/(c + d*x))^n)*((B*c*i)/(4*b) + (B*a*d*i)/(12*b^2) + (B*d*i*x)/(3*b)))/(a^4*g^5 + b^4*g^5*x^4 + 4*a*b^3*g^5*x^3 + 6*a^2*b^2*g^5*x^2 + 4*a^3*b*g^5*x) - ((12*A*a^3*d^3*i + 36*A*b^3*c^3*i + 13*B*a^3*d^3*i*n + 9*B*b^3*c^3*i*n - 60*A*a*b^2*c^2*d*i + 12*A*a^2*b*c*d^2*i - 23*B*a*b^2*c^2*d*i*n + 13*B*a^2*b*c*d^2*i*n)/(12*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (x*(12*A*a^2*b*d^3*i + 12*A*b^3*c^2*d*i - 24*A*a*b^2*c*d^2*i + 13*B*a^2*b*d^3*i*n + B*b^3*c^2*d*i*n - 5*B*a*b^2*c*d^2*i*n))/(3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) - (d*x^2*(B*b^3*c*d*i*n - 7*B*a*b^2*d^2*i*n))/(2*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (B*b^3*d^3*i*n*x^3)/(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))/(12*a^4*b^2*g^5 + 12*b^6*g^5*x^4 + 48*a^3*b^3*g^5*x + 48*a*b^5*g^5*x^3 + 72*a^2*b^4*g^5*x^2)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)**5,x)

[Out] Timed out

$$3.117 \quad \int (ag+bgx)^3 (ci+dix)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) dx$$

Optimal. Leaf size=442

$$\frac{b^3 g^3 i^2 (c+dx)^6 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{6d^4} - \frac{3b^2 g^3 i^2 (c+dx)^5 (bc-ad) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{5d^4} - \frac{g^3 i^2 (c+dx)^3 (bc-ad)}{6d^4}$$

[Out] $1/60*B*(-a*d+b*c)^5*g^3*i^2*n*x/b^2/d^3+1/120*B*(-a*d+b*c)^4*g^3*i^2*n*(d*x+c)^2/b/d^4-19/180*B*(-a*d+b*c)^3*g^3*i^2*n*(d*x+c)^3/d^4+13/120*b*B*(-a*d+b*c)^2*g^3*i^2*n*(d*x+c)^4/d^4-1/30*b^2*B*(-a*d+b*c)*g^3*i^2*n*(d*x+c)^5/d^4-1/3*(-a*d+b*c)^3*g^3*i^2*(d*x+c)^3*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/d^4+3/4*b*(-a*d+b*c)^2*g^3*i^2*(d*x+c)^4*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/d^4-3/5*b^2*(-a*d+b*c)*g^3*i^2*(d*x+c)^5*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/d^4+1/6*b^3*g^3*i^2*(d*x+c)^6*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/d^4+1/60*B*(-a*d+b*c)^6*g^3*i^2*n*ln((b*x+a)/(d*x+c))/b^3/d^4+1/60*B*(-a*d+b*c)^6*g^3*i^2*n*ln(d*x+c)/b^3/d^4$

Rubi [A] time = 0.69, antiderivative size = 345, normalized size of antiderivative = 0.78, number of steps used = 14, number of rules used = 4, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.093$, Rules used = {2528, 2525, 12, 43}

$$\frac{d^2 g^3 i^2 (a+bx)^6 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{6b^3} + \frac{g^3 i^2 (a+bx)^4 (bc-ad)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{4b^3} + \frac{2d g^3 i^2 (a+bx)^5 (bc-ad)}{6b^3}$$

Antiderivative was successfully verified.

[In] Int[(a*g + b*g*x)^3*(c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]), x]

[Out] $-(B*(b*c - a*d)^5*g^3*i^2*n*x)/(60*b^2*d^3) + (B*(b*c - a*d)^4*g^3*i^2*n*(a + b*x)^2)/(120*b^3*d^2) - (B*(b*c - a*d)^3*g^3*i^2*n*(a + b*x)^3)/(180*b^3*d) - (7*B*(b*c - a*d)^2*g^3*i^2*n*(a + b*x)^4)/(120*b^3) - (B*d*(b*c - a*d)*g^3*i^2*n*(a + b*x)^5)/(30*b^3) + ((b*c - a*d)^2*g^3*i^2*(a + b*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(4*b^3) + (2*d*(b*c - a*d)*g^3*i^2*(a + b*x)^5*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(5*b^3) + (d^2*g^3*i^2*(a + b*x)^6*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(6*b^3) + (B*(b*c - a*d)^6*g^3*i^2*n*Log[c + d*x])/(60*b^3*d^4)$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_) /; FreeQ[b, x]]

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && (!IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunci
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int (117c + 117dx)^2 (ag + bgx)^3 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right) dx &= \int \left(\frac{13689(bc - ad)^2 (ag + bgx)^3 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)}{b^2} \right) dx \\
&= \frac{(13689(bc - ad)^2) \int (ag + bgx)^3 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right) dx}{b^2} \\
&= \frac{13689(bc - ad)^2 g^3 (a + bx)^4 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)}{4b^3} \\
&= \frac{13689(bc - ad)^2 g^3 (a + bx)^4 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)}{4b^3} \\
&= \frac{13689(bc - ad)^2 g^3 (a + bx)^4 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)}{4b^3} \\
&= -\frac{4563B(bc - ad)^5 g^3 nx}{20b^2 d^3} + \frac{4563B(bc - ad)^4 g^3 n(a + bx)^4}{40b^3 d^2}
\end{aligned}$$

Mathematica [A] time = 0.40, size = 441, normalized size = 1.00

$$\frac{g^3 i^2 \left(60d^6 (a + bx)^6 \left(B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) + A \right) + 144d^5 (a + bx)^5 (bc - ad) \left(B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) + A \right) + 90d^4 (a + bx)^4 \right)}{1}$$

Antiderivative was successfully verified.

[In] Integrate[(a*g + b*g*x)^3*(c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]), x]

[Out] (g^3*i^2*(90*d^4*(b*c - a*d)^2*(a + b*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 144*d^5*(b*c - a*d)*(a + b*x)^5*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 60*d^6*(a + b*x)^6*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 15*B*(b*c - a*d)^3*n*(6*b*d*(b*c - a*d)^2*x + 3*d^2*(-(b*c) + a*d)*(a + b*x)^2 + 2*d^3*(a + b*x)^3 - 6*(b*c - a*d)^3*Log[c + d*x]) + 12*B*(b*c - a*d)^2*n*(12*b*d*(b*c - a*d)^3*x - 6*d^2*(b*c - a*d)^2*(a + b*x)^2 + 4*d^3*(b*c - a*d)*(a + b*x)^3 - 3*d^4*(a + b*x)^4 - 12*(b*c - a*d)^4*Log[c + d*x]) - B*(b*c - a*d)*n*(60*b*d*(b*c - a*d)^4*x + 30*d^2*(-(b*c) + a*d)^3*(a + b*x)^2 + 20*d

$$\frac{\int^3 (b*c - a*d)^2 * (a + b*x)^3 + 15*d^4 * (-(b*c) + a*d) * (a + b*x)^4 + 12*d^5 * (a + b*x)^5 - 60*(b*c - a*d)^5 * \text{Log}[c + d*x])}{(360*b^3*d^4)}$$

fricas [B] time = 1.66, size = 1074, normalized size = 2.43

$$60 Ab^6 d^6 g^3 i^2 x^6 + 6 (15 Ba^4 b^2 c^2 d^4 - 6 Ba^5 bcd^5 + Ba^6 d^6) g^3 i^2 n \log (bx + a) + 6 (Bb^6 c^6 - 6 Bab^5 c^5 d + 15 Ba^2 b^4 c^4 d^2)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="fricas")

[Out] 1/360*(60*A*b^6*d^6*g^3*i^2*x^6 + 6*(15*B*a^4*b^2*c^2*d^4 - 6*B*a^5*b*c*d^5 + B*a^6*d^6)*g^3*i^2*n*log(b*x + a) + 6*(B*b^6*c^6 - 6*B*a*b^5*c^5*d + 15*B*a^2*b^4*c^4*d^2 - 20*B*a^3*b^3*c^3*d^3)*g^3*i^2*n*log(d*x + c) - 12*((B*b^6*c*d^5 - B*a*b^5*d^6)*g^3*i^2*n - 6*(2*A*b^6*c*d^5 + 3*A*a*b^5*d^6)*g^3*i^2)*x^5 - 3*((7*B*b^6*c^2*d^4 + 6*B*a*b^5*c*d^5 - 13*B*a^2*b^4*d^6)*g^3*i^2)*n - 30*(A*b^6*c^2*d^4 + 6*A*a*b^5*c*d^5 + 3*A*a^2*b^4*d^6)*g^3*i^2)*x^4 - 2*((B*b^6*c^3*d^3 + 39*B*a*b^5*c^2*d^4 - 21*B*a^2*b^4*c*d^5 - 19*B*a^3*b^3*d^6)*g^3*i^2)*n - 60*(3*A*a*b^5*c^2*d^4 + 6*A*a^2*b^4*c*d^5 + A*a^3*b^3*d^6)*g^3*i^2)*x^3 + 3*((B*b^6*c^4*d^2 - 6*B*a*b^5*c^3*d^3 - 30*B*a^2*b^4*c^2*d^4 + 34*B*a^3*b^3*c*d^5 + B*a^4*b^2*d^6)*g^3*i^2)*n + 60*(3*A*a^2*b^4*c^2*d^4 + 2*A*a^3*b^3*c*d^5)*g^3*i^2)*x^2 + 6*(60*A*a^3*b^3*c^2*d^4*g^3*i^2 - (B*b^6*c^5*d - 6*B*a*b^5*c^4*d^2 + 15*B*a^2*b^4*c^3*d^3 - 5*B*a^3*b^3*c^2*d^4 - 6*B*a^4*b^2*c*d^5 + B*a^5*b*d^6)*g^3*i^2)*n)*x + 6*(10*B*b^6*d^6*g^3*i^2*x^6 + 60*B*a^3*b^3*c^2*d^4*g^3*i^2*x + 12*(2*B*b^6*c*d^5 + 3*B*a*b^5*d^6)*g^3*i^2*x^5 + 15*(B*b^6*c^2*d^4 + 6*B*a*b^5*c*d^5 + 3*B*a^2*b^4*d^6)*g^3*i^2*x^4 + 20*(3*B*a*b^5*c^2*d^4 + 6*B*a^2*b^4*c*d^5 + B*a^3*b^3*d^6)*g^3*i^2*x^3 + 30*(3*B*a^2*b^4*c^2*d^4 + 2*B*a^3*b^3*c*d^5)*g^3*i^2*x^2)*log(e) + 6*(10*B*b^6*d^6*g^3*i^2*n*x^6 + 60*B*a^3*b^3*c^2*d^4*g^3*i^2*n*x + 12*(2*B*b^6*c*d^5 + 3*B*a*b^5*d^6)*g^3*i^2*n*x^5 + 15*(B*b^6*c^2*d^4 + 6*B*a*b^5*c*d^5 + 3*B*a^2*b^4*d^6)*g^3*i^2*n*x^4 + 20*(3*B*a*b^5*c^2*d^4 + 6*B*a^2*b^4*c*d^5 + B*a^3*b^3*d^6)*g^3*i^2*n*x^3 + 30*(3*B*a^2*b^4*c^2*d^4 + 2*B*a^3*b^3*c*d^5)*g^3*i^2*n*x^2)*log((b*x + a)/(d*x + c)))/(b^3*d^4)

giac [B] time = 11.65, size = 4589, normalized size = 10.38

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="giac")

[Out] 1/360*(6*(B*b^10*c^7*g^3*n - 7*B*a*b^9*c^6*d*g^3*n - 6*(b*x + a)*B*b^9*c^7*d*g^3*n)/(d*x + c) + 21*B*a^2*b^8*c^5*d^2*g^3*n + 42*(b*x + a)*B*a*b^8*c^6*d

$$\begin{aligned}
& ^2g^3n/(dx + c) + 15*(bx + a)^2B*b^8*c^7*d^2*g^3n/(dx + c)^2 - 35*B* \\
& a^3*b^7*c^4*d^3*g^3n - 126*(bx + a)*B*a^2*b^7*c^5*d^3*g^3n/(dx + c) - 1 \\
& 05*(bx + a)^2*B*a*b^7*c^6*d^3*g^3n/(dx + c)^2 - 20*(bx + a)^3*B*b^7*c^7 \\
& *d^3*g^3n/(dx + c)^3 + 35*B*a^4*b^6*c^3*d^4*g^3n + 210*(bx + a)*B*a^3*b \\
& ^6*c^4*d^4*g^3n/(dx + c) + 315*(bx + a)^2*B*a^2*b^6*c^5*d^4*g^3n/(dx + \\
& c)^2 + 140*(bx + a)^3*B*a*b^6*c^6*d^4*g^3n/(dx + c)^3 - 21*B*a^5*b^5*c^ \\
& 2*d^5*g^3n - 210*(bx + a)*B*a^4*b^5*c^3*d^5*g^3n/(dx + c) - 525*(bx + \\
& a)^2*B*a^3*b^5*c^4*d^5*g^3n/(dx + c)^2 - 420*(bx + a)^3*B*a^2*b^5*c^5*d^ \\
& 5*g^3n/(dx + c)^3 + 7*B*a^6*b^4*c*d^6*g^3n + 126*(bx + a)*B*a^5*b^4*c^2 \\
& *d^6*g^3n/(dx + c) + 525*(bx + a)^2*B*a^4*b^4*c^3*d^6*g^3n/(dx + c)^2 \\
& + 700*(bx + a)^3*B*a^3*b^4*c^4*d^6*g^3n/(dx + c)^3 - B*a^7*b^3*d^7*g^3n \\
& - 42*(bx + a)*B*a^6*b^3*c*d^7*g^3n/(dx + c) - 315*(bx + a)^2*B*a^5*b^3 \\
& *c^2*d^7*g^3n/(dx + c)^2 - 700*(bx + a)^3*B*a^4*b^3*c^3*d^7*g^3n/(dx + \\
& c)^3 + 6*(bx + a)*B*a^7*b^2*d^8*g^3n/(dx + c) + 105*(bx + a)^2*B*a^6*b \\
& ^2*c*d^8*g^3n/(dx + c)^2 + 420*(bx + a)^3*B*a^5*b^2*c^2*d^8*g^3n/(dx + \\
& c)^3 - 15*(bx + a)^2*B*a^7*b*d^9*g^3n/(dx + c)^2 - 140*(bx + a)^3*B*a^ \\
& 6*b*c*d^9*g^3n/(dx + c)^3 + 20*(bx + a)^3*B*a^7*d^10*g^3n/(dx + c)^3)* \\
& \log((bx + a)/(dx + c))/(b^6*d^4 - 6*(bx + a)*b^5*d^5/(dx + c) + 15*(bx \\
& + a)^2*b^4*d^6/(dx + c)^2 - 20*(bx + a)^3*b^3*d^7/(dx + c)^3 + 15*(bx \\
& + a)^4*b^2*d^8/(dx + c)^4 - 6*(bx + a)^5*b*d^9/(dx + c)^5 + (bx + a)^6 \\
& d^10/(dx + c)^6) + (2*B*b^12*c^7*g^3n - 14*B*a*b^11*c^6*d*g^3n - 6*(bx \\
& + a)*B*b^11*c^7*d*g^3n/(dx + c) + 42*B*a^2*b^10*c^5*d^2*g^3n + 42*(bx + \\
& a)*B*a*b^10*c^6*d^2*g^3n/(dx + c) - 3*(bx + a)^2*B*b^10*c^7*d^2*g^3n/(\\
& dx + c)^2 - 70*B*a^3*b^9*c^4*d^3*g^3n - 126*(bx + a)*B*a^2*b^9*c^5*d^3*g \\
& ^3n/(dx + c) + 21*(bx + a)^2*B*a*b^9*c^6*d^3*g^3n/(dx + c)^2 + 34*(bx \\
& + a)^3*B*b^9*c^7*d^3*g^3n/(dx + c)^3 + 70*B*a^4*b^8*c^3*d^4*g^3n + 210* \\
& (bx + a)*B*a^3*b^8*c^4*d^4*g^3n/(dx + c) - 63*(bx + a)^2*B*a^2*b^8*c^5 \\
& d^4*g^3n/(dx + c)^2 - 238*(bx + a)^3*B*a*b^8*c^6*d^4*g^3n/(dx + c)^3 - \\
& 33*(bx + a)^4*B*b^8*c^7*d^4*g^3n/(dx + c)^4 - 42*B*a^5*b^7*c^2*d^5*g^3n \\
& n - 210*(bx + a)*B*a^4*b^7*c^3*d^5*g^3n/(dx + c) + 105*(bx + a)^2*B*a^3 \\
& *b^7*c^4*d^5*g^3n/(dx + c)^2 + 714*(bx + a)^3*B*a^2*b^7*c^5*d^5*g^3n/(d \\
& *x + c)^3 + 231*(bx + a)^4*B*a*b^7*c^6*d^5*g^3n/(dx + c)^4 + 6*(bx + a) \\
& ^5*B*b^7*c^7*d^5*g^3n/(dx + c)^5 + 14*B*a^6*b^6*c*d^6*g^3n + 126*(bx + \\
& a)*B*a^5*b^6*c^2*d^6*g^3n/(dx + c) - 105*(bx + a)^2*B*a^4*b^6*c^3*d^6*g^ \\
& 3n/(dx + c)^2 - 1190*(bx + a)^3*B*a^3*b^6*c^4*d^6*g^3n/(dx + c)^3 - 69 \\
& 3*(bx + a)^4*B*a^2*b^6*c^5*d^6*g^3n/(dx + c)^4 - 42*(bx + a)^5*B*a*b^6* \\
& c^6*d^6*g^3n/(dx + c)^5 - 2*B*a^7*b^5*d^7*g^3n - 42*(bx + a)*B*a^6*b^5* \\
& c*d^7*g^3n/(dx + c) + 63*(bx + a)^2*B*a^5*b^5*c^2*d^7*g^3n/(dx + c)^2 \\
& + 1190*(bx + a)^3*B*a^4*b^5*c^3*d^7*g^3n/(dx + c)^3 + 1155*(bx + a)^4*B \\
& *a^3*b^5*c^4*d^7*g^3n/(dx + c)^4 + 126*(bx + a)^5*B*a^2*b^5*c^5*d^7*g^3n \\
& n/(dx + c)^5 + 6*(bx + a)*B*a^7*b^4*d^8*g^3n/(dx + c) - 21*(bx + a)^2* \\
& B*a^6*b^4*c*d^8*g^3n/(dx + c)^2 - 714*(bx + a)^3*B*a^5*b^4*c^2*d^8*g^3n \\
& /(dx + c)^3 - 1155*(bx + a)^4*B*a^4*b^4*c^3*d^8*g^3n/(dx + c)^4 - 210*(\\
& bx + a)^5*B*a^3*b^4*c^4*d^8*g^3n/(dx + c)^5 + 3*(bx + a)^2*B*a^7*b^3*d^ \\
& 9*g^3n/(dx + c)^2 + 238*(bx + a)^3*B*a^6*b^3*c*d^9*g^3n/(dx + c)^3 + 6
\end{aligned}$$

$$\begin{aligned}
& 93*(b*x + a)^4*B*a^5*b^3*c^2*d^9*g^3*n/(d*x + c)^4 + 210*(b*x + a)^5*B*a^4* \\
& b^3*c^3*d^9*g^3*n/(d*x + c)^5 - 34*(b*x + a)^3*B*a^7*b^2*d^10*g^3*n/(d*x + \\
& c)^3 - 231*(b*x + a)^4*B*a^6*b^2*c*d^10*g^3*n/(d*x + c)^4 - 126*(b*x + a)^5 \\
& *B*a^5*b^2*c^2*d^10*g^3*n/(d*x + c)^5 + 33*(b*x + a)^4*B*a^7*b*d^11*g^3*n/(\\
& d*x + c)^4 + 42*(b*x + a)^5*B*a^6*b*c*d^11*g^3*n/(d*x + c)^5 - 6*(b*x + a)^ \\
& 5*B*a^7*d^12*g^3*n/(d*x + c)^5 + 6*A*b^12*c^7*g^3 + 6*B*b^12*c^7*g^3 - 42*A \\
& *a*b^11*c^6*d*g^3 - 42*B*a*b^11*c^6*d*g^3 - 36*(b*x + a)*A*b^11*c^7*d*g^3/(\\
& d*x + c) - 36*(b*x + a)*B*b^11*c^7*d*g^3/(d*x + c) + 126*A*a^2*b^10*c^5*d^2 \\
& *g^3 + 126*B*a^2*b^10*c^5*d^2*g^3 + 252*(b*x + a)*A*a*b^10*c^6*d^2*g^3/(d*x \\
& + c) + 252*(b*x + a)*B*a*b^10*c^6*d^2*g^3/(d*x + c) + 90*(b*x + a)^2*A*b^1 \\
& 0*c^7*d^2*g^3/(d*x + c)^2 + 90*(b*x + a)^2*B*b^10*c^7*d^2*g^3/(d*x + c)^2 - \\
& 210*A*a^3*b^9*c^4*d^3*g^3 - 210*B*a^3*b^9*c^4*d^3*g^3 - 756*(b*x + a)*A*a^ \\
& 2*b^9*c^5*d^3*g^3/(d*x + c) - 756*(b*x + a)*B*a^2*b^9*c^5*d^3*g^3/(d*x + c) \\
& - 630*(b*x + a)^2*A*a*b^9*c^6*d^3*g^3/(d*x + c)^2 - 630*(b*x + a)^2*B*a*b^ \\
& 9*c^6*d^3*g^3/(d*x + c)^2 - 120*(b*x + a)^3*A*b^9*c^7*d^3*g^3/(d*x + c)^3 - \\
& 120*(b*x + a)^3*B*b^9*c^7*d^3*g^3/(d*x + c)^3 + 210*A*a^4*b^8*c^3*d^4*g^3 \\
& + 210*B*a^4*b^8*c^3*d^4*g^3 + 1260*(b*x + a)*A*a^3*b^8*c^4*d^4*g^3/(d*x + c \\
&) + 1260*(b*x + a)*B*a^3*b^8*c^4*d^4*g^3/(d*x + c) + 1890*(b*x + a)^2*A*a^2 \\
& *b^8*c^5*d^4*g^3/(d*x + c)^2 + 1890*(b*x + a)^2*B*a^2*b^8*c^5*d^4*g^3/(d*x \\
& + c)^2 + 840*(b*x + a)^3*A*a*b^8*c^6*d^4*g^3/(d*x + c)^3 + 840*(b*x + a)^3* \\
& B*a*b^8*c^6*d^4*g^3/(d*x + c)^3 - 126*A*a^5*b^7*c^2*d^5*g^3 - 126*B*a^5*b^7 \\
& *c^2*d^5*g^3 - 1260*(b*x + a)*A*a^4*b^7*c^3*d^5*g^3/(d*x + c) - 1260*(b*x + \\
& a)*B*a^4*b^7*c^3*d^5*g^3/(d*x + c) - 3150*(b*x + a)^2*A*a^3*b^7*c^4*d^5*g^ \\
& 3/(d*x + c)^2 - 3150*(b*x + a)^2*B*a^3*b^7*c^4*d^5*g^3/(d*x + c)^2 - 2520*(\\
& b*x + a)^3*A*a^2*b^7*c^5*d^5*g^3/(d*x + c)^3 - 2520*(b*x + a)^3*B*a^2*b^7*c \\
& ^5*d^5*g^3/(d*x + c)^3 + 42*A*a^6*b^6*c*d^6*g^3 + 42*B*a^6*b^6*c*d^6*g^3 + \\
& 756*(b*x + a)*A*a^5*b^6*c^2*d^6*g^3/(d*x + c) + 756*(b*x + a)*B*a^5*b^6*c^2 \\
& *d^6*g^3/(d*x + c) + 3150*(b*x + a)^2*A*a^4*b^6*c^3*d^6*g^3/(d*x + c)^2 + 3 \\
& 150*(b*x + a)^2*B*a^4*b^6*c^3*d^6*g^3/(d*x + c)^2 + 4200*(b*x + a)^3*A*a^3* \\
& b^6*c^4*d^6*g^3/(d*x + c)^3 + 4200*(b*x + a)^3*B*a^3*b^6*c^4*d^6*g^3/(d*x + \\
& c)^3 - 6*A*a^7*b^5*d^7*g^3 - 6*B*a^7*b^5*d^7*g^3 - 252*(b*x + a)*A*a^6*b^5 \\
& *c*d^7*g^3/(d*x + c) - 252*(b*x + a)*B*a^6*b^5*c*d^7*g^3/(d*x + c) - 1890*(\\
& b*x + a)^2*A*a^5*b^5*c^2*d^7*g^3/(d*x + c)^2 - 1890*(b*x + a)^2*B*a^5*b^5*c \\
& ^2*d^7*g^3/(d*x + c)^2 - 4200*(b*x + a)^3*A*a^4*b^5*c^3*d^7*g^3/(d*x + c)^3 \\
& - 4200*(b*x + a)^3*B*a^4*b^5*c^3*d^7*g^3/(d*x + c)^3 + 36*(b*x + a)*A*a^7* \\
& b^4*d^8*g^3/(d*x + c) + 36*(b*x + a)*B*a^7*b^4*d^8*g^3/(d*x + c) + 630*(b*x \\
& + a)^2*A*a^6*b^4*c*d^8*g^3/(d*x + c)^2 + 630*(b*x + a)^2*B*a^6*b^4*c*d^8*g \\
& ^3/(d*x + c)^2 + 2520*(b*x + a)^3*A*a^5*b^4*c^2*d^8*g^3/(d*x + c)^3 + 2520* \\
& (b*x + a)^3*B*a^5*b^4*c^2*d^8*g^3/(d*x + c)^3 - 90*(b*x + a)^2*A*a^7*b^3*d^ \\
& 9*g^3/(d*x + c)^2 - 90*(b*x + a)^2*B*a^7*b^3*d^9*g^3/(d*x + c)^2 - 840*(b*x \\
& + a)^3*A*a^6*b^3*c*d^9*g^3/(d*x + c)^3 - 840*(b*x + a)^3*B*a^6*b^3*c*d^9*g \\
& ^3/(d*x + c)^3 + 120*(b*x + a)^3*A*a^7*b^2*d^10*g^3/(d*x + c)^3 + 120*(b*x \\
& + a)^3*B*a^7*b^2*d^10*g^3/(d*x + c)^3)/(b^8*d^4 - 6*(b*x + a)*b^7*d^5/(d*x \\
& + c) + 15*(b*x + a)^2*b^6*d^6/(d*x + c)^2 - 20*(b*x + a)^3*b^5*d^7/(d*x + c \\
&)^3 + 15*(b*x + a)^4*b^4*d^8/(d*x + c)^4 - 6*(b*x + a)^5*b^3*d^9/(d*x + c)^
\end{aligned}$$

$5 + (b*x + a)^6*b^2*d^{10}/(d*x + c)^6 + 6*(B*b^7*c^7*g^{3*n} - 7*B*a*b^6*c^6*d*g^{3*n} + 21*B*a^2*b^5*c^5*d^2*g^{3*n} - 35*B*a^3*b^4*c^4*d^3*g^{3*n} + 35*B*a^4*b^3*c^3*d^4*g^{3*n} - 21*B*a^5*b^2*c^2*d^5*g^{3*n} + 7*B*a^6*b*c*d^6*g^{3*n} - B*a^7*d^7*g^{3*n})*\log(-b + (b*x + a)*d/(d*x + c))/(b^3*d^4) - 6*(B*b^7*c^7*g^{3*n} - 7*B*a*b^6*c^6*d*g^{3*n} + 21*B*a^2*b^5*c^5*d^2*g^{3*n} - 35*B*a^3*b^4*c^4*d^3*g^{3*n} + 35*B*a^4*b^3*c^3*d^4*g^{3*n} - 21*B*a^5*b^2*c^2*d^5*g^{3*n} + 7*B*a^6*b*c*d^6*g^{3*n} - B*a^7*d^7*g^{3*n})*\log((b*x + a)/(d*x + c))/(b^3*d^4))*(b*c/(b*c - a*d)^2 - a*d/(b*c - a*d)^2)$

maple [F] time = 0.43, size = 0, normalized size = 0.00

$$\int (bgx + ag)^3 (dix + ci)^2 \left(B \ln \left(e \left(\frac{bx + a}{dx + c} \right)^n \right) + A \right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)^3*(d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)

[Out] int((b*g*x+a*g)^3*(d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)

maxima [B] time = 1.66, size = 1978, normalized size = 4.48

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="maxima")

[Out] $1/6*B*b^3*d^2*g^3*i^2*x^6*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/6*A*b^3*d^2*g^3*i^2*x^6 + 2/5*B*b^3*c*d*g^3*i^2*x^5*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 3/5*B*a*b^2*d^2*g^3*i^2*x^5*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 2/5*A*b^3*c*d*g^3*i^2*x^5 + 3/5*A*a*b^2*d^2*g^3*i^2*x^5 + 1/4*B*b^3*c^2*g^3*i^2*x^4*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 3/2*B*a*b^2*c*d*g^3*i^2*x^4*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 3/4*B*a^2*b*d^2*g^3*i^2*x^4*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/4*A*b^3*c^2*g^3*i^2*x^4 + 3/2*A*a*b^2*c*d*g^3*i^2*x^4 + 3/4*A*a^2*b*d^2*g^3*i^2*x^4 + B*a*b^2*c^2*g^3*i^2*x^3*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 2*B*a^2*b*c*d*g^3*i^2*x^3*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/3*B*a^3*d^2*g^3*i^2*x^3*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A*a*b^2*c^2*g^3*i^2*x^3 + 2*A*a^2*b*c*d*g^3*i^2*x^3 + 1/3*A*a^3*d^2*g^3*i^2*x^3 + 3/2*B*a^2*b*c^2*g^3*i^2*x^2*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + B*a^3*c*d*g^3*i^2*x^2*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 3/2*A*a^2*b*c^2*g^3*i^2*x^2 + A*a^3*c*d*g^3*i^2*x^2 - 1/360*B*b^3*d^2*g^3*i^2*n*(60*a^6*log(b*x + a)/b^6 - 60*c^6*log(d*x + c)/d^6 + (12*(b^5*c*d^4 - a*b^4*d^5)*x^5 - 15*(b^5*c^2*d^3 - a^2*b^3*d^5)*x^4 + 20*(b^5*c^3*d^2 - a^3*b^2*d^5)*x^3 - 30*(b^5*c^4*d - a^4*b*d^5)*x^2 + 60*(b^5*c^5 - a^5)*x - 60*a^6*log(b*x + a)/b^6 - 60*c^6*log(d*x + c)/d^6)$

$$\begin{aligned}
& 5*c^5 - a^5*d^5)*x)/(b^5*d^5)) + 1/30*B*b^3*c*d*g^3*i^2*n*(12*a^5*log(b*x + \\
& a)/b^5 - 12*c^5*log(d*x + c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4 \\
& *c^2*d^2 - a^2*b^2*d^4)*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 - \\
& a^4*d^4)*x)/(b^4*d^4)) + 1/20*B*a*b^2*d^2*g^3*i^2*n*(12*a^5*log(b*x + a)/b \\
& ^5 - 12*c^5*log(d*x + c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4*c^2* \\
& d^2 - a^2*b^2*d^4)*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 - a^4* \\
& d^4)*x)/(b^4*d^4)) - 1/24*B*b^3*c^2*g^3*i^2*n*(6*a^4*log(b*x + a)/b^4 - 6*c \\
& ^4*log(d*x + c)/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b \\
& *d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3)) - 1/4*B*a*b^2*c*d*g^3*i^2*n \\
& *(6*a^4*log(b*x + a)/b^4 - 6*c^4*log(d*x + c)/d^4 + (2*(b^3*c*d^2 - a*b^2*d \\
& ^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3 \\
&)) - 1/8*B*a^2*b*d^2*g^3*i^2*n*(6*a^4*log(b*x + a)/b^4 - 6*c^4*log(d*x + c) \\
& /d^4 + (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(\\
& b^3*c^3 - a^3*d^3)*x)/(b^3*d^3)) + 1/2*B*a*b^2*c^2*g^3*i^2*n*(2*a^3*log(b*x \\
& + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 \\
& - a^2*d^2)*x)/(b^2*d^2)) + B*a^2*b*c*d*g^3*i^2*n*(2*a^3*log(b*x + a)/b^3 - \\
& 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x \\
&)/(b^2*d^2)) + 1/6*B*a^3*d^2*g^3*i^2*n*(2*a^3*log(b*x + a)/b^3 - 2*c^3*log(\\
& d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2 \\
&)) - 3/2*B*a^2*b*c^2*g^3*i^2*n*(a^2*log(b*x + a)/b^2 - c^2*log(d*x + c)/d^2 \\
& + (b*c - a*d)*x/(b*d)) - B*a^3*c*d*g^3*i^2*n*(a^2*log(b*x + a)/b^2 - c^2*log \\
& (d*x + c)/d^2 + (b*c - a*d)*x/(b*d)) + B*a^3*c^2*g^3*i^2*n*(a*log(b*x + a \\
&)/b - c*log(d*x + c)/d) + B*a^3*c^2*g^3*i^2*x*log(e*(b*x/(d*x + c) + a/(d*x \\
& + c))^n) + A*a^3*c^2*g^3*i^2*x
\end{aligned}$$

mupad [B] time = 5.91, size = 2555, normalized size = 5.78

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{int}((a*g + b*g*x)^3*(c*i + d*i*x)^2*(A + B*\log(e*((a + b*x)/(c + d*x))^n)), x)$

[Out] $x^2*((a*c*(((b^2*d*g^3*i^2*(24*A*a*d + 18*A*b*c + B*a*d*n - B*b*c*n))/6 - (A*b^2*d*g^3*i^2*(60*a*d + 60*b*c))/60)*(60*a*d + 60*b*c))/(60*b*d) - (b*g^3*i^2*(30*A*a^2*d^2 + 15*A*b^2*c^2 + 3*B*a^2*d^2*n - 2*B*b^2*c^2*n + 60*A*a*b*c*d - B*a*b*c*d*n))/5 + A*a*b^2*c*d*g^3*i^2))/(2*b*d) - ((60*a*d + 60*b*c)*((g^3*i^2*(16*A*a^3*d^3 + 4*A*b^3*c^3 + 3*B*a^3*d^3*n - B*b^3*c^3*n + 48*A*a*b^2*c^2*d + 72*A*a^2*b*c*d^2 - 5*B*a*b^2*c^2*d*n + 3*B*a^2*b*c*d^2*n)))/(4*d) + ((60*a*d + 60*b*c)*(((b^2*d*g^3*i^2*(24*A*a*d + 18*A*b*c + B*a*d*n - B*b*c*n))/6 - (A*b^2*d*g^3*i^2*(60*a*d + 60*b*c))/60)*(60*a*d + 60*b*c))/(60*b*d) - (b*g^3*i^2*(30*A*a^2*d^2 + 15*A*b^2*c^2 + 3*B*a^2*d^2*n - 2*B*b^2*c^2*n + 60*A*a*b*c*d - B*a*b*c*d*n))/5 + A*a*b^2*c*d*g^3*i^2))/(60*b*d) - (a*c*(((b^2*d*g^3*i^2*(24*A*a*d + 18*A*b*c + B*a*d*n - B*b*c*n))/6 - (A*b^2*d*g^3*i^2*(60*a*d + 60*b*c))/60))/(b*d)))/(120*b*d) + (a*g^3*i^2*(3*A*a^$

$$\begin{aligned}
& 3*d^3 + 12*A*b^3*c^3 + B*a^3*d^3*n - 3*B*b^3*c^3*n + 54*A*a*b^2*c^2*d + 36* \\
& A*a^2*b*c*d^2 - 3*B*a*b^2*c^2*d*n + 5*B*a^2*b*c*d^2*n))/ (6*b*d) + x^3*((g^ \\
& 3*i^2*(16*A*a^3*d^3 + 4*A*b^3*c^3 + 3*B*a^3*d^3*n - B*b^3*c^3*n + 48*A*a*b^ \\
& 2*c^2*d + 72*A*a^2*b*c*d^2 - 5*B*a*b^2*c^2*d*n + 3*B*a^2*b*c*d^2*n))/ (12*d) \\
& + ((60*a*d + 60*b*c)*(((b^2*d*g^3*i^2*(24*A*a*d + 18*A*b*c + B*a*d*n - B* \\
& b*c*n))/6 - (A*b^2*d*g^3*i^2*(60*a*d + 60*b*c))/60)*(60*a*d + 60*b*c))/ (60* \\
& b*d) - (b*g^3*i^2*(30*A*a^2*d^2 + 15*A*b^2*c^2 + 3*B*a^2*d^2*n - 2*B*b^2*c^ \\
& 2*n + 60*A*a*b*c*d - B*a*b*c*d*n))/5 + A*a*b^2*c*d*g^3*i^2))/ (180*b*d) - (a \\
& *c*((b^2*d*g^3*i^2*(24*A*a*d + 18*A*b*c + B*a*d*n - B*b*c*n))/6 - (A*b^2*d* \\
& g^3*i^2*(60*a*d + 60*b*c))/60))/ (3*b*d) - x^4*(((b^2*d*g^3*i^2*(24*A*a*d \\
& + 18*A*b*c + B*a*d*n - B*b*c*n))/6 - (A*b^2*d*g^3*i^2*(60*a*d + 60*b*c))/60 \\
&)*(60*a*d + 60*b*c))/ (240*b*d) - (b*g^3*i^2*(30*A*a^2*d^2 + 15*A*b^2*c^2 + \\
& 3*B*a^2*d^2*n - 2*B*b^2*c^2*n + 60*A*a*b*c*d - B*a*b*c*d*n))/20 + (A*a*b^2* \\
& c*d*g^3*i^2)/4 + x^5*((b^2*d*g^3*i^2*(24*A*a*d + 18*A*b*c + B*a*d*n - B*b* \\
& c*n))/30 - (A*b^2*d*g^3*i^2*(60*a*d + 60*b*c))/300) - x*(((60*a*d + 60*b*c) \\
& *((a*c*((b^2*d*g^3*i^2*(24*A*a*d + 18*A*b*c + B*a*d*n - B*b*c*n))/6 - (A* \\
& b^2*d*g^3*i^2*(60*a*d + 60*b*c))/60)*(60*a*d + 60*b*c))/ (60*b*d) - (b*g^3*i \\
& ^2*(30*A*a^2*d^2 + 15*A*b^2*c^2 + 3*B*a^2*d^2*n - 2*B*b^2*c^2*n + 60*A*a*b* \\
& c*d - B*a*b*c*d*n))/5 + A*a*b^2*c*d*g^3*i^2))/ (b*d) - ((60*a*d + 60*b*c)* \\
& (g^3*i^2*(16*A*a^3*d^3 + 4*A*b^3*c^3 + 3*B*a^3*d^3*n - B*b^3*c^3*n + 48*A*a* \\
& b^2*c^2*d + 72*A*a^2*b*c*d^2 - 5*B*a*b^2*c^2*d*n + 3*B*a^2*b*c*d^2*n))/ (4*d \\
&) + ((60*a*d + 60*b*c)*(((b^2*d*g^3*i^2*(24*A*a*d + 18*A*b*c + B*a*d*n - B \\
& *b*c*n))/6 - (A*b^2*d*g^3*i^2*(60*a*d + 60*b*c))/60)*(60*a*d + 60*b*c))/ (60 \\
& *b*d) - (b*g^3*i^2*(30*A*a^2*d^2 + 15*A*b^2*c^2 + 3*B*a^2*d^2*n - 2*B*b^2*c^ \\
& ^2*n + 60*A*a*b*c*d - B*a*b*c*d*n))/5 + A*a*b^2*c*d*g^3*i^2))/ (60*b*d) - (a \\
& *c*((b^2*d*g^3*i^2*(24*A*a*d + 18*A*b*c + B*a*d*n - B*b*c*n))/6 - (A*b^2*d* \\
& g^3*i^2*(60*a*d + 60*b*c))/60))/ (b*d))/ (60*b*d) + (a*g^3*i^2*(3*A*a^3*d^3 \\
& + 12*A*b^3*c^3 + B*a^3*d^3*n - 3*B*b^3*c^3*n + 54*A*a*b^2*c^2*d + 36*A*a^2* \\
& b*c*d^2 - 3*B*a*b^2*c^2*d*n + 5*B*a^2*b*c*d^2*n))/ (3*b*d))/ (60*b*d) + (a*c \\
& *((g^3*i^2*(16*A*a^3*d^3 + 4*A*b^3*c^3 + 3*B*a^3*d^3*n - B*b^3*c^3*n + 48*A \\
& *a*b^2*c^2*d + 72*A*a^2*b*c*d^2 - 5*B*a*b^2*c^2*d*n + 3*B*a^2*b*c*d^2*n))/ (\\
& 4*d) + ((60*a*d + 60*b*c)*(((b^2*d*g^3*i^2*(24*A*a*d + 18*A*b*c + B*a*d*n \\
& - B*b*c*n))/6 - (A*b^2*d*g^3*i^2*(60*a*d + 60*b*c))/60)*(60*a*d + 60*b*c))/ \\
& (60*b*d) - (b*g^3*i^2*(30*A*a^2*d^2 + 15*A*b^2*c^2 + 3*B*a^2*d^2*n - 2*B*b^ \\
& 2*c^2*n + 60*A*a*b*c*d - B*a*b*c*d*n))/5 + A*a*b^2*c*d*g^3*i^2))/ (60*b*d) - \\
& (a*c*((b^2*d*g^3*i^2*(24*A*a*d + 18*A*b*c + B*a*d*n - B*b*c*n))/6 - (A*b^2 \\
& *d*g^3*i^2*(60*a*d + 60*b*c))/60))/ (b*d))/ (b*d) - (a^2*c*g^3*i^2*(6*A*a^2* \\
& d^2 + 12*A*b^2*c^2 + 2*B*a^2*d^2*n - 3*B*b^2*c^2*n + 24*A*a*b*c*d + B*a*b*c \\
& *d*n))/ (2*b*d) + log(e*((a + b*x)/(c + d*x))^n)*(B*a^3*c^2*g^3*i^2*x + (B* \\
& a*g^3*i^2*x^3*(a^2*d^2 + 3*b^2*c^2 + 6*a*b*c*d))/3 + (B*b*g^3*i^2*x^4*(3*a^ \\
& 2*d^2 + b^2*c^2 + 6*a*b*c*d))/4 + (B*b^3*d^2*g^3*i^2*x^6)/6 + (B*a^2*c*g^3* \\
& i^2*x^2*(2*a*d + 3*b*c))/2 + (B*b^2*d*g^3*i^2*x^5*(3*a*d + 2*b*c))/5) + (lo \\
& g(c + d*x)*(B*b^3*c^6*g^3*i^2*n - 20*B*a^3*c^3*d^3*g^3*i^2*n + 15*B*a^2*b*c \\
& ^4*d^2*g^3*i^2*n - 6*B*a*b^2*c^5*d*g^3*i^2*n))/ (60*d^4) + (log(a + b*x)*(B* \\
& a^6*d^2*g^3*i^2*n + 15*B*a^4*b^2*c^2*g^3*i^2*n - 6*B*a^5*b*c*d*g^3*i^2*n))/
\end{aligned}$$

$(60*b^3) + (A*b^3*d^2*g^3*i^2*x^6)/6$

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)**3*(d*i*x+c*i)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n)),x)

[Out] Timed out

$$3.118 \quad \int (ag+bgx)^2(ci+dix)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) dx$$

Optimal. Leaf size=352

$$\frac{b^2 g^2 i^2 (c+dx)^5 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{5d^3} + \frac{g^2 i^2 (c+dx)^3 (bc-ad)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{3d^3} - \frac{bg^2 i^2 (c+dx)^4 (bc-ad)}{3d^3}$$

[Out] $-1/30*B*(-a*d+b*c)^4*g^2*i^2*n*x/b^2/d^2-1/60*B*(-a*d+b*c)^3*g^2*i^2*n*(d*x+c)^2/b/d^3+1/10*B*(-a*d+b*c)^2*g^2*i^2*n*(d*x+c)^3/d^3-1/20*b*B*(-a*d+b*c)*g^2*i^2*n*(d*x+c)^4/d^3+1/3*(-a*d+b*c)^2*g^2*i^2*(d*x+c)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/d^3-1/2*b*(-a*d+b*c)*g^2*i^2*(d*x+c)^4*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/d^3+1/5*b^2*g^2*i^2*(d*x+c)^5*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/d^3-1/30*B*(-a*d+b*c)^5*g^2*i^2*n*\ln((b*x+a)/(d*x+c))/b^3/d^3-1/30*B*(-a*d+b*c)^5*g^2*i^2*n*\ln(d*x+c)/b^3/d^3$

Rubi [A] time = 0.54, antiderivative size = 310, normalized size of antiderivative = 0.88, number of steps used = 14, number of rules used = 4, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.093$, Rules used = {2528, 2525, 12, 43}

$$\frac{d^2 g^2 i^2 (a+bx)^5 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{5b^3} + \frac{g^2 i^2 (a+bx)^3 (bc-ad)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{3b^3} + \frac{dg^2 i^2 (a+bx)^4 (bc-ad)}{3b^3}$$

Antiderivative was successfully verified.

[In] Int[(a*g + b*g*x)^2*(c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]), x]

[Out] $(B*(b*c - a*d)^4*g^2*i^2*n*x)/(30*b^2*d^2) - (B*(b*c - a*d)^3*g^2*i^2*n*(a + b*x)^2)/(60*b^3*d) - (B*(b*c - a*d)^2*g^2*i^2*n*(a + b*x)^3)/(10*b^3) - (B*d*(b*c - a*d)*g^2*i^2*n*(a + b*x)^4)/(20*b^3) + ((b*c - a*d)^2*g^2*i^2*(a + b*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(3*b^3) + (d*(b*c - a*d)*g^2*i^2*(a + b*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(2*b^3) + (d^2*g^2*i^2*(a + b*x)^5*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(5*b^3) - (B*(b*c - a*d)^5*g^2*i^2*n*Log[c + d*x])/(30*b^3*d^3)$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_) /; FreeQ[b, x]]

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && (!IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*
(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunci
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int (118c + 118dx)^2 (ag + bgx)^2 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right) dx &= \int \left(\frac{(-bc + ad)^2 g^2 (118c + 118dx)^2 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)}{d^2} \right) dx \\
&= \frac{(b^2 g^2) \int (118c + 118dx)^4 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right) dx}{13924 d^2} \\
&= \frac{13924 (bc - ad)^2 g^2 (c + dx)^3 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)}{3 d^3} \\
&= \frac{13924 (bc - ad)^2 g^2 (c + dx)^3 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)}{3 d^3} \\
&= \frac{13924 (bc - ad)^2 g^2 (c + dx)^3 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)}{3 d^3} \\
&= -\frac{6962 B (bc - ad)^4 g^2 n x}{15 b^2 d^2} - \frac{3481 B (bc - ad)^3 g^2 n (c + dx)}{15 b d^3}
\end{aligned}$$

Mathematica [A] time = 0.28, size = 374, normalized size = 1.06

$$g^2 i^2 \left(12 d^5 (a + bx)^5 \left(B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) + A \right) + 30 d^4 (a + bx)^4 (bc - ad) \left(B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) + A \right) + 20 d^3 (a + bx)^3 (bc - ad)^2 \left(B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) + A \right) \right)$$

Antiderivative was successfully verified.

[In] Integrate[(a*g + b*g*x)^2*(c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]),x]

[Out] (g^2*i^2*(20*d^3*(b*c - a*d)^2*(a + b*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 30*d^4*(b*c - a*d)*(a + b*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 12*d^5*(a + b*x)^5*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 10*B*(b*c - a*d)^3*n*(2*b*d*(b*c - a*d)*x - d^2*(a + b*x)^2 - 2*(b*c - a*d)^2*Log[c + d*x]) - 5*B*(b*c - a*d)^2*n*(6*b*d*(b*c - a*d)^2*x + 3*d^2*(-(b*c) + a*d)*(a + b*x)^2 + 2*d^3*(a + b*x)^3 - 6*(b*c - a*d)^3*Log[c + d*x]) + B*(b*c - a*d)*n*(12*b*d*(b*c - a*d)^3*x - 6*d^2*(b*c - a*d)^2*(a + b*x)^2 + 4*d^3*(b*c - a*d)*(a + b*x)^3 - 3*d^4*(a + b*x)^4 - 12*(b*c - a*d)^4*Log[c + d*x]))/(60*b^3*d^3)

fricas [B] time = 1.16, size = 774, normalized size = 2.20

$$12 Ab^5 d^5 g^2 i^2 x^5 + 2 (10 Ba^3 b^2 c^2 d^3 - 5 Ba^4 bcd^4 + Ba^5 d^5) g^2 i^2 n \log(bx + a) - 2 (Bb^5 c^5 - 5 Bab^4 c^4 d + 10 Ba^2 b^3 c^3 d^2)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="fricas")

[Out] 1/60*(12*A*b^5*d^5*g^2*i^2*x^5 + 2*(10*B*a^3*b^2*c^2*d^3 - 5*B*a^4*b*c*d^4 + B*a^5*d^5)*g^2*i^2*n*log(b*x + a) - 2*(B*b^5*c^5 - 5*B*a*b^4*c^4*d + 10*B*a^2*b^3*c^3*d^2)*g^2*i^2*n*log(d*x + c) - 3*((B*b^5*c*d^4 - B*a*b^4*d^5)*g^2*i^2*n - 10*(A*b^5*c*d^4 + A*a*b^4*d^5)*g^2*i^2)*x^4 - 2*(3*(B*b^5*c^2*d^3 - B*a^2*b^3*d^5)*g^2*i^2*n - 10*(A*b^5*c^2*d^3 + 4*A*a*b^4*c*d^4 + A*a^2*b^3*d^5)*g^2*i^2)*x^3 - ((B*b^5*c^3*d^2 + 15*B*a*b^4*c^2*d^3 - 15*B*a^2*b^3*c*d^4 - B*a^3*b^2*d^5)*g^2*i^2*n - 60*(A*a*b^4*c^2*d^3 + A*a^2*b^3*c*d^4)*g^2*i^2)*x^2 + 2*(30*A*a^2*b^3*c^2*d^3*g^2*i^2 + (B*b^5*c^4*d - 5*B*a*b^4*c^3*d^2 + 5*B*a^3*b^2*c*d^4 - B*a^4*b*d^5)*g^2*i^2*n)*x + 2*(6*B*b^5*d^5*g^2*i^2*x^5 + 30*B*a^2*b^3*c^2*d^3*g^2*i^2*x + 15*(B*b^5*c*d^4 + B*a*b^4*d^5)*g^2*i^2*x^4 + 10*(B*b^5*c^2*d^3 + 4*B*a*b^4*c*d^4 + B*a^2*b^3*d^5)*g^2*i^2*x^3 + 30*(B*a*b^4*c^2*d^3 + B*a^2*b^3*c*d^4)*g^2*i^2*x^2)*log(e) + 2*(6*B*b^5*d^5*g^2*i^2*n*x^5 + 30*B*a^2*b^3*c^2*d^3*g^2*i^2*n*x + 15*(B*b^5*c*d^4 + B*a*b^4*d^5)*g^2*i^2*n*x^4 + 10*(B*b^5*c^2*d^3 + 4*B*a*b^4*c*d^4 + B*a^2*b^3*d^5)*g^2*i^2*n*x^3 + 30*(B*a*b^4*c^2*d^3 + B*a^2*b^3*c*d^4)*g^2*i^2*n*x^2)*log((b*x + a)/(d*x + c)))/(b^3*d^3)

giac [B] time = 7.34, size = 2995, normalized size = 8.51

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="giac")

[Out] -1/60*(2*(B*b^8*c^6*g^2*n - 6*B*a*b^7*c^5*d*g^2*n - 5*(b*x + a)*B*b^7*c^6*d*g^2*n)/(d*x + c) + 15*B*a^2*b^6*c^4*d^2*g^2*n + 30*(b*x + a)*B*a*b^6*c^5*d^2*g^2*n/(d*x + c) + 10*(b*x + a)^2*B*b^6*c^6*d^2*g^2*n/(d*x + c)^2 - 20*B*a^3*b^5*c^3*d^3*g^2*n - 75*(b*x + a)*B*a^2*b^5*c^4*d^3*g^2*n/(d*x + c) - 60*(b*x + a)^2*B*a*b^5*c^5*d^3*g^2*n/(d*x + c)^2 + 15*B*a^4*b^4*c^2*d^4*g^2*n + 100*(b*x + a)*B*a^3*b^4*c^3*d^4*g^2*n/(d*x + c) + 150*(b*x + a)^2*B*a^2*b^4*c^4*d^4*g^2*n/(d*x + c)^2 - 6*B*a^5*b^3*c*d^5*g^2*n - 75*(b*x + a)*B*a^4*b^3*c^2*d^5*g^2*n/(d*x + c) - 200*(b*x + a)^2*B*a^3*b^3*c^3*d^5*g^2*n/(d*x + c)^2 + B*a^6*b^2*d^6*g^2*n + 30*(b*x + a)*B*a^5*b^2*c*d^6*g^2*n/(d*x + c)

$$\begin{aligned}
&) + 150*(b*x + a)^2*B*a^4*b^2*c^2*d^6*g^2*n/(d*x + c)^2 - 5*(b*x + a)*B*a^6 \\
& *b*d^7*g^2*n/(d*x + c) - 60*(b*x + a)^2*B*a^5*b*c*d^7*g^2*n/(d*x + c)^2 + 1 \\
& 0*(b*x + a)^2*B*a^6*d^8*g^2*n/(d*x + c)^2*\log((b*x + a)/(d*x + c))/(b^5*d^ \\
& 3 - 5*(b*x + a)*b^4*d^4/(d*x + c) + 10*(b*x + a)^2*b^3*d^5/(d*x + c)^2 - 10 \\
& *(b*x + a)^3*b^2*d^6/(d*x + c)^3 + 5*(b*x + a)^4*b*d^7/(d*x + c)^4 - (b*x + \\
& a)^5*d^8/(d*x + c)^5 + (2*(b*x + a)*B*b^9*c^6*d*g^2*n/(d*x + c) - 12*(b*x \\
& + a)*B*a*b^8*c^5*d^2*g^2*n/(d*x + c) - 9*(b*x + a)^2*B*b^8*c^6*d^2*g^2*n/(\\
& d*x + c)^2 + 30*(b*x + a)*B*a^2*b^7*c^4*d^3*g^2*n/(d*x + c) + 54*(b*x + a)^ \\
& 2*B*a*b^7*c^5*d^3*g^2*n/(d*x + c)^2 + 9*(b*x + a)^3*B*b^7*c^6*d^3*g^2*n/(d* \\
& x + c)^3 - 40*(b*x + a)*B*a^3*b^6*c^3*d^4*g^2*n/(d*x + c) - 135*(b*x + a)^2 \\
& *B*a^2*b^6*c^4*d^4*g^2*n/(d*x + c)^2 - 54*(b*x + a)^3*B*a*b^6*c^5*d^4*g^2*n \\
& /(d*x + c)^3 - 2*(b*x + a)^4*B*b^6*c^6*d^4*g^2*n/(d*x + c)^4 + 30*(b*x + a) \\
& *B*a^4*b^5*c^2*d^5*g^2*n/(d*x + c) + 180*(b*x + a)^2*B*a^3*b^5*c^3*d^5*g^2*n \\
& n/(d*x + c)^2 + 135*(b*x + a)^3*B*a^2*b^5*c^4*d^5*g^2*n/(d*x + c)^3 + 12*(b \\
& *x + a)^4*B*a*b^5*c^5*d^5*g^2*n/(d*x + c)^4 - 12*(b*x + a)*B*a^5*b^4*c*d^6* \\
& g^2*n/(d*x + c) - 135*(b*x + a)^2*B*a^4*b^4*c^2*d^6*g^2*n/(d*x + c)^2 - 180 \\
& *(b*x + a)^3*B*a^3*b^4*c^3*d^6*g^2*n/(d*x + c)^3 - 30*(b*x + a)^4*B*a^2*b^4 \\
& *c^4*d^6*g^2*n/(d*x + c)^4 + 2*(b*x + a)*B*a^6*b^3*d^7*g^2*n/(d*x + c) + 54 \\
& *(b*x + a)^2*B*a^5*b^3*c*d^7*g^2*n/(d*x + c)^2 + 135*(b*x + a)^3*B*a^4*b^3* \\
& c^2*d^7*g^2*n/(d*x + c)^3 + 40*(b*x + a)^4*B*a^3*b^3*c^3*d^7*g^2*n/(d*x + c \\
&)^4 - 9*(b*x + a)^2*B*a^6*b^2*d^8*g^2*n/(d*x + c)^2 - 54*(b*x + a)^3*B*a^5* \\
& b^2*c*d^8*g^2*n/(d*x + c)^3 - 30*(b*x + a)^4*B*a^4*b^2*c^2*d^8*g^2*n/(d*x + \\
& c)^4 + 9*(b*x + a)^3*B*a^6*b*d^9*g^2*n/(d*x + c)^3 + 12*(b*x + a)^4*B*a^5* \\
& b*c*d^9*g^2*n/(d*x + c)^4 - 2*(b*x + a)^4*B*a^6*d^10*g^2*n/(d*x + c)^4 + 2* \\
& A*b^10*c^6*g^2 + 2*B*b^10*c^6*g^2 - 12*A*a*b^9*c^5*d*g^2 - 12*B*a*b^9*c^5*d \\
& *g^2 - 10*(b*x + a)*A*b^9*c^6*d*g^2/(d*x + c) - 10*(b*x + a)*B*b^9*c^6*d*g^ \\
& 2/(d*x + c) + 30*A*a^2*b^8*c^4*d^2*g^2 + 30*B*a^2*b^8*c^4*d^2*g^2 + 60*(b*x \\
& + a)*A*a*b^8*c^5*d^2*g^2/(d*x + c) + 60*(b*x + a)*B*a*b^8*c^5*d^2*g^2/(d*x \\
& + c) + 20*(b*x + a)^2*A*b^8*c^6*d^2*g^2/(d*x + c)^2 + 20*(b*x + a)^2*B*b^8 \\
& *c^6*d^2*g^2/(d*x + c)^2 - 40*A*a^3*b^7*c^3*d^3*g^2 - 40*B*a^3*b^7*c^3*d^3* \\
& g^2 - 150*(b*x + a)*A*a^2*b^7*c^4*d^3*g^2/(d*x + c) - 150*(b*x + a)*B*a^2*b \\
& ^7*c^4*d^3*g^2/(d*x + c) - 120*(b*x + a)^2*A*a*b^7*c^5*d^3*g^2/(d*x + c)^2 \\
& - 120*(b*x + a)^2*B*a*b^7*c^5*d^3*g^2/(d*x + c)^2 + 30*A*a^4*b^6*c^2*d^4*g^ \\
& 2 + 30*B*a^4*b^6*c^2*d^4*g^2 + 200*(b*x + a)*A*a^3*b^6*c^3*d^4*g^2/(d*x + c \\
&) + 200*(b*x + a)*B*a^3*b^6*c^3*d^4*g^2/(d*x + c) + 300*(b*x + a)^2*A*a^2*b \\
& ^6*c^4*d^4*g^2/(d*x + c)^2 + 300*(b*x + a)^2*B*a^2*b^6*c^4*d^4*g^2/(d*x + c \\
&)^2 - 12*A*a^5*b^5*c*d^5*g^2 - 12*B*a^5*b^5*c*d^5*g^2 - 150*(b*x + a)*A*a^4 \\
& *b^5*c^2*d^5*g^2/(d*x + c) - 150*(b*x + a)*B*a^4*b^5*c^2*d^5*g^2/(d*x + c) \\
& - 400*(b*x + a)^2*A*a^3*b^5*c^3*d^5*g^2/(d*x + c)^2 - 400*(b*x + a)^2*B*a^3 \\
& *b^5*c^3*d^5*g^2/(d*x + c)^2 + 2*A*a^6*b^4*d^6*g^2 + 2*B*a^6*b^4*d^6*g^2 + \\
& 60*(b*x + a)*A*a^5*b^4*c*d^6*g^2/(d*x + c) + 60*(b*x + a)*B*a^5*b^4*c*d^6*g \\
& ^2/(d*x + c) + 300*(b*x + a)^2*A*a^4*b^4*c^2*d^6*g^2/(d*x + c)^2 + 300*(b*x \\
& + a)^2*B*a^4*b^4*c^2*d^6*g^2/(d*x + c)^2 - 10*(b*x + a)*A*a^6*b^3*d^7*g^2/ \\
& (d*x + c) - 10*(b*x + a)*B*a^6*b^3*d^7*g^2/(d*x + c) - 120*(b*x + a)^2*A*a^ \\
& 5*b^3*c*d^7*g^2/(d*x + c)^2 - 120*(b*x + a)^2*B*a^5*b^3*c*d^7*g^2/(d*x + c)
\end{aligned}$$

$$\begin{aligned} &^2 + 20*(b*x + a)^2*A*a^6*b^2*d^8*g^2/(d*x + c)^2 + 20*(b*x + a)^2*B*a^6*b^2*d^8*g^2/(d*x + c)^2/(b^7*d^3 - 5*(b*x + a)*b^6*d^4/(d*x + c) + 10*(b*x + a)^2*b^5*d^5/(d*x + c)^2 - 10*(b*x + a)^3*b^4*d^6/(d*x + c)^3 + 5*(b*x + a)^4*b^3*d^7/(d*x + c)^4 - (b*x + a)^5*b^2*d^8/(d*x + c)^5) + 2*(B*b^6*c^6*g^2*n - 6*B*a*b^5*c^5*d*g^2*n + 15*B*a^2*b^4*c^4*d^2*g^2*n - 20*B*a^3*b^3*c^3*d^3*g^2*n + 15*B*a^4*b^2*c^2*d^4*g^2*n - 6*B*a^5*b*c*d^5*g^2*n + B*a^6*d^6*g^2*n)*\log(b - (b*x + a)*d/(d*x + c))/(b^3*d^3) - 2*(B*b^6*c^6*g^2*n - 6*B*a*b^5*c^5*d*g^2*n + 15*B*a^2*b^4*c^4*d^2*g^2*n - 20*B*a^3*b^3*c^3*d^3*g^2*n + 15*B*a^4*b^2*c^2*d^4*g^2*n - 6*B*a^5*b*c*d^5*g^2*n + B*a^6*d^6*g^2*n)*\log((b*x + a)/(d*x + c))/(b^3*d^3))*(b*c/(b*c - a*d)^2 - a*d/(b*c - a*d)^2) \end{aligned}$$

maple [F] time = 0.44, size = 0, normalized size = 0.00

$$\int (bgx + ag)^2 (dix + ci)^2 \left(B \ln \left(e \left(\frac{bx + a}{dx + c} \right)^n \right) + A \right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)^2*(d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)

[Out] int((b*g*x+a*g)^2*(d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)

maxima [B] time = 1.43, size = 1336, normalized size = 3.80

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="maxima")

[Out] $\frac{1}{5}B*b^2*d^2*g^2*i^2*x^5*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + \frac{1}{5}A*b^2*d^2*g^2*i^2*x^5 + \frac{1}{2}B*b^2*c*d*g^2*i^2*x^4*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + \frac{1}{2}B*a*b*d^2*g^2*i^2*x^4*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + \frac{1}{2}A*b^2*c*d*g^2*i^2*x^4 + \frac{1}{2}A*a*b*d^2*g^2*i^2*x^4 + \frac{1}{3}B*b^2*c^2*g^2*i^2*x^3*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + \frac{4}{3}B*a*b*c*d*g^2*i^2*x^3*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + \frac{1}{3}B*a^2*d^2*g^2*i^2*x^3*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + \frac{1}{3}A*b^2*c^2*g^2*i^2*x^3 + \frac{4}{3}A*a*b*c*d*g^2*i^2*x^3 + \frac{1}{3}A*a^2*d^2*g^2*i^2*x^3 + B*a*b*c^2*g^2*i^2*x^2*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + B*a^2*c*d*g^2*i^2*x^2*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A*a*b*c^2*g^2*i^2*x^2 + A*a^2*c*d*g^2*i^2*x^2 + \frac{1}{60}B*b^2*d^2*g^2*i^2*n*(12*a^5*\log(b*x + a)/b^5 - 12*c^5*\log(d*x + c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4*c^2*d^2 - a^2*b^2*d^4)*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 - a^4*d^4)*x)/(b^4*d^4)) - \frac{1}{12}B*b^2*c*d*g^2*i^2*n*(6*a^4*\log(b*x + a)/b^4 - 6*c^4*\log(d*x + c)/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x - 3*(b^3*c^4 - a^4*d^4))/b^4*d^4) + \frac{1}{12}A*b^2*c*d*g^2*i^2*n*(6*a^4*\log(b*x + a)/b^4 - 6*c^4*\log(d*x + c)/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x - 3*(b^3*c^4 - a^4*d^4))/b^4*d^4)$

$$\begin{aligned} & x)/(b^3*d^3)) - 1/12*B*a*b*d^2*g^2*i^2*n*(6*a^4*\log(b*x + a)/b^4 - 6*c^4*\log(d*x + c)/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3) \\ & *x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3)) + 1/6*B*b^2*c^2*g^2*i^2*n*(2*a^3 \\ & *\log(b*x + a)/b^3 - 2*c^3*\log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(\\ & b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) + 2/3*B*a*b*c*d*g^2*i^2*n*(2*a^3*\log(b*x + \\ & a)/b^3 - 2*c^3*\log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - \\ & a^2*d^2)*x)/(b^2*d^2)) + 1/6*B*a^2*d^2*g^2*i^2*n*(2*a^3*\log(b*x + a)/b^3 - \\ & 2*c^3*\log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x \\ &)/(b^2*d^2)) - B*a*b*c^2*g^2*i^2*n*(a^2*\log(b*x + a)/b^2 - c^2*\log(d*x + c) \\ & /d^2 + (b*c - a*d)*x/(b*d)) - B*a^2*c*d*g^2*i^2*n*(a^2*\log(b*x + a)/b^2 - c \\ & ^2*\log(d*x + c)/d^2 + (b*c - a*d)*x/(b*d)) + B*a^2*c^2*g^2*i^2*n*(a*\log(b*x \\ & + a)/b - c*\log(d*x + c)/d) + B*a^2*c^2*g^2*i^2*x*\log(e*(b*x/(d*x + c) + a/ \\ & (d*x + c))^n) + A*a^2*c^2*g^2*i^2*x \end{aligned}$$

mupad [B] time = 5.14, size = 1328, normalized size = 3.77

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{int}((a*g + b*g*x)^2*(c*i + d*i*x)^2*(A + B*\log(e*((a + b*x)/(c + d*x))^n)), x)$

[Out]
$$\begin{aligned} & x^2*(((30*a*d + 30*b*c)*(((b*d*g^2*i^2*(15*A*a*d + 15*A*b*c + B*a*d*n - B* \\ & b*c*n))/5 - (A*b*d*g^2*i^2*(30*a*d + 30*b*c))/30)*(30*a*d + 30*b*c))/(30*b* \\ & d) - (g^2*i^2*(6*A*a^2*d^2 + 6*A*b^2*c^2 + B*a^2*d^2*n - B*b^2*c^2*n + 18*A \\ & *a*b*c*d))/2 + A*a*b*c*d*g^2*i^2))/(60*b*d) - (a*c*((b*d*g^2*i^2*(15*A*a*d \\ & + 15*A*b*c + B*a*d*n - B*b*c*n))/5 - (A*b*d*g^2*i^2*(30*a*d + 30*b*c))/30)) \\ & /((2*b*d) + (g^2*i^2*(3*A*a^3*d^3 + 3*A*b^3*c^3 + B*a^3*d^3*n - B*b^3*c^3*n \\ & + 27*A*a*b^2*c^2*d + 27*A*a^2*b*c*d^2 - 3*B*a*b^2*c^2*d*n + 3*B*a^2*b*c*d^2 \\ & *n))/(6*b*d)) + \log(e*((a + b*x)/(c + d*x))^n)*((B*g^2*i^2*x^3*(a^2*d^2 + b \\ & ^2*c^2 + 4*a*b*c*d))/3 + B*a^2*c^2*g^2*i^2*x + (B*b^2*d^2*g^2*i^2*x^5)/5 + \\ & B*a*c*g^2*i^2*x^2*(a*d + b*c) + (B*b*d*g^2*i^2*x^4*(a*d + b*c))/2) - x^3*((\\ & ((b*d*g^2*i^2*(15*A*a*d + 15*A*b*c + B*a*d*n - B*b*c*n))/5 - (A*b*d*g^2*i^2 \\ & *(30*a*d + 30*b*c))/30)*(30*a*d + 30*b*c))/(90*b*d) - (g^2*i^2*(6*A*a^2*d^2 \\ & + 6*A*b^2*c^2 + B*a^2*d^2*n - B*b^2*c^2*n + 18*A*a*b*c*d))/6 + (A*a*b*c*d* \\ & g^2*i^2)/3) + x*((a*c*((b*d*g^2*i^2*(15*A*a*d + 15*A*b*c + B*a*d*n - B*b* \\ & c*n))/5 - (A*b*d*g^2*i^2*(30*a*d + 30*b*c))/30)*(30*a*d + 30*b*c))/(30*b*d) \\ & - (g^2*i^2*(6*A*a^2*d^2 + 6*A*b^2*c^2 + B*a^2*d^2*n - B*b^2*c^2*n + 18*A*a \\ & *b*c*d))/2 + A*a*b*c*d*g^2*i^2))/(b*d) - ((30*a*d + 30*b*c)*(((30*a*d + 30* \\ & b*c)*(((b*d*g^2*i^2*(15*A*a*d + 15*A*b*c + B*a*d*n - B*b*c*n))/5 - (A*b*d* \\ & g^2*i^2*(30*a*d + 30*b*c))/30)*(30*a*d + 30*b*c))/(30*b*d) - (g^2*i^2*(6*A \\ & a^2*d^2 + 6*A*b^2*c^2 + B*a^2*d^2*n - B*b^2*c^2*n + 18*A*a*b*c*d))/2 + A*a \\ & b*c*d*g^2*i^2))/(30*b*d) - (a*c*((b*d*g^2*i^2*(15*A*a*d + 15*A*b*c + B*a*d* \\ & n - B*b*c*n))/5 - (A*b*d*g^2*i^2*(30*a*d + 30*b*c))/30))/(b*d) + (g^2*i^2*(\\ & 3*A*a^3*d^3 + 3*A*b^3*c^3 + B*a^3*d^3*n - B*b^3*c^3*n + 27*A*a*b^2*c^2*d + \end{aligned}$$

$$27*A*a^2*b*c*d^2 - 3*B*a*b^2*c^2*d^n + 3*B*a^2*b*c*d^2*n)/(3*b*d)))/(30*b*d) + (a*c*g^2*i^2*(3*A*a^2*d^2 + 3*A*b^2*c^2 + B*a^2*d^2*n - B*b^2*c^2*n + 9*A*a*b*c*d))/(b*d) + x^4*((b*d*g^2*i^2*(15*A*a*d + 15*A*b*c + B*a*d*n - B*b*c*n))/20 - (A*b*d*g^2*i^2*(30*a*d + 30*b*c))/120) + (\log(a + b*x)*(B*a^5*d^2*g^2*i^2*n + 10*B*a^3*b^2*c^2*g^2*i^2*n - 5*B*a^4*b*c*d*g^2*i^2*n))/(30*b^3) - (\log(c + d*x)*(B*b^2*c^5*g^2*i^2*n + 10*B*a^2*c^3*d^2*g^2*i^2*n - 5*B*a*b*c^4*d*g^2*i^2*n))/(30*d^3) + (A*b^2*d^2*g^2*i^2*x^5)/5$$

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)**2*(d*i*x+c*i)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n)),x)

[Out] Timed out

$$3.119 \quad \int (ag+bgx)(ci+dix)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) dx$$

Optimal. Leaf size=250

$$\frac{gi^2(c+dx)^3(bc-ad) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{3d^2} + \frac{bgi^2(c+dx)^4 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{4d^2} + \frac{Bgi^2n(bc-ad)^4 \log \left(\frac{a}{c} \right)}{12b^3d^2}$$

[Out] $1/12*B*(-a*d+b*c)^3*g*i^2*n*x/b^2/d+1/24*B*(-a*d+b*c)^2*g*i^2*n*(d*x+c)^2/b/d^2-1/12*B*(-a*d+b*c)*g*i^2*n*(d*x+c)^3/d^2-1/3*(-a*d+b*c)*g*i^2*(d*x+c)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/d^2+1/4*b*g*i^2*(d*x+c)^4*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/d^2+1/12*B*(-a*d+b*c)^4*g*i^2*n*\ln((b*x+a)/(d*x+c))/b^3/d^2+1/12*B*(-a*d+b*c)^4*g*i^2*n*\ln(d*x+c)/b^3/d^2$

Rubi [A] time = 0.35, antiderivative size = 210, normalized size of antiderivative = 0.84, number of steps used = 10, number of rules used = 4, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}} = 0.098$, Rules used = {2528, 2525, 12, 43}

$$\frac{gi^2(c+dx)^3(bc-ad) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{3d^2} + \frac{bgi^2(c+dx)^4 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{4d^2} + \frac{Bgi^2n(bc-ad)^4 \log \left(\frac{a}{c} \right)}{12b^3d^2}$$

Antiderivative was successfully verified.

[In] $\text{Int}[(a*g + b*g*x)*(c*i + d*i*x)^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]),x]$

[Out] $(B*(b*c - a*d)^3*g*i^2*n*x)/(12*b^2*d) + (B*(b*c - a*d)^2*g*i^2*n*(c + d*x)^2)/(24*b*d^2) - (B*(b*c - a*d)*g*i^2*n*(c + d*x)^3)/(12*d^2) + (B*(b*c - a*d)^4*g*i^2*n*\text{Log}[a + b*x])/(12*b^3*d^2) - ((b*c - a*d)*g*i^2*(c + d*x)^3*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(3*d^2) + (b*g*i^2*(c + d*x)^4*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(4*d^2)$

Rule 12

$\text{Int}[(a_*)(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] /;$ FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 43

$\text{Int}[(a_. + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] \rightarrow \text{Int}[\text{ExpandIntegrand}[(a + b*x)^m*(c + d*x)^n, x], x] /;$ FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && (!IntegerQ[n] || (EqQ[c, 0] && LeQ[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])

Rule 2525

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_.))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int (119c + 119dx)^2 (ag + bgx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) dx &= \int \frac{(-bc + ad)g(119c + 119dx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{d} dx \\
&= \frac{(bg) \int (119c + 119dx)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) dx}{119d} \\
&= -\frac{14161(bc - ad)g(c + dx)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{3d^2} \\
&= -\frac{14161(bc - ad)g(c + dx)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{3d^2} \\
&= -\frac{14161(bc - ad)g(c + dx)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{3d^2} \\
&= \frac{14161B(bc - ad)^3 gnx}{12b^2d} + \frac{14161B(bc - ad)^2 gn(c + d)}{24bd^2}
\end{aligned}$$

Mathematica [A] time = 0.20, size = 224, normalized size = 0.90

$$\frac{gi^2 \left(6b(c+dx)^4 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right) - 8(c+dx)^3(bc-ad) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right) + \frac{4Bn(bc-ad)^2(2bdx(bc-ad)+2)}{24d^2} \right)}{24d^2}$$

Antiderivative was successfully verified.

[In] Integrate[(a*g + b*g*x)*(c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]),x]

[Out] (g*i^2*((4*B*(b*c - a*d)^2*n*(2*b*d*(b*c - a*d)*x + b^2*(c + d*x)^2 + 2*(b*c - a*d)^2*Log[a + b*x]))/b^3 - (B*(b*c - a*d)*n*(6*b*d*(b*c - a*d)^2*x + 3*b^2*(b*c - a*d)*(c + d*x)^2 + 2*b^3*(c + d*x)^3 + 6*(b*c - a*d)^3*Log[a + b*x]))/b^3 - 8*(b*c - a*d)*(c + d*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 6*b*(c + d*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(24*d^2)

fricas [B] time = 0.83, size = 530, normalized size = 2.12

$$6Ab^4d^4gi^2x^4 + 2(6Ba^2b^2c^2d^2 - 4Ba^3bcd^3 + Ba^4d^4)gi^2n \log(bx + a) + 2(Bb^4c^4 - 4Bab^3c^3d)gi^2n \log(dx + c)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="fricas")

[Out] 1/24*(6*A*b^4*d^4*g*i^2*x^4 + 2*(6*B*a^2*b^2*c^2*d^2 - 4*B*a^3*b*c*d^3 + B*a^4*d^4)*g*i^2*n*log(b*x + a) + 2*(B*b^4*c^4 - 4*B*a*b^3*c^3*d)*g*i^2*n*log(d*x + c) - 2*((B*b^4*c*d^3 - B*a*b^3*d^4)*g*i^2*n - 4*(2*A*b^4*c*d^3 + A*a*b^3*d^4)*g*i^2)*x^3 - ((5*B*b^4*c^2*d^2 - 4*B*a*b^3*c*d^3 - B*a^2*b^2*d^4)*g*i^2*n - 12*(A*b^4*c^2*d^2 + 2*A*a*b^3*c*d^3)*g*i^2)*x^2 + 2*(12*A*a*b^3*c^2*d^2*g*i^2 - (B*b^4*c^3*d + 2*B*a*b^3*c^2*d^2 - 4*B*a^2*b^2*c*d^3 + B*a^3*b*d^4)*g*i^2*n)*x + 2*(3*B*b^4*d^4*g*i^2*x^4 + 12*B*a*b^3*c^2*d^2*g*i^2*x + 4*(2*B*b^4*c*d^3 + B*a*b^3*d^4)*g*i^2*x^3 + 6*(B*b^4*c^2*d^2 + 2*B*a*b^3*c*d^3)*g*i^2*x^2)*log(e) + 2*(3*B*b^4*d^4*g*i^2*n*x^4 + 12*B*a*b^3*c^2*d^2*g*i^2*n*x + 4*(2*B*b^4*c*d^3 + B*a*b^3*d^4)*g*i^2*n*x^3 + 6*(B*b^4*c^2*d^2 + 2*B*a*b^3*c*d^3)*g*i^2*n*x^2)*log((b*x + a)/(d*x + c)))/(b^3*d^2)

giac [B] time = 3.88, size = 1757, normalized size = 7.03

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="giac")

```
[Out] 1/24*(2*(B*b^6*c^5*g*n - 5*B*a*b^5*c^4*d*g*n - 4*(b*x + a)*B*b^5*c^5*d*g*n/
(dx + c) + 10*B*a^2*b^4*c^3*d^2*g*n + 20*(b*x + a)*B*a*b^4*c^4*d^2*g*n/(d*
x + c) - 10*B*a^3*b^3*c^2*d^3*g*n - 40*(b*x + a)*B*a^2*b^3*c^3*d^3*g*n/(d*x
+ c) + 5*B*a^4*b^2*c*d^4*g*n + 40*(b*x + a)*B*a^3*b^2*c^2*d^4*g*n/(d*x + c
) - B*a^5*b*d^5*g*n - 20*(b*x + a)*B*a^4*b*c*d^5*g*n/(d*x + c) + 4*(b*x + a
)*B*a^5*d^6*g*n/(d*x + c))*log((b*x + a)/(d*x + c))/(b^4*d^2 - 4*(b*x + a)*
b^3*d^3/(d*x + c) + 6*(b*x + a)^2*b^2*d^4/(d*x + c)^2 - 4*(b*x + a)^3*b*d^5
/(d*x + c)^3 + (b*x + a)^4*d^6/(d*x + c)^4) - (B*b^8*c^5*g*n - 5*B*a*b^7*c^
4*d*g*n - 6*(b*x + a)*B*b^7*c^5*d*g*n/(d*x + c) + 10*B*a^2*b^6*c^3*d^2*g*n
+ 30*(b*x + a)*B*a*b^6*c^4*d^2*g*n/(d*x + c) + 7*(b*x + a)^2*B*b^6*c^5*d^2*
g*n/(d*x + c)^2 - 10*B*a^3*b^5*c^2*d^3*g*n - 60*(b*x + a)*B*a^2*b^5*c^3*d^3
*g*n/(d*x + c) - 35*(b*x + a)^2*B*a*b^5*c^4*d^3*g*n/(d*x + c)^2 - 2*(b*x +
a)^3*B*b^5*c^5*d^3*g*n/(d*x + c)^3 + 5*B*a^4*b^4*c*d^4*g*n + 60*(b*x + a)*B
*a^3*b^4*c^2*d^4*g*n/(d*x + c) + 70*(b*x + a)^2*B*a^2*b^4*c^3*d^4*g*n/(d*x
+ c)^2 + 10*(b*x + a)^3*B*a*b^4*c^4*d^4*g*n/(d*x + c)^3 - B*a^5*b^3*d^5*g*n
- 30*(b*x + a)*B*a^4*b^3*c*d^5*g*n/(d*x + c) - 70*(b*x + a)^2*B*a^3*b^3*c^
2*d^5*g*n/(d*x + c)^2 - 20*(b*x + a)^3*B*a^2*b^3*c^3*d^5*g*n/(d*x + c)^3 +
6*(b*x + a)*B*a^5*b^2*d^6*g*n/(d*x + c) + 35*(b*x + a)^2*B*a^4*b^2*c*d^6*g*
n/(d*x + c)^2 + 20*(b*x + a)^3*B*a^3*b^2*c^2*d^6*g*n/(d*x + c)^3 - 7*(b*x +
a)^2*B*a^5*b*d^7*g*n/(d*x + c)^2 - 10*(b*x + a)^3*B*a^4*b*c*d^7*g*n/(d*x +
c)^3 + 2*(b*x + a)^3*B*a^5*d^8*g*n/(d*x + c)^3 - 2*A*b^8*c^5*g - 2*B*b^8*c
^5*g + 10*A*a*b^7*c^4*d*g + 10*B*a*b^7*c^4*d*g + 8*(b*x + a)*A*b^7*c^5*d*g/
(dx + c) + 8*(b*x + a)*B*b^7*c^5*d*g/(dx + c) - 20*A*a^2*b^6*c^3*d^2*g -
20*B*a^2*b^6*c^3*d^2*g - 40*(b*x + a)*A*a*b^6*c^4*d^2*g/(dx + c) - 40*(b*x
+ a)*B*a*b^6*c^4*d^2*g/(dx + c) + 20*A*a^3*b^5*c^2*d^3*g + 20*B*a^3*b^5*c
^2*d^3*g + 80*(b*x + a)*A*a^2*b^5*c^3*d^3*g/(dx + c) + 80*(b*x + a)*B*a^2*
b^5*c^3*d^3*g/(dx + c) - 10*A*a^4*b^4*c*d^4*g - 10*B*a^4*b^4*c*d^4*g - 80*
(b*x + a)*A*a^3*b^4*c^2*d^4*g/(dx + c) - 80*(b*x + a)*B*a^3*b^4*c^2*d^4*g/
(dx + c) + 2*A*a^5*b^3*d^5*g + 2*B*a^5*b^3*d^5*g + 40*(b*x + a)*A*a^4*b^3*
c*d^5*g/(dx + c) + 40*(b*x + a)*B*a^4*b^3*c*d^5*g/(dx + c) - 8*(b*x + a)*
A*a^5*b^2*d^6*g/(dx + c) - 8*(b*x + a)*B*a^5*b^2*d^6*g/(dx + c))/(b^6*d^2
- 4*(b*x + a)*b^5*d^3/(d*x + c) + 6*(b*x + a)^2*b^4*d^4/(d*x + c)^2 - 4*(b
*x + a)^3*b^3*d^5/(d*x + c)^3 + (b*x + a)^4*b^2*d^6/(d*x + c)^4) + 2*(B*b^5
*c^5*g*n - 5*B*a*b^4*c^4*d*g*n + 10*B*a^2*b^3*c^3*d^2*g*n - 10*B*a^3*b^2*c^
2*d^3*g*n + 5*B*a^4*b*c*d^4*g*n - B*a^5*d^5*g*n)*log(-b + (b*x + a)*d/(d*x
+ c))/(b^3*d^2) - 2*(B*b^5*c^5*g*n - 5*B*a*b^4*c^4*d*g*n + 10*B*a^2*b^3*c^3
*d^2*g*n - 10*B*a^3*b^2*c^2*d^3*g*n + 5*B*a^4*b*c*d^4*g*n - B*a^5*d^5*g*n)*
log((b*x + a)/(d*x + c))/(b^3*d^2))*(b*c/(b*c - a*d)^2 - a*d/(b*c - a*d)^2)
```

maple [F] time = 0.30, size = 0, normalized size = 0.00

$$\int (bgx + ag)(dix + ci)^2 \left(B \ln \left(e \left(\frac{bx + a}{dx + c} \right)^n \right) + A \right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)*(d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)

[Out] int((b*g*x+a*g)*(d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)

maxima [B] time = 1.37, size = 740, normalized size = 2.96

$$\frac{1}{4} B b d^2 g i^2 x^4 \log\left(e\left(\frac{b x}{d x+c}+\frac{a}{d x+c}\right)^n\right)+\frac{1}{4} A b d^2 g i^2 x^4+\frac{2}{3} B b c d g i^2 x^3 \log\left(e\left(\frac{b x}{d x+c}+\frac{a}{d x+c}\right)^n\right)+\frac{1}{3} B a d^2 g i^2 x^3 \log\left(e\left(\frac{b x}{d x+c}+\frac{a}{d x+c}\right)^n\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="maxima")

[Out] $\frac{1}{4} B b d^2 g i^2 x^4 \log\left(e\left(\frac{b x}{d x+c}+\frac{a}{d x+c}\right)^n\right)+\frac{1}{4} A b d^2 g i^2 x^4+\frac{2}{3} B b c d g i^2 x^3 \log\left(e\left(\frac{b x}{d x+c}+\frac{a}{d x+c}\right)^n\right)+\frac{1}{3} B a d^2 g i^2 x^3 \log\left(e\left(\frac{b x}{d x+c}+\frac{a}{d x+c}\right)^n\right)+\frac{2}{3} A b c d g i^2 x^3+\frac{1}{3} A a d^2 g i^2 x^3+\frac{1}{2} B b c^2 g i^2 x^2 \log\left(e\left(\frac{b x}{d x+c}+\frac{a}{d x+c}\right)^n\right)+B a c d g i^2 x^2 \log\left(e\left(\frac{b x}{d x+c}+\frac{a}{d x+c}\right)^n\right)+\frac{1}{2} A b c^2 g i^2 x^2+A a c d g i^2 x^2-\frac{1}{24} B b d^2 g i^2 x^2 n\left(6 a^4 \log(b x+a) / b^4-6 c^4 \log(d x+c) / d^4+\left(2\left(b^3 c d^2-a b^2 d^3\right) x^3-3\left(b^3 c^2 d-a^2 b d^3\right) x^2+6\left(b^3 c^3-a^3 d^3\right) x\right) / \left(b^3 d^3\right)\right)+\frac{1}{3} B b c d g i^2 x n\left(2 a^3 \log(b x+a) / b^3-2 c^3 \log(d x+c) / d^3-\left(\left(b^2 c d-a b d^2\right) x^2-2\left(b^2 c^2-a^2 d^2\right) x\right) / \left(b^2 d^2\right)\right)+\frac{1}{6} B a d^2 g i^2 x n\left(2 a^3 \log(b x+a) / b^3-2 c^3 \log(d x+c) / d^3-\left(\left(b^2 c d-a b d^2\right) x^2-2\left(b^2 c^2-a^2 d^2\right) x\right) / \left(b^2 d^2\right)\right)-\frac{1}{2} B b c^2 g i^2 x n\left(a^2 \log(b x+a) / b^2-c^2 \log(d x+c) / d^2+\left(b c-a d\right) x / \left(b d\right)\right)-B a c d g i^2 x n\left(a^2 \log(b x+a) / b^2-c^2 \log(d x+c) / d^2+\left(b c-a d\right) x / \left(b d\right)\right)+B a c^2 g i^2 x n\left(a \log(b x+a) / b-c \log(d x+c) / d\right)+B a c^2 g i^2 x \log\left(e\left(\frac{b x}{d x+c}+\frac{a}{d x+c}\right)^n\right)+A a c^2 g i^2 x$

mupad [B] time = 5.15, size = 661, normalized size = 2.64

$$\ln\left(e\left(\frac{a+b x}{c+d x}\right)^n\right)\left(B a c^2 g i^2 x+\frac{B c g i^2 x^2(2 a d+b c)}{2}+\frac{B d g i^2 x^3(a d+2 b c)}{3}+\frac{B b d^2 g i^2 x^4}{4}\right)+x^3\left(\frac{d g i^2(8 a^4 \log(b x+a) / b^4-8 c^4 \log(d x+c) / d^4+\left(2\left(b^3 c d^2-a b^2 d^3\right) x^3-3\left(b^3 c^2 d-a^2 b d^3\right) x^2+6\left(b^3 c^3-a^3 d^3\right) x\right) / \left(b^3 d^3\right)}{3}+\frac{2\left(b^2 c d-a b d^2\right) x^2-2\left(b^2 c^2-a^2 d^2\right) x}{2 b^2 d^2}+\frac{2\left(a^2 \log(b x+a) / b^2-c^2 \log(d x+c) / d^2+\left(b c-a d\right) x / \left(b d\right)\right)}{2}-\frac{2\left(a^2 \log(b x+a) / b^2-c^2 \log(d x+c) / d^2+\left(b c-a d\right) x / \left(b d\right)\right)}{2}+\frac{a \log(b x+a) / b-c \log(d x+c) / d}{1}+\frac{2\left(a^2 \log(b x+a) / b^2-c^2 \log(d x+c) / d^2+\left(b c-a d\right) x / \left(b d\right)\right)}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a*g + b*g*x)*(c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n)),x)

[Out] $\log\left(e\left(\frac{a+b x}{c+d x}\right)^n\right)\left(B a c^2 g i^2 x+\frac{B c g i^2 x^2(2 a d+b c)}{2}+\frac{B d g i^2 x^3(a d+2 b c)}{3}+\frac{B b d^2 g i^2 x^4}{4}\right)+x^3\left(\frac{d g i^2(8 a^4 \log(b x+a) / b^4-8 c^4 \log(d x+c) / d^4+\left(2\left(b^3 c d^2-a b^2 d^3\right) x^3-3\left(b^3 c^2 d-a^2 b d^3\right) x^2+6\left(b^3 c^3-a^3 d^3\right) x\right) / \left(b^3 d^3\right)}{3}+\frac{2\left(b^2 c d-a b d^2\right) x^2-2\left(b^2 c^2-a^2 d^2\right) x}{2 b^2 d^2}+\frac{2\left(a^2 \log(b x+a) / b^2-c^2 \log(d x+c) / d^2+\left(b c-a d\right) x / \left(b d\right)\right)}{2}-\frac{2\left(a^2 \log(b x+a) / b^2-c^2 \log(d x+c) / d^2+\left(b c-a d\right) x / \left(b d\right)\right)}{2}+\frac{a \log(b x+a) / b-c \log(d x+c) / d}{1}+\frac{2\left(a^2 \log(b x+a) / b^2-c^2 \log(d x+c) / d^2+\left(b c-a d\right) x / \left(b d\right)\right)}{2}\right)$

```

*g*i^2*(8*A*a*d + 12*A*b*c + B*a*d*n - B*b*c*n))/12 - (A*d*g*i^2*(12*a*d +
12*b*c))/36) + x*(((12*a*d + 12*b*c)*(((d*g*i^2*(8*A*a*d + 12*A*b*c + B*a*
d*n - B*b*c*n))/4 - (A*d*g*i^2*(12*a*d + 12*b*c))/12)*(12*a*d + 12*b*c))/(1
2*b*d) - (g*i^2*(3*A*a^2*d^2 + 9*A*b^2*c^2 + B*a^2*d^2*n - 2*B*b^2*c^2*n +
18*A*a*b*c*d + B*a*b*c*d*n))/(3*b) + A*a*c*d*g*i^2))/(12*b*d) - (a*c*((d*g*
i^2*(8*A*a*d + 12*A*b*c + B*a*d*n - B*b*c*n))/4 - (A*d*g*i^2*(12*a*d + 12*b
*c))/12))/(b*d) + (c*g*i^2*(6*A*a^2*d^2 + 2*A*b^2*c^2 + 2*B*a^2*d^2*n - B*b
^2*c^2*n + 12*A*a*b*c*d - B*a*b*c*d*n))/(2*b*d)) - x^2*(((d*g*i^2*(8*A*a*d
+ 12*A*b*c + B*a*d*n - B*b*c*n))/4 - (A*d*g*i^2*(12*a*d + 12*b*c))/12)*(12
*a*d + 12*b*c))/(24*b*d) - (g*i^2*(3*A*a^2*d^2 + 9*A*b^2*c^2 + B*a^2*d^2*n
- 2*B*b^2*c^2*n + 18*A*a*b*c*d + B*a*b*c*d*n))/(6*b) + (A*a*c*d*g*i^2)/2) +
(log(c + d*x)*(B*b*c^4*g*i^2*n - 4*B*a*c^3*d*g*i^2*n))/(12*d^2) + (log(a +
b*x)*(B*a^4*d^2*g*i^2*n + 6*B*a^2*b^2*c^2*g*i^2*n - 4*B*a^3*b*c*d*g*i^2*n)
)/(12*b^3) + (A*b*d^2*g*i^2*x^4)/4

```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n)),x)
```

```
[Out] Timed out
```

$$3.120 \quad \int (ci + dix)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) dx$$

Optimal. Leaf size=124

$$\frac{i^2(c+dx)^3 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{3d} - \frac{Bi^2n(bc-ad)^3 \log(a+bx)}{3b^3d} - \frac{Bi^2nx(bc-ad)^2}{3b^2} - \frac{Bi^2n(c+dx)^2(bc-ad)}{6bd}$$

[Out] $-1/3*B*(-a*d+b*c)^2*i^2*n*x/b^2-1/6*B*(-a*d+b*c)*i^2*n*(d*x+c)^2/b/d-1/3*B*(-a*d+b*c)^3*i^2*n*\ln(b*x+a)/b^3/d+1/3*i^2*(d*x+c)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/d$

Rubi [A] time = 0.07, antiderivative size = 124, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {2525, 12, 43}

$$\frac{i^2(c+dx)^3 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{3d} - \frac{Bi^2nx(bc-ad)^2}{3b^2} - \frac{Bi^2n(bc-ad)^3 \log(a+bx)}{3b^3d} - \frac{Bi^2n(c+dx)^2(bc-ad)}{6bd}$$

Antiderivative was successfully verified.

[In] Int[(c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]),x]

[Out] $-(B*(b*c - a*d)^2*i^2*n*x)/(3*b^2) - (B*(b*c - a*d)*i^2*n*(c + d*x)^2)/(6*b*d) - (B*(b*c - a*d)^3*i^2*n*\text{Log}[a + b*x])/(3*b^3*d) + (i^2*(c + d*x)^3*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(3*d)$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 43

Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && (!IntegerQ[n] || (EqQ[c, 0] && LeQ[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])

Rule 2525

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*

$a + b \cdot \text{Log}[c \cdot \text{RFX}^p]^{(n-1)} \cdot D[\text{RFX}, x] / \text{RFX}, x], x], x] /;$ FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFX, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]

Rubi steps

$$\begin{aligned} \int (120c + 120dx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) dx &= \frac{4800(c+dx)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{d} - \frac{(Bn) \int \frac{1728000(bc-ad)}{a+bx}}{360d} \\ &= \frac{4800(c+dx)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{d} - \frac{(4800B(bc-ad)n)}{d} \\ &= \frac{4800(c+dx)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{d} - \frac{(4800B(bc-ad)n)}{d} \\ &= -\frac{4800B(bc-ad)^2 nx}{b^2} - \frac{2400B(bc-ad)n(c+dx)^2}{bd} - \frac{4800B(bc-ad)n}{d} \end{aligned}$$

Mathematica [A] time = 0.05, size = 101, normalized size = 0.81

$$\frac{i^2 \left((c+dx)^3 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right) - \frac{Bn(bc-ad)(2bdx(bc-ad) + 2(bc-ad)^2 \log(a+bx) + b^2(c+dx)^2)}{2b^3} \right)}{3d}$$

Antiderivative was successfully verified.

[In] Integrate[(c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]),x]

[Out] (i^2*(-1/2*(B*(b*c - a*d)*n*(2*b*d*(b*c - a*d)*x + b^2*(c + d*x)^2 + 2*(b*c - a*d)^2*Log[a + b*x]))/b^3 + (c + d*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(3*d)

fricas [B] time = 0.89, size = 297, normalized size = 2.40

$$\frac{2Ab^3d^3i^2x^3 - 2Bb^3c^3i^2n \log(dx+c) + 2(3Bab^2c^2d - 3Ba^2bcd^2 + Ba^3d^3)i^2n \log(bx+a) + (6Ab^3cd^2i^2 - (Bb^3c^3i^2n))}{3d}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="fricas")


```
[Out] 1/6*(2*A*b^3*d^3*i^2*x^3 - 2*B*b^3*c^3*i^2*n*log(d*x + c) + 2*(3*B*a*b^2*c^2*d - 3*B*a^2*b*c*d^2 + B*a^3*d^3)*i^2*n*log(b*x + a) + (6*A*b^3*c*d^2*i^2 - (B*b^3*c*d^2 - B*a*b^2*d^3)*i^2*n)*x^2 + 2*(3*A*b^3*c^2*d*i^2 - (2*B*b^3*c^2*d - 3*B*a*b^2*c*d^2 + B*a^2*b*d^3)*i^2*n)*x + 2*(B*b^3*d^3*i^2*x^3 + 3*B*b^3*c*d^2*i^2*x^2 + 3*B*b^3*c^2*d*i^2*x)*log(e) + 2*(B*b^3*d^3*i^2*n*x^3 + 3*B*b^3*c*d^2*i^2*n*x^2 + 3*B*b^3*c^2*d*i^2*n*x)*log((b*x + a)/(d*x + c)))/(b^3*d)
```

giac [B] time = 1.60, size = 860, normalized size = 6.94

$$-\frac{1}{6} \left(\frac{2(Bb^4c^4n - 4Bab^3c^3dn + 6Ba^2b^2c^2d^2n - 4Ba^3bcd^3n + Ba^4d^4n) \log\left(\frac{bx+a}{dx+c}\right)}{b^3d - \frac{3(bx+a)b^2d^2}{dx+c} + \frac{3(bx+a)^2bd^3}{(dx+c)^2} - \frac{(bx+a)^3d^4}{(dx+c)^3}} - \frac{3Bb^6c^4n - 12Bab^5c^3dn - \frac{5}{6} \dots}{\dots} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="giac")
```

```
[Out] -1/6*(2*(B*b^4*c^4*n - 4*B*a*b^3*c^3*d*n + 6*B*a^2*b^2*c^2*d^2*n - 4*B*a^3*b*c*d^3*n + B*a^4*d^4*n)*log((b*x + a)/(d*x + c))/(b^3*d - 3*(b*x + a)*b^2*d^2/(d*x + c) + 3*(b*x + a)^2*b*d^3/(d*x + c)^2 - (b*x + a)^3*d^4/(d*x + c)^3) - (3*B*b^6*c^4*n - 12*B*a*b^5*c^3*d*n - 5*(b*x + a)*B*b^5*c^4*d*n/(d*x + c) + 18*B*a^2*b^4*c^2*d^2*n + 20*(b*x + a)*B*a*b^4*c^3*d^2*n/(d*x + c) + 2*(b*x + a)^2*B*b^4*c^4*d^2*n/(d*x + c)^2 - 12*B*a^3*b^3*c*d^3*n - 30*(b*x + a)*B*a^2*b^3*c^2*d^3*n/(d*x + c) - 8*(b*x + a)^2*B*a*b^3*c^3*d^3*n/(d*x + c)^2 + 3*B*a^4*b^2*d^4*n + 20*(b*x + a)*B*a^3*b^2*c*d^4*n/(d*x + c) + 12*(b*x + a)^2*B*a^2*b^2*c^2*d^4*n/(d*x + c)^2 - 5*(b*x + a)*B*a^4*b*d^5*n/(d*x + c) - 8*(b*x + a)^2*B*a^3*b*c*d^5*n/(d*x + c)^2 + 2*(b*x + a)^2*B*a^4*d^6*n/(d*x + c)^2 - 2*A*b^6*c^4 - 2*B*b^6*c^4 + 8*A*a*b^5*c^3*d + 8*B*a*b^5*c^3*d - 12*A*a^2*b^4*c^2*d^2 - 12*B*a^2*b^4*c^2*d^2 + 8*A*a^3*b^3*c*d^3 + 8*B*a^3*b^3*c*d^3 - 2*A*a^4*b^2*d^4 - 2*B*a^4*b^2*d^4)/(b^5*d - 3*(b*x + a)*b^4*d^2/(d*x + c) + 3*(b*x + a)^2*b^3*d^3/(d*x + c)^2 - (b*x + a)^3*b^2*d^4/(d*x + c)^3) + 2*(B*b^4*c^4*n - 4*B*a*b^3*c^3*d*n + 6*B*a^2*b^2*c^2*d^2*n - 4*B*a^3*b*c*d^3*n + B*a^4*d^4*n)*log(b - (b*x + a)*d/(d*x + c))/(b^3*d) - 2*(B*b^4*c^4*n - 4*B*a*b^3*c^3*d*n + 6*B*a^2*b^2*c^2*d^2*n - 4*B*a^3*b*c*d^3*n + B*a^4*d^4*n)*log((b*x + a)/(d*x + c))/(b^3*d)*(b*c/(b*c - a*d))^2 - a*d/(b*c - a*d)^2)
```

maple [F] time = 0.29, size = 0, normalized size = 0.00

$$\int (dix + ci)^2 \left(B \ln \left(e \left(\frac{bx + a}{dx + c} \right)^n \right) + A \right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)

[Out] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)

maxima [B] time = 1.18, size = 309, normalized size = 2.49

$$\frac{1}{3} B d^2 i^2 x^3 \log\left(e\left(\frac{b x}{d x+c}+\frac{a}{d x+c}\right)^n\right)+\frac{1}{3} A d^2 i^2 x^3+B c d i^2 x^2 \log\left(e\left(\frac{b x}{d x+c}+\frac{a}{d x+c}\right)^n\right)+A c d i^2 x^2+\frac{1}{6} B d^2 i^2 n\left(\frac{2 a^3}{3 b^3} \log\left(\frac{b x+a}{d x+c}\right)^n\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="maxima")

[Out] 1/3*B*d^2*i^2*x^3*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/3*A*d^2*i^2*x^3 + B*c*d*i^2*x^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A*c*d*i^2*x^2 + 1/6*B*d^2*i^2*n*(2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) - B*c*d*i^2*n*(a^2*log(b*x + a)/b^2 - c^2*log(d*x + c)/d^2 + (b*c - a*d)*x/(b*d)) + B*c^2*i^2*n*(a*log(b*x + a)/b - c*log(d*x + c)/d) + B*c^2*i^2*x*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A*c^2*i^2*x

mupad [B] time = 4.62, size = 303, normalized size = 2.44

$$\ln\left(e\left(\frac{a+b x}{c+d x}\right)^n\right)\left(B c^2 i^2 x+B c d i^2 x^2+\frac{B d^2 i^2 x^3}{3}\right)-x\left(\frac{(3 a d+3 b c)\left(\frac{d i^2(3 A a d+9 A b c+B a d n-B b c n)}{3 b}-\frac{A d i^2(3 a d+3 b c)}{3 b}\right)}{3 b d}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n)),x)

[Out] log(e*((a + b*x)/(c + d*x))^n)*((B*d^2*i^2*x^3)/3 + B*c^2*i^2*x + B*c*d*i^2*x^2) - x*((((3*a*d + 3*b*c)*((d*i^2*(3*A*a*d + 9*A*b*c + B*a*d*n - B*b*c*n))/(3*b) - (A*d*i^2*(3*a*d + 3*b*c))/(3*b)))/(3*b*d) - (c*i^2*(3*A*a*d + 3*A*b*c + B*a*d*n - B*b*c*n))/b + (A*a*c*d*i^2)/b) + x^2*((d*i^2*(3*A*a*d + 9*A*b*c + B*a*d*n - B*b*c*n))/(6*b) - (A*d*i^2*(3*a*d + 3*b*c))/(6*b)) + (log(a + b*x)*(B*a^3*d^2*i^2*n + 3*B*a*b^2*c^2*i^2*n - 3*B*a^2*b*c*d*i^2*n))/(3*b^3) + (A*d^2*i^2*x^3)/3 - (B*c^3*i^2*n*log(c + d*x))/(3*d)

sympy [A] time = 58.61, size = 779, normalized size = 6.28

$$\left\{ \begin{array}{l} c^2 i^2 x \left(A + B \log \left(e \left(\frac{a}{c} \right)^n \right) \right) \\ Ac^2 i^2 x + Acd i^2 x^2 + \frac{Ad^2 i^2 x^3}{3} - \frac{Bc^3 i^2 n \log(c+dx)}{3d} + Bc^2 i^2 n x \log(a) - Bc^2 i^2 n x \log(c+dx) + \frac{Bc^2 i^2 n x}{3} + Bc^2 i^2 x \log(e) \\ c^2 i^2 \left(Ax + \frac{Ban \log \left(\frac{a}{c} + \frac{bx}{c} \right)}{b} + Bnx \log \left(\frac{a}{c} + \frac{bx}{c} \right) - Bnx + Bx \log(e) \right) \\ Ac^2 i^2 x + Acd i^2 x^2 + \frac{Ad^2 i^2 x^3}{3} + \frac{Ba^3 d^2 i^2 n \log \left(\frac{a}{c+dx} + \frac{bx}{c+dx} \right)}{3b^3} + \frac{Ba^3 d^2 i^2 n \log \left(\frac{c}{d} + x \right)}{3b^3} - \frac{Ba^2 c d i^2 n \log \left(\frac{a}{c+dx} + \frac{bx}{c+dx} \right)}{b^2} - \frac{Ba^2 c d i^2 n \log \left(\frac{c}{d} + x \right)}{b^2} \end{array} \right.$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n)),x)

[Out] Piecewise((c**2*i**2*x*(A + B*log(e*(a/c)**n)), Eq(b, 0) & Eq(d, 0)), (A*c**2*i**2*x + A*c*d*i**2*x**2 + A*d**2*i**2*x**3/3 - B*c**3*i**2*n*log(c + d*x)/(3*d) + B*c**2*i**2*n*x*log(a) - B*c**2*i**2*n*x*log(c + d*x) + B*c**2*i**2*n*x/3 + B*c**2*i**2*x*log(e) + B*c*d*i**2*n*x**2*log(a) - B*c*d*i**2*n*x**2*log(c + d*x) + B*c*d*i**2*n*x**2/3 + B*c*d*i**2*x**2*log(e) + B*d**2*i**2*n*x**3*log(a)/3 - B*d**2*i**2*n*x**3*log(c + d*x)/3 + B*d**2*i**2*n*x**3/9 + B*d**2*i**2*x**3*log(e)/3, Eq(b, 0)), (c**2*i**2*(A*x + B*a*n*log(a/c + b*x/c)/b + B*n*x*log(a/c + b*x/c) - B*n*x + B*x*log(e)), Eq(d, 0)), (A*c**2*i**2*x + A*c*d*i**2*x**2 + A*d**2*i**2*x**3/3 + B*a**3*d**2*i**2*n*log(a/(c + d*x) + b*x/(c + d*x))/(3*b**3) + B*a**3*d**2*i**2*n*log(c/d + x)/(3*b**3) - B*a**2*c*d*i**2*n*log(a/(c + d*x) + b*x/(c + d*x))/b**2 - B*a**2*c*d*i**2*n*log(c/d + x)/b**2 - B*a**2*d**2*i**2*n*x/(3*b**2) + B*a*c**2*i**2*n*log(a/(c + d*x) + b*x/(c + d*x))/b + B*a*c**2*i**2*n*log(c/d + x)/b + B*a*c*d*i**2*n*x/b + B*a*d**2*i**2*n*x**2/(6*b) - B*c**3*i**2*n*log(c/d + x)/(3*d) + B*c**2*i**2*n*x*log(a/(c + d*x) + b*x/(c + d*x)) - 2*B*c**2*i**2*n*x/3 + B*c**2*i**2*x*log(e) + B*c*d*i**2*n*x**2*log(a/(c + d*x) + b*x/(c + d*x)) - B*c*d*i**2*n*x**2/6 + B*c*d*i**2*x**2*log(e) + B*d**2*i**2*n*x**3*log(a/(c + d*x) + b*x/(c + d*x))/3 + B*d**2*i**2*x**3*log(e)/3, True))

$$3.121 \quad \int \frac{(ci+dx)^2 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{ag+bgx} dx$$

Optimal. Leaf size=289

$$\frac{di^2(a+bx)(bc-ad) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{b^3g} - \frac{i^2(bc-ad)^2 \log \left(1 - \frac{b(c+dx)}{d(a+bx)} \right) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{b^3g} + \frac{i^2(c+dx)^2}{b^2g}$$

[Out] $-1/2*B*d*(-a*d+b*c)*i^{2*n*x}/b^2/g+d*(-a*d+b*c)*i^{2*(b*x+a)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^3/g+1/2*i^{2*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b/g-1/2*B*(-a*d+b*c)^{2*i^{2*n*\ln((b*x+a)/(d*x+c))}/b^3/g-3/2*B*(-a*d+b*c)^{2*i^{2*n*\ln(d*x+c)}/b^3/g-(-a*d+b*c)^{2*i^{2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))*\ln(1-b*(d*x+c)/d/(b*x+a))/b^3/g+B*(-a*d+b*c)^{2*i^{2*n*\text{polylog}(2,b*(d*x+c)/d/(b*x+a))}/b^3/g}$

Rubi [A] time = 0.49, antiderivative size = 369, normalized size of antiderivative = 1.28, number of steps used = 18, number of rules used = 13, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.302$, Rules used = {2528, 2486, 31, 2524, 2418, 2390, 12, 2301, 2394, 2393, 2391, 2525, 43}

$$\frac{Bi^2n(bc-ad)^2 \text{PolyLog} \left(2, -\frac{d(a+bx)}{bc-ad} \right)}{b^3g} + \frac{i^2(bc-ad)^2 \log(ag+bgx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{b^3g} + \frac{Adi^2x(bc-ad)}{b^2g} + \frac{i^2(c+dx)^2}{b^2g}$$

Antiderivative was successfully verified.

[In] $\text{Int}[\left((c*i + d*i*x)^{2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n] \right) \right) / (a*g + b*g*x), x]$

[Out] $(A*d*(b*c - a*d)*i^{2*x})/(b^2*g) - (B*d*(b*c - a*d)*i^{2*n*x})/(2*b^2*g) - (B*(b*c - a*d)^{2*i^{2*n*\text{Log}[a + b*x]}})/(2*b^3*g) - (B*(b*c - a*d)^{2*i^{2*n*\text{Log}[g*(a + b*x)]^2}})/(2*b^3*g) + (B*d*(b*c - a*d)*i^{2*(a + b*x)*\text{Log}[e*((a + b*x)/(c + d*x))^n]})/(b^3*g) + (i^{2*(c + d*x)^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]})/(2*b*g) - (B*(b*c - a*d)^{2*i^{2*n*\text{Log}[c + d*x]}})/(b^3*g) + ((b*c - a*d)^{2*i^{2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]})*\text{Log}[a*g + b*g*x]})/(b^3*g) + (B*(b*c - a*d)^{2*i^{2*n*\text{Log}[(b*(c + d*x))/(b*c - a*d)]})*\text{Log}[a*g + b*g*x]})/(b^3*g) + (B*(b*c - a*d)^{2*i^{2*n*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))]}))/(b^3*g)$

Rule 12

$\text{Int}[(a_*)(u_), x_Symbol] := \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \ \&\& \ !\text{MatchQ}[u, (b_*)(v_)] /; \text{FreeQ}[b, x]$

Rule 31

Int[((a_) + (b_)*(x_))⁽⁻¹⁾, x_Symbol] := Simp[Log[RemoveContent[a + b*x, x]]/b, x] /; FreeQ[{a, b}, x]

Rule 43

Int[((a_) + (b_)*(x_))^{(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)ⁿ, x], x] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && (!IntegerQ[n] || (EqQ[c, 0] && LeQ[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])}

Rule 2301

Int[((a_) + Log[(c_)*(x_)^{(n_)]*(b_))/(x_), x_Symbol] := Simp[(a + b*Log[c*xⁿ])²/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]}

Rule 2390

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^{(n_)]*(b_))^{(p_)*((f_) + (g_)*(x_))^(q_), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*xⁿ])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]}}

Rule 2391

Int[Log[(c_)*((d_) + (e_)*(x_))^{(n_)]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*xⁿ)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]}

Rule 2393

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))]*(b_))/((f_) + (g_)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^{(n_)]*(b_))/((f_) + (g_)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)ⁿ])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]}

Rule 2418

```
Int[((a_.) + Log[(c_.)*(d_.) + (e_.)*(x_.)]^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n]^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_.))^(p_.))*((c_.) + (d_.)*(x_.))^(q_.)
^(r_.)]^(s_.), x_Symbol] := Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q]^r]^s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_.)), x_S
ymbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_.))^(m_.
), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunci
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(121c + 121dx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{ag + bgx} dx &= \int \left(\frac{14641d(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^2g} + \frac{121d(121c + 121dx)}{b^2g} \right) dx \\
&= \frac{(14641(bc - ad)^2) \int \frac{A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{ag+bgx} dx}{b^2} + \frac{(121d) \int (121c + 121dx)}{b^2g} \\
&= \frac{14641Ad(bc - ad)x}{b^2g} + \frac{14641(c + dx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{2bg} \\
&= \frac{14641Ad(bc - ad)x}{b^2g} + \frac{14641Bd(bc - ad)(a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^3g} \\
&= \frac{14641Ad(bc - ad)x}{b^2g} + \frac{14641Bd(bc - ad)(a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^3g} \\
&= \frac{14641Ad(bc - ad)x}{b^2g} - \frac{14641Bd(bc - ad)nx}{2b^2g} - \frac{14641B(bc - ad)}{2b^3} \\
&= \frac{14641Ad(bc - ad)x}{b^2g} - \frac{14641Bd(bc - ad)nx}{2b^2g} - \frac{14641B(bc - ad)}{2b^3} \\
&= \frac{14641Ad(bc - ad)x}{b^2g} - \frac{14641Bd(bc - ad)nx}{2b^2g} - \frac{14641B(bc - ad)}{2b^3}
\end{aligned}$$

Mathematica [A] time = 0.20, size = 264, normalized size = 0.91

$$\frac{i^2 \left(b^2(c + dx)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right) + 2(bc - ad)^2 \log(g(a + bx)) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right) + 2Abdx(bc - ad) \right)}{b^2g}$$

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b*g*x), x]

[Out] $(i^2*(2*A*b*d*(b*c - a*d)*x - B*(b*c - a*d)*n*(b*d*x + (b*c - a*d)*\text{Log}[a + b*x]) + 2*B*d*(b*c - a*d)*(a + b*x)*\text{Log}[e*((a + b*x)/(c + d*x))^n] + b^2*(c + d*x)^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]) + 2*(b*c - a*d)^2*\text{Log}[g*(a + b*x)]*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]) - 2*B*(b*c - a*d)^2*n*\text{Log}[c + d*x] + B*(b*c - a*d)^2*n*(-(\text{Log}[g*(a + b*x)]*(\text{Log}[g*(a + b*x)] - 2*\text{Log}[(b*(c + d*x))/(b*c - a*d])) + 2*\text{PolyLog}[2, (d*(a + b*x))/(-b*c + a*d)])))/(2*b^3*g)$

fricas [F] time = 0.93, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{Ad^2i^2x^2 + 2Ac di^2x + Ac^2i^2 + (Bd^2i^2x^2 + 2Bcdi^2x + Bc^2i^2) \log \left(e \left(\frac{bx+a}{dx+c} \right)^n \right)}{bgx + ag}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g), x, algorithm="fricas")`

[Out] `integral((A*d^2*i^2*x^2 + 2*A*c*d*i^2*x + A*c^2*i^2 + (B*d^2*i^2*x^2 + 2*B*c*d*i^2*x + B*c^2*i^2)*log(e*((b*x + a)/(d*x + c))^n))/(b*g*x + a*g), x)`

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g), x, algorithm="giac")`

[Out] Timed out

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci)^2 \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)}{bgx + ag} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g), x)`

[Out] `int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g), x)`

maxima [B] time = 5.31, size = 580, normalized size = 2.01

$$2 A c d i^2 \left(\frac{x}{b g} - \frac{a \log(b x + a)}{b^2 g} \right) + \frac{1}{2} A d^2 i^2 \left(\frac{2 a^2 \log(b x + a)}{b^3 g} + \frac{b x^2 - 2 a x}{b^2 g} \right) + \frac{A c^2 i^2 \log(b g x + a g)}{b g} - \frac{(3 b c^2 i^2 n - 2 a c)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g),x, algorithm="maxima")

[Out] 2*A*c*d*i^2*(x/(b*g) - a*log(b*x + a)/(b^2*g)) + 1/2*A*d^2*i^2*(2*a^2*log(b*x + a)/(b^3*g) + (b*x^2 - 2*a*x)/(b^2*g)) + A*c^2*i^2*log(b*g*x + a*g)/(b*g) - 1/2*(3*b*c^2*i^2*n - 2*a*c*d*i^2*n)*B*log(d*x + c)/(b^2*g) + (b^2*c^2*i^2*n - 2*a*b*c*d*i^2*n + a^2*d^2*i^2*n)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d)))*B/(b^3*g) + 1/2*(B*b^2*d^2*i^2*x^2*log(e) - (b^2*c^2*i^2*n - 2*a*b*c*d*i^2*n + a^2*d^2*i^2*n)*B*log(b*x + a)^2 - ((i^2*n - 4*i^2*log(e))*b^2*c*d - (i^2*n - 2*i^2*log(e))*a*b*d^2)*B*x + (2*b^2*c^2*i^2*log(e) + 4*(i^2*n - i^2*log(e))*a*b*c*d - (3*i^2*n - 2*i^2*log(e))*a^2*d^2)*B*log(b*x + a) + (B*b^2*d^2*i^2*x^2 + 2*(2*b^2*c*d*i^2 - a*b*d^2*i^2)*B*x + 2*(b^2*c^2*i^2 - 2*a*b*c*d*i^2 + a^2*d^2*i^2)*B*log(b*x + a))*log((d*x + c)^n))/(b^3*g)

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c i + d i x)^2 \left(A + B \ln \left(e \left(\frac{a + b x}{c + d x} \right)^n \right) \right)}{a g + b g x} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x), x)

[Out] int(((c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x), x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*((b*x+a)/(d*x+c)**n)))/(b*g*x+a*g),x)

[Out] Timed out

$$3.122 \quad \int \frac{(ci+dx)^2 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ag+bgx)^2} dx$$

Optimal. Leaf size=259

$$\frac{d^2 i^2 (a+bx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{b^3 g^2} - \frac{2 d i^2 (bc-ad) \log \left(1 - \frac{b(c+dx)}{d(a+bx)} \right) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{b^3 g^2} - \frac{i^2 (c+dx)(bc-ad)}{b^2 g}$$

[Out] $-B*(-a*d+b*c)*i^{2*n}*(d*x+c)/b^2/g^2/(b*x+a)+d^2*i^{2*n}*(b*x+a)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^3/g^2-(-a*d+b*c)*i^{2*n}*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^2/g^2/(b*x+a)-B*d*(-a*d+b*c)*i^{2*n}*\ln(d*x+c)/b^3/g^2-2*d*(-a*d+b*c)*i^{2*n}*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))*\ln(1-b*(d*x+c)/d/(b*x+a))/b^3/g^2+2*B*d*(-a*d+b*c)*i^{2*n}*\text{polylog}(2,b*(d*x+c)/d/(b*x+a))/b^3/g^2$

Rubi [A] time = 0.52, antiderivative size = 327, normalized size of antiderivative = 1.26, number of steps used = 17, number of rules used = 13, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.302$, Rules used = {2528, 2486, 31, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{2Bd^2 n(bc-ad) \text{PolyLog} \left(2, -\frac{d(a+bx)}{bc-ad} \right)}{b^3 g^2} + \frac{2di^2(bc-ad) \log(a+bx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{b^3 g^2} - \frac{i^2(bc-ad)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{b^3 g^2 (a+bx)}$$

Antiderivative was successfully verified.

[In] $\text{Int}[(c*i + d*i*x)^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])]/(a*g + b*g*x)^2, x]$

[Out] $(A*d^2*i^{2*n})/(b^2*g^2) - (B*(b*c - a*d)^2*i^{2*n})/(b^3*g^2*(a + b*x)) - (B*d*(b*c - a*d)*i^{2*n}*\text{Log}[a + b*x])/(b^3*g^2) - (B*d*(b*c - a*d)*i^{2*n}*\text{Log}[a + b*x]^2)/(b^3*g^2) + (B*d^2*i^{2*n}*(a + b*x)*\text{Log}[e*((a + b*x)/(c + d*x))^n])/(b^3*g^2) - ((b*c - a*d)^2*i^{2*n}*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(b^3*g^2*(a + b*x)) + (2*d*(b*c - a*d)*i^{2*n}*\text{Log}[a + b*x]*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(b^3*g^2) + (2*B*d*(b*c - a*d)*i^{2*n}*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)])/(b^3*g^2) + (2*B*d*(b*c - a*d)*i^{2*n}*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))])/(b^3*g^2)$

Rule 12

$\text{Int}[(a_*)*(u_), x_Symbol] := \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \ \&\amp; \ !\text{MatchQ}[u, (b_*)*(v_)] /; \text{FreeQ}[b, x]$

Rule 31

```
Int[((a_) + (b_)*(x_))^-1), x_Symbol] := Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 44

```
Int[((a_) + (b_)*(x_))^(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_))/(x_), x_Symbol] := Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)])*(b_)^(p_)*((f_) + (g_
)*(x_))^(q_), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_)*((d_) + (e_)*(x_))^(n_)])/(x_), x_Symbol] := -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))])*(b_))/((f_) + (g_)*(x_)), x_
Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)])*(b_))/((f_) + (g_)*(x_
)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n])/g, x] - Dist[(b*e^n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)])*(b_)^(p_)*(RFx_), x_Sy
mbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
```

```
Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFX, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] := Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q]^r]^s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFX^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFX^p])^(n - 1)*D[RFX, x])/RFX, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFX, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFX^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*
(a + b*Log[c*RFX^p])^(n - 1)*D[RFX, x])/RFX, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFX, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*RFX^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFX, x] && RationalFunci
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(122c + 122dx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ag + bgx)^2} dx &= \int \left(\frac{14884d^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^2g^2} + \frac{14884(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^2g^2(a + bx)} \right) dx \\
&= \frac{(14884d^2) \int \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) dx}{b^2g^2} + \frac{(29768d(bc - ad)) \int \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) dx}{b^2g^2(a + bx)} \\
&= \frac{14884Ad^2x}{b^2g^2} - \frac{14884(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^3g^2(a + bx)} + \frac{29768d(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^3g^2(a + bx)} \\
&= \frac{14884Ad^2x}{b^2g^2} + \frac{14884Bd^2(a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^3g^2} - \frac{14884(bc - ad)^2 A}{b^3g^2(a + bx)} \\
&= \frac{14884Ad^2x}{b^2g^2} + \frac{14884Bd^2(a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^3g^2} - \frac{14884(bc - ad)^2 A}{b^3g^2(a + bx)} \\
&= \frac{14884Ad^2x}{b^2g^2} - \frac{14884B(bc - ad)^2 n}{b^3g^2(a + bx)} - \frac{14884Bd(bc - ad)n \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^3g^2} \\
&= \frac{14884Ad^2x}{b^2g^2} - \frac{14884B(bc - ad)^2 n}{b^3g^2(a + bx)} - \frac{14884Bd(bc - ad)n \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^3g^2} \\
&= \frac{14884Ad^2x}{b^2g^2} - \frac{14884B(bc - ad)^2 n}{b^3g^2(a + bx)} - \frac{14884Bd(bc - ad)n \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^3g^2}
\end{aligned}$$

Mathematica [A] time = 0.25, size = 233, normalized size = 0.90

$$\frac{i^2 \left(2d(bc - ad) \log(a + bx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right) - \frac{(bc-ad)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{a+bx} + Bd^2(a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + B \right)}{b^3g^2}$$

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b*g*x)^2,x]

[Out] $(i^2*(A*b*d^2*x - (B*(b*c - a*d)^2*n)/(a + b*x) + B*d*(-(b*c) + a*d)*n*\text{Log}[a + b*x] + B*d^2*(a + b*x)*\text{Log}[e*((a + b*x)/(c + d*x))^n] - ((b*c - a*d)^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(a + b*x) + 2*d*(b*c - a*d)*\text{Log}[a + b*x]*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]) + B*d*(-(b*c) + a*d)*n*(\text{Log}[a + b*x]*(\text{Log}[a + b*x] - 2*\text{Log}[(b*(c + d*x))/(b*c - a*d)]) - 2*\text{PolyLog}[2, (d*(a + b*x))/(-(b*c) + a*d)])))/(b^3*g^2)$

fricas [F] time = 0.73, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{Ad^2i^2x^2 + 2Ac di^2x + Ac^2i^2 + \left(Bd^2i^2x^2 + 2Bcdi^2x + Bc^2i^2 \right) \log \left(e \left(\frac{bx+a}{dx+c} \right)^n \right)}{b^2g^2x^2 + 2abg^2x + a^2g^2}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^2,x, algorithm="fricas")`

[Out] `integral((A*d^2*i^2*x^2 + 2*A*c*d*i^2*x + A*c^2*i^2 + (B*d^2*i^2*x^2 + 2*B*c*d*i^2*x + B*c^2*i^2)*log(e*((b*x + a)/(d*x + c))^n))/(b^2*g^2*x^2 + 2*a*b*g^2*x + a^2*g^2), x)`

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^2,x, algorithm="giac")`

[Out] Timed out

maple [F] time = 0.46, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci)^2 \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)}{(bgx + ag)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^2,x)`

[Out] `int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^2,x)`

maxima [B] time = 4.35, size = 1190, normalized size = 4.59

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^2,x, algorithm="maxima")

[Out]
$$-B*c^2*i^2*n*(1/(b^2*g^2*x + a*b*g^2) + d*\log(b*x + a)/((b^2*c - a*b*d)*g^2) - d*\log(d*x + c)/((b^2*c - a*b*d)*g^2)) - A*(a^2/(b^4*g^2*x + a*b^3*g^2) - x/(b^2*g^2) + 2*a*\log(b*x + a)/(b^3*g^2))*d^2*i^2 + 2*A*c*d*i^2*(a/(b^3*g^2*x + a*b^2*g^2) + \log(b*x + a)/(b^2*g^2)) - B*c^2*i^2*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^2*g^2*x + a*b*g^2) - A*c^2*i^2/(b^2*g^2*x + a*b*g^2) - (b^2*c^2*d*i^2*n + a*b*c*d^2*i^2*n - a^2*d^3*i^2*n)*B*\log(d*x + c)/(b^4*c*g^2 - a*b^3*d*g^2) + ((b^3*c*d^2*i^2*\log(e) - a*b^2*d^3*i^2*\log(e))*B*x^2 + (a*b^2*c*d^2*i^2*\log(e) - a^2*b*d^3*i^2*\log(e))*B*x - ((b^3*c^2*d*i^2*n - 2*a*b^2*c*d^2*i^2*n + a^2*b*d^3*i^2*n)*B*x + (a*b^2*c^2*d*i^2*n - 2*a^2*b*c*d^2*i^2*n + a^3*d^3*i^2*n)*B)*\log(b*x + a)^2 + (2*(i^2*n + i^2*\log(e))*a*b^2*c^2*d - 3*(i^2*n + i^2*\log(e))*a^2*b*c*d^2 + (i^2*n + i^2*\log(e))*a^3*d^3)*B + ((2*b^3*c^2*d*i^2*\log(e) + (3*i^2*n - 4*i^2*\log(e))*a*b^2*c*d^2 - 2*(i^2*n - i^2*\log(e))*a^2*b*d^3)*B*x + (2*a*b^2*c^2*d*i^2*\log(e) + (3*i^2*n - 4*i^2*\log(e))*a^2*b*c*d^2 - 2*(i^2*n - i^2*\log(e))*a^3*d^3)*B)*\log(b*x + a) + ((b^3*c*d^2*i^2 - a*b^2*d^3*i^2)*B*x^2 + (a*b^2*c*d^2*i^2 - a^2*b*d^3*i^2)*B*x + (2*a*b^2*c^2*d*i^2 - 3*a^2*b*c*d^2*i^2 + a^3*d^3*i^2)*B + 2*((b^3*c^2*d*i^2 - 2*a*b^2*c*d^2*i^2 + a^2*b*d^3*i^2)*B*x + (a*b^2*c^2*d*i^2 - 2*a^2*b*c*d^2*i^2 + a^3*d^3*i^2)*B)*\log(b*x + a))*\log((d*x + c)^n)/(a*b^4*c*g^2 - a^2*b^3*d*g^2 + (b^5*c*g^2 - a*b^4*d*g^2)*x) + 2*(b*c*d*i^2*n - a*d^2*i^2*n)*(\log(b*x + a)*\log((b*d*x + a*d)/(b*c - a*d) + 1) + \operatorname{dilog}(-(b*d*x + a*d)/(b*c - a*d)))*B/(b^3*g^2)$$

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ci + dix)^2 \left(A + B \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ag + bgx)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x)^2,x)

```
[Out] int(((c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x)^2, x)
```

```
sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00
```

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n)))/(b*g*x+a*g)**2,x)
```

```
[Out] Timed out
```


$$3.123 \quad \int \frac{(ci+dx)^2 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ag+bgx)^3} dx$$

Optimal. Leaf size=242

$$\frac{d^2 i^2 \log \left(1 - \frac{b(c+dx)}{d(a+bx)} \right) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{b^3 g^3} - \frac{d i^2 (c+dx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{b^2 g^3 (a+bx)} - \frac{i^2 (c+dx)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{2b g^3 (a+bx)^2}$$

[Out] $-B*d*i^2*n*(d*x+c)/b^2/g^3/(b*x+a)-1/4*B*i^2*n*(d*x+c)^2/b/g^3/(b*x+a)^2-d*i^2*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^2/g^3/(b*x+a)-1/2*i^2*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b/g^3/(b*x+a)^2-d^2*i^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))*\ln(1-b*(d*x+c)/d/(b*x+a))/b^3/g^3+B*d^2*i^2*n*polylog(2,b*(d*x+c)/d/(b*x+a))/b^3/g^3$

Rubi [A] time = 0.56, antiderivative size = 354, normalized size of antiderivative = 1.46, number of steps used = 18, number of rules used = 11, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.256$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{Bd^2i^2nPolyLog\left(2, -\frac{d(a+bx)}{bc-ad}\right)}{b^3g^3} + \frac{d^2i^2 \log(a+bx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{b^3g^3} - \frac{2di^2(bc-ad) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{b^3g^3(a+bx)}$$

Antiderivative was successfully verified.

[In] $\text{Int}[\frac{(c*i + d*i*x)^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])}{(a*g + b*g*x)^3}, x]$

[Out] $-(B*(b*c - a*d)^2*i^2*n)/(4*b^3*g^3*(a + b*x)^2) - (3*B*d*(b*c - a*d)*i^2*n)/(2*b^3*g^3*(a + b*x)) - (3*B*d^2*i^2*n*\text{Log}[a + b*x])/(2*b^3*g^3) - (B*d^2*i^2*n*\text{Log}[a + b*x]^2)/(2*b^3*g^3) - ((b*c - a*d)^2*i^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(2*b^3*g^3*(a + b*x)^2) - (2*d*(b*c - a*d)*i^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(b^3*g^3*(a + b*x)) + (d^2*i^2*\text{Log}[a + b*x]*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(b^3*g^3) + (3*B*d^2*i^2*n*\text{Log}[c + d*x])/(2*b^3*g^3) + (B*d^2*i^2*n*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)])/(b^3*g^3) + (B*d^2*i^2*n*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))])/(b^3*g^3)$

Rule 12

$\text{Int}[(a_*)*(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \ \&\& \ !\text{MatchQ}[u, (b_)*(v_)] /; \text{FreeQ}[b, x]$

Rule 44

```
Int[((a_) + (b_)*(x_))^(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_))/(x_), x_Symbol] := Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)])*(b_)^(p_)*((f_) + (g_
)*(x_))^(q_), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_)*((d_) + (e_)*(x_))^(n_)])/(x_), x_Symbol] := -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))])*(b_))/((f_) + (g_)*(x_)), x_
Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)])*(b_))/((f_) + (g_)*(x_
)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x
), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)])*(b_)^(p_)*(RFx_), x_Sy
mbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol]
:> Simp[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol]
:> With[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(123c + 123dx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ag + bgx)^3} dx &= \int \left(\frac{15129(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^2 g^3 (a + bx)^3} + \frac{30258d(bc - ad)}{b^2 g^3} \right) dx \\
&= \frac{(15129d^2) \int \frac{A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{a+bx} dx}{b^2 g^3} + \frac{(30258d(bc - ad)) \int \frac{A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{(a+bx)^2} dx}{b^2 g^3} \\
&= -\frac{15129(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{2b^3 g^3 (a + bx)^2} - \frac{30258d(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^3 g^3} \\
&= -\frac{15129(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{2b^3 g^3 (a + bx)^2} - \frac{30258d(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^3 g^3} \\
&= -\frac{15129(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{2b^3 g^3 (a + bx)^2} - \frac{30258d(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^3 g^3} \\
&= -\frac{15129B(bc - ad)^2 n}{4b^3 g^3 (a + bx)^2} - \frac{45387Bd(bc - ad)n}{2b^3 g^3 (a + bx)} - \frac{45387Bd^2 n \log(a)}{2b^3 g^3} \\
&= -\frac{15129B(bc - ad)^2 n}{4b^3 g^3 (a + bx)^2} - \frac{45387Bd(bc - ad)n}{2b^3 g^3 (a + bx)} - \frac{45387Bd^2 n \log(a)}{2b^3 g^3} \\
&= -\frac{15129B(bc - ad)^2 n}{4b^3 g^3 (a + bx)^2} - \frac{45387Bd(bc - ad)n}{2b^3 g^3 (a + bx)} - \frac{45387Bd^2 n \log(a)}{2b^3 g^3}
\end{aligned}$$

Mathematica [A] time = 0.35, size = 258, normalized size = 1.07

$$i^2 \left(4d^2 \log(a + bx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right) + \frac{8d(ad-bc) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{a+bx} - \frac{2(bc-ad)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{(a+bx)^2} - 2Bd^2 n \left(\log(a) \right) \right)$$

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b*g*x)^3,x]

```
[Out] (i^2*(-((B*(b*c - a*d)^2*n)/(a + b*x)^2) + (6*B*d*(-(b*c) + a*d)*n)/(a + b*x) - 6*B*d^2*n*Log[a + b*x] - (2*(b*c - a*d)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a + b*x)^2 + (8*d*(-(b*c) + a*d)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a + b*x) + 4*d^2*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 6*B*d^2*n*Log[c + d*x] - 2*B*d^2*n*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d])) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)])))/(4*b^3*g^3)
```

fricas [F] time = 0.91, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{Ad^2i^2x^2 + 2Ac di^2x + Ac^2i^2 + (Bd^2i^2x^2 + 2Bcdi^2x + Bc^2i^2) \log \left(e \left(\frac{bx+a}{dx+c} \right)^n \right)}{b^3g^3x^3 + 3ab^2g^3x^2 + 3a^2bg^3x + a^3g^3}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^3,x, algorithm="fricas")
```

```
[Out] integral((A*d^2*i^2*x^2 + 2*A*c*d*i^2*x + A*c^2*i^2 + (B*d^2*i^2*x^2 + 2*B*c*d*i^2*x + B*c^2*i^2)*log(e*((b*x + a)/(d*x + c))^n))/(b^3*g^3*x^3 + 3*a*b^2*g^3*x^2 + 3*a^2*b*g^3*x + a^3*g^3), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^3,x, algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.45, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci)^2 \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)}{(bgx + ag)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^3,x)
```

```
[Out] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^3,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2} Bcdi^2n \left(\frac{3abc - a^2d + 2(2b^2c - abd)x}{(b^5c - ab^4d)g^3x^2 + 2(ab^4c - a^2b^3d)g^3x + (a^2b^3c - a^3b^2d)g^3} + \frac{2(2bcd - ad^2)\log(bx + a)}{(b^4c^2 - 2ab^3cd + a^2b^2d^2)g^3} - \frac{2(2bcd - ad^2)\log(bx + a)}{(b^4c^2 - 2ab^3cd + a^2b^2d^2)g^3} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^3,x, algorithm="maxima")

[Out]
$$-1/2*B*c*d*i^2*n*((3*a*b*c - a^2*d + 2*(2*b^2*c - a*b*d)*x)/((b^5*c - a*b^4*d)*g^3*x^2 + 2*(a*b^4*c - a^2*b^3*d)*g^3*x + (a^2*b^3*c - a^3*b^2*d)*g^3) + 2*(2*b*c*d - a*d^2)*\log(b*x + a)/((b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)*g^3) - 2*(2*b*c*d - a*d^2)*\log(d*x + c)/((b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)*g^3) + 1/4*B*c^2*i^2*n*((2*b*d*x - b*c + 3*a*d)/((b^4*c - a*b^3*d)*g^3*x^2 + 2*(a*b^3*c - a^2*b^2*d)*g^3*x + (a^2*b^2*c - a^3*b*d)*g^3) + 2*d^2*\log(b*x + a)/((b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*g^3) - 2*d^2*\log(d*x + c)/((b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*g^3) + 1/2*A*d^2*i^2*((4*a*b*x + 3*a^2)/(b^5*g^3*x^2 + 2*a*b^4*g^3*x + a^2*b^3*g^3) + 2*\log(b*x + a)/(b^3*g^3)) + 1/2*B*d^2*i^2*((4*a*b*x + 3*a^2 + 2*(b^2*x^2 + 2*a*b*x + a^2)*\log(b*x + a))*\log((b*x + a)^n) - (4*a*b*x + 3*a^2 + 2*(b^2*x^2 + 2*a*b*x + a^2)*\log(b*x + a))*\log((d*x + c)^n))/(b^5*g^3*x^2 + 2*a*b^4*g^3*x + a^2*b^3*g^3) + 2*i^2*\int(1/2*(2*b^3*d*x^3*\log(e) + 2*b^3*c*x^2*\log(e) - 3*a^2*b*c*n + 3*a^3*d*n - 4*(a*b^2*c*n - a^2*b*d*n)*x - 2*(a^2*b*c*n - a^3*d*n + (b^3*c*n - a*b^2*d*n)*x^2 + 2*(a*b^2*c*n - a^2*b*d*n)*x)*\log(b*x + a))/(b^6*d*g^3*x^4 + a^3*b^3*c*g^3 + (b^6*c*g^3 + 3*a*b^5*d*g^3)*x^3 + 3*(a*b^5*c*g^3 + a^2*b^4*d*g^3)*x^2 + (3*a^2*b^4*c*g^3 + a^3*b^3*d*g^3)*x), x) - (2*b*x + a)*B*c*d*i^2*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^4*g^3*x^2 + 2*a*b^3*g^3*x + a^2*b^2*g^3) - (2*b*x + a)*A*c*d*i^2/(b^4*g^3*x^2 + 2*a*b^3*g^3*x + a^2*b^2*g^3) - 1/2*B*c^2*i^2*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^3*g^3*x^2 + 2*a*b^2*g^3*x + a^2*b*g^3) - 1/2*A*c^2*i^2/(b^3*g^3*x^2 + 2*a*b^2*g^3*x + a^2*b*g^3)$$

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ci + dix)^2 \left(A + B \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ag + bgx)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x)^3,x)

```
[Out] int(((c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x)^3, x)
```

```
sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00
```

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)**3,x)
```

```
[Out] Timed out
```

$$3.124 \quad \int \frac{(ci+dx)^2 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ag+bgx)^4} dx$$

Optimal. Leaf size=93

$$-\frac{i^2(c+dx)^3 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{3g^4(a+bx)^3(bc-ad)} - \frac{Bi^2n(c+dx)^3}{9g^4(a+bx)^3(bc-ad)}$$

[Out] $-1/9*B*i^2*n*(d*x+c)^3/(-a*d+b*c)/g^4/(b*x+a)^3-1/3*i^2*(d*x+c)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)/g^4/(b*x+a)^3$

Rubi [B] time = 0.52, antiderivative size = 301, normalized size of antiderivative = 3.24, number of steps used = 14, number of rules used = 4, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.093$, Rules used = {2528, 2525, 12, 44}

$$\frac{d^2i^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{b^3g^4(a+bx)} - \frac{di^2(bc-ad) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{b^3g^4(a+bx)^2} - \frac{i^2(bc-ad)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{3b^3g^4(a+bx)^3} - \frac{Bd^3i^2n}{3b^3g^4(a+bx)^3}$$

Antiderivative was successfully verified.

[In] $\text{Int}[(c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])/(a*g + b*g*x)^4, x]$

[Out] $-(B*(b*c - a*d)^2*i^2*n)/(9*b^3*g^4*(a + b*x)^3) - (B*d*(b*c - a*d)*i^2*n)/(3*b^3*g^4*(a + b*x)^2) - (B*d^2*i^2*n)/(3*b^3*g^4*(a + b*x)) - (B*d^3*i^2*n*Log[a + b*x])/(3*b^3*(b*c - a*d)*g^4) - ((b*c - a*d)^2*i^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])/(3*b^3*g^4*(a + b*x)^3) - (d*(b*c - a*d)*i^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])/(b^3*g^4*(a + b*x)^2) - (d^2*i^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])/(b^3*g^4*(a + b*x)) + (B*d^3*i^2*n*Log[c + d*x])/(3*b^3*(b*c - a*d)*g^4)$

Rule 12

$\text{Int}[(a_*)(u_), x_Symbol] := \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \ \&\& \ !\text{MatchQ}[u, (b_*)(v_)] /; \text{FreeQ}[b, x]$

Rule 44

$\text{Int}[(a_*) + (b_*)(x_)^(m_)*((c_*) + (d_*)(x_))^(n_), x_Symbol] := \text{Int}[\text{ExpandIntegrand}[(a + b*x)^m*(c + d*x)^n, x], x] /; \text{FreeQ}[\{a, b, c, d\}, x] \ \&\& \ \text{NeQ}[b*c - a*d, 0] \ \&\& \ \text{ILtQ}[m, 0] \ \&\& \ \text{IntegerQ}[n] \ \&\& \ !(\text{IGtQ}[n, 0] \ \&\& \ \text{LtQ}[m + n + 2, 0])$

Rule 2525

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_.))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(124c + 124dx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ag + bgx)^4} dx &= \int \left(\frac{15376(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^2 g^4 (a + bx)^4} + \frac{30752d(bc - ad)}{b^2 g^4} \right) dx \\
&= \frac{(15376d^2) \int \frac{A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{(a+bx)^2} dx}{b^2 g^4} + \frac{(30752d(bc - ad)) \int \frac{A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{(a+bx)^2} dx}{b^2 g^4} \\
&= -\frac{15376(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{3b^3 g^4 (a + bx)^3} - \frac{15376d(bc - ad)}{b^3 g^4} \\
&= -\frac{15376(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{3b^3 g^4 (a + bx)^3} - \frac{15376d(bc - ad)}{b^3 g^4} \\
&= -\frac{15376(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{3b^3 g^4 (a + bx)^3} - \frac{15376d(bc - ad)}{b^3 g^4} \\
&= -\frac{15376B(bc - ad)^2 n}{9b^3 g^4 (a + bx)^3} - \frac{15376Bd(bc - ad)n}{3b^3 g^4 (a + bx)^2} - \frac{15376Bd^2 n}{3b^3 g^4 (a + bx)}
\end{aligned}$$

Mathematica [B] time = 0.32, size = 329, normalized size = 3.54

$$i^2 \left(-3a^3 Ad^3 - 3a^3 Bd^3 n \log(c + dx) - a^3 Bd^3 n - 9a^2 Abd^3 x + 3B(bc - ad) (a^2 d^2 + abd(c + 3dx) + b^2 (c^2 + 3cdx - \right.$$

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])/(a*g + b*g*x)^4,x]

[Out] -1/9*(i^2*(3*A*b^3*c^3 - 3*a^3*A*d^3 + b^3*B*c^3*n - a^3*B*d^3*n + 9*A*b^3*c^2*d*x - 9*a^2*A*b*d^3*x + 3*b^3*B*c^2*d*n*x - 3*a^2*b*B*d^3*n*x + 9*A*b^3*c*d^2*x^2 - 9*a*A*b^2*d^3*x^2 + 3*b^3*B*c*d^2*n*x^2 - 3*a*b^2*B*d^3*n*x^2 + 3*B*d^3*n*(a + b*x)^3*Log[a + b*x] + 3*B*(b*c - a*d)*(a^2*d^2 + a*b*d*(c + 3*d*x) + b^2*(c^2 + 3*c*d*x + 3*d^2*x^2))*Log[e*((a + b*x)/(c + d*x))^n] - 3*a^3*B*d^3*n*Log[c + d*x] - 9*a^2*b*B*d^3*n*x*Log[c + d*x] - 9*a*b^2*B*d^3*n*x^2*Log[c + d*x] - 3*b^3*B*d^3*n*x^3*Log[c + d*x]))/(b^3*(b*c - a*d)*g^4*(a + b*x)^3)

fricas [B] time = 1.01, size = 409, normalized size = 4.40

$$(Bb^3c^3 - Ba^3d^3)i^2n + 3(Ab^3c^3 - Aa^3d^3)i^2 + 3((Bb^3cd^2 - Bab^2d^3)i^2n + 3(Ab^3cd^2 - Aab^2d^3)i^2)x^2 + 3((Bb^3c^2 -$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^4,x, algorithm="fricas")

[Out] -1/9*((B*b^3*c^3 - B*a^3*d^3)*i^2*n + 3*(A*b^3*c^3 - A*a^3*d^3)*i^2 + 3*((B*b^3*c*d^2 - B*a*b^2*d^3)*i^2*n + 3*(A*b^3*c*d^2 - A*a*b^2*d^3)*i^2)*x^2 + 3*((B*b^3*c^2*d - B*a^2*b*d^3)*i^2*n + 3*(A*b^3*c^2*d - A*a^2*b*d^3)*i^2)*x + 3*(3*(B*b^3*c*d^2 - B*a*b^2*d^3)*i^2*x^2 + 3*(B*b^3*c^2*d - B*a^2*b*d^3)*i^2*x + (B*b^3*c^3 - B*a^3*d^3)*i^2)*log(e) + 3*(B*b^3*d^3*i^2*n*x^3 + 3*B*b^3*c*d^2*i^2*n*x^2 + 3*B*b^3*c^2*d*i^2*n*x + B*b^3*c^3*i^2*n)*log((b*x + a)/(d*x + c)))/((b^7*c - a*b^6*d)*g^4*x^3 + 3*(a*b^6*c - a^2*b^5*d)*g^4*x^2 + 3*(a^2*b^5*c - a^3*b^4*d)*g^4*x + (a^3*b^4*c - a^4*b^3*d)*g^4)

giac [A] time = 53.75, size = 94, normalized size = 1.01

$$\frac{1}{9} \left(\frac{bc}{(bc - ad)^2} - \frac{ad}{(bc - ad)^2} \right) \left(\frac{3(dx + c)^3 Bn \log\left(\frac{bx+a}{dx+c}\right)}{(bx + a)^3 g^4} + \frac{(Bn + 3A + 3B)(dx + c)^3}{(bx + a)^3 g^4} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^4,x, algorithm="giac")

[Out] 1/9*(b*c/(b*c - a*d)^2 - a*d/(b*c - a*d)^2)*(3*(d*x + c)^3*B*n*log((b*x + a)/(d*x + c)))/((b*x + a)^3*g^4) + (B*n + 3*A + 3*B)*(d*x + c)^3/((b*x + a)^3*g^4)

maple [F] time = 0.45, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci)^2 \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)}{(bgx + ag)^4} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^4,x)

[Out] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^4,x)

maxima [B] time = 1.94, size = 1544, normalized size = 16.60

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^4,x, algorithm="maxima")

[Out] -1/18*B*d^2*i^2*n*((11*a^2*b^2*c^2 - 7*a^3*b*c*d + 2*a^4*d^2 + 6*(3*b^4*c^2 - 3*a*b^3*c*d + a^2*b^2*d^2)*x^2 + 3*(9*a*b^3*c^2 - 7*a^2*b^2*c*d + 2*a^3*b*d^2)*x)/((b^8*c^2 - 2*a*b^7*c*d + a^2*b^6*d^2)*g^4*x^3 + 3*(a*b^7*c^2 - 2*a^2*b^6*c*d + a^3*b^5*d^2)*g^4*x^2 + 3*(a^2*b^6*c^2 - 2*a^3*b^5*c*d + a^4*b^4*d^2)*g^4*x + (a^3*b^5*c^2 - 2*a^4*b^4*c*d + a^5*b^3*d^2)*g^4) + 6*(3*b^2*c^2*d - 3*a*b*c*d^2 + a^2*d^3)*log(b*x + a)/((b^6*c^3 - 3*a*b^5*c^2*d + 3*a^2*b^4*c*d^2 - a^3*b^3*d^3)*g^4) - 6*(3*b^2*c^2*d - 3*a*b*c*d^2 + a^2*d^3)*log(d*x + c)/((b^6*c^3 - 3*a*b^5*c^2*d + 3*a^2*b^4*c*d^2 - a^3*b^3*d^3)*g^4) - 1/18*B*c^2*i^2*n*((6*b^2*d^2*x^2 + 2*b^2*c^2 - 7*a*b*c*d + 11*a^2*d^2 - 3*(b^2*c*d - 5*a*b*d^2)*x)/((b^6*c^2 - 2*a*b^5*c*d + a^2*b^4*d^2)*g^4*x^3 + 3*(a*b^5*c^2 - 2*a^2*b^4*c*d + a^3*b^3*d^2)*g^4*x^2 + 3*(a^2*b^4*c^2 - 2*a^3*b^3*c*d + a^4*b^2*d^2)*g^4*x + (a^3*b^3*c^2 - 2*a^4*b^2*c*d + a^5*b*d^2)*g^4) + 6*d^3*log(b*x + a)/((b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^3)*g^4) - 6*d^3*log(d*x + c)/((b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^3)*g^4) - 1/18*B*c*d*i^2*n*((5*a*b^2*c^2 - 22*a^2*b*c*d + 5*a^3*d^2 - 6*(3*b^3*c*d - a*b^2*d^2)*x^2 + 3*(3*b^3*c^2 - 16*a*b^2*c*d +

$$5a^2bd^2x)/((b^7c^2 - 2a^6bcd + a^2b^5d^2)g^4x^3 + 3(a^6c^2 - 2a^2b^5cd + a^3b^4d^2)g^4x^2 + 3(a^2b^5c^2 - 2a^3b^4cd + a^4b^3d^2)g^4x + (a^3b^4c^2 - 2a^4b^3cd + a^5b^2d^2)g^4) - 6(3b^3cd^2 - ad^3)\log(bx + a)/((b^5c^3 - 3a^4b^2cd + 3a^2b^3cd^2 - a^3b^2d^3)g^4) + 6(3b^3cd^2 - ad^3)\log(dx + c)/((b^5c^3 - 3a^4b^2cd + 3a^2b^3cd^2 - a^3b^2d^3)g^4) - 1/3(3bx + a)B^3cd^2i^2\log(e*(bx/(dx + c) + a/(dx + c))^n)/(b^5g^4x^3 + 3a^4b^2g^4x^2 + 3a^2b^3g^4x + a^3b^2g^4) - 1/3(3b^2x^2 + 3abx + a^2)B^3d^2i^2\log(e*(bx/(dx + c) + a/(dx + c))^n)/(b^6g^4x^3 + 3a^5b^2g^4x^2 + 3a^2b^4g^4x + a^3b^3g^4) - 1/3(3bx + a)A^3cd^2i^2/(b^5g^4x^3 + 3a^4b^2g^4x^2 + 3a^2b^3g^4x + a^3b^2g^4) - 1/3(3b^2x^2 + 3abx + a^2)A^3d^2i^2/(b^6g^4x^3 + 3a^5b^2g^4x^2 + 3a^2b^4g^4x + a^3b^3g^4) - 1/3B^3c^2i^2\log(e*(bx/(dx + c) + a/(dx + c))^n)/(b^4g^4x^3 + 3a^3b^2g^4x^2 + 3a^2b^2g^4x + a^3b^2g^4) - 1/3A^3c^2i^2/(b^4g^4x^3 + 3a^3b^2g^4x^2 + 3a^2b^2g^4x + a^3b^2g^4)$$

mupad [B] time = 5.62, size = 421, normalized size = 4.53

$$\frac{x(3Aabd^2i^2 + 3Ab^2cdi^2 + Babd^2i^2n + Bb^2cdi^2n) + x^2(3Ab^2d^2i^2 + Bb^2d^2i^2n) + Aa^2d^2i^2 + Ab^2c^2i^2}{3a^3b^3g^4 + 9a^2b^4g^4x + 9ab^5g^4x^2 + 3b^6g^4x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x)^4, x)

[Out] - (x*(3A*a*b*d^2*i^2 + 3A*b^2*c*d*i^2 + B*a*b*d^2*i^2*n + B*b^2*c*d*i^2*n) + x^2*(3A*b^2*d^2*i^2 + B*b^2*d^2*i^2*n) + A*a^2*d^2*i^2 + A*b^2*c^2*i^2 + (B*a^2*d^2*i^2*n)/3 + (B*b^2*c^2*i^2*n)/3 + A*a*b*c*d*i^2 + (B*a*b*c*d*i^2*n)/3)/(3a^3b^3g^4 + 3b^6g^4x^3 + 9a^2b^4g^4x^2 + 9a*b^5g^4x) - (log(e*((a + b*x)/(c + d*x))^n)*(a*((B*a*d^2*i^2)/(3*b^3) + (B*c*d*i^2)/(3*b^2)) + x*(b*((B*a*d^2*i^2)/(3*b^3) + (B*c*d*i^2)/(3*b^2)) + (2*B*a*d^2*i^2)/(3*b^2) + (2*B*c*d*i^2)/(3*b) + (B*c^2*i^2)/(3*b) + (B*d^2*i^2*x^2)/b))/(a^3g^4 + b^3g^4x^3 + 3a^2b^2g^4x^2 + 3a^2b^2g^4x) - (B*d^3*i^2*n*atan((b*c*2i + b*d*x*2i)/(a*d - b*c) + 1i)*2i)/(3b^3g^4*(a*d - b*c))

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n))/(b*g*x+a*g)**4, x)

[Out] Timed out

$$3.125 \quad \int \frac{(ci+dx)^2 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ag+bgx)^5} dx$$

Optimal. Leaf size=189

$$\frac{b^2(c+dx)^4 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{4g^5(a+bx)^4(bc-ad)^2} + \frac{d^2(c+dx)^3 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{3g^5(a+bx)^3(bc-ad)^2} - \frac{bB^2n(c+dx)^4}{16g^5(a+bx)^4(bc-ad)^2} + \frac{Bdi}{9g^5(a+bx)^4}$$

[Out] $\frac{1}{9} B d^2 i^2 (c+dx)^4 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right) / (-a d + b c)^2 / g^5 / (b x + a)^3 - \frac{1}{16} b B^2 n (c+dx)^4 / (-a d + b c)^2 / g^5 / (b x + a)^4 + \frac{1}{3} d^2 i^2 (c+dx)^3 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right) / (-a d + b c)^2 / g^5 / (b x + a)^3 - \frac{1}{4} b B^2 n (c+dx)^4 / (-a d + b c)^2 / g^5 / (b x + a)^3 + \frac{B d i}{9 g^5 (a+bx)^4}$

Rubi [A] time = 0.60, antiderivative size = 340, normalized size of antiderivative = 1.80, number of steps used = 14, number of rules used = 4, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.093$, Rules used = {2528, 2525, 12, 44}

$$\frac{d^2 i^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{2b^3 g^5 (a+bx)^2} - \frac{2d^2 i^2 (bc-ad) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{3b^3 g^5 (a+bx)^3} - \frac{i^2 (bc-ad)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{4b^3 g^5 (a+bx)^4} + \frac{B d i}{9 g^5 (a+bx)^4}$$

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b*g*x)^5, x]

[Out] $-\frac{B(b^3 c - a^3 d)^2 i^2 n}{16 b^3 g^5 (a + b x)^4} - \frac{5 B d (b^3 c - a^3 d) i^2 n}{36 b^3 g^5 (a + b x)^3} - \frac{B d^2 i^2 n}{24 b^3 g^5 (a + b x)^2} + \frac{B d^3 i^2 n}{12 b^3 g^5 (a + b x)} + \frac{B d^4 i^2 n \log[a + b x]}{12 b^3 g^5 (a + b x)} - \frac{((b^3 c - a^3 d)^2 i^2 (A + B \log[e*((a + b x)/(c + d x))^n]))}{4 b^3 g^5 (a + b x)^4} - \frac{(2 d (b^3 c - a^3 d) i^2 (A + B \log[e*((a + b x)/(c + d x))^n]))}{3 b^3 g^5 (a + b x)^3} - \frac{(d^2 i^2 (A + B \log[e*((a + b x)/(c + d x))^n]))}{2 b^3 g^5 (a + b x)^2} - \frac{(B d^4 i^2 n \log[c + d x])}{12 b^3 g^5 (a + b x)}$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 44

Int[((a_) + (b_)*(x_))^(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &

& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])

Rule 2525

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(125c + 125dx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ag + bgx)^5} dx &= \int \left(\frac{15625(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^2 g^5 (a + bx)^5} + \frac{31250d(bc - ad)}{b^2 g^5} \right) dx \\
&= \frac{(15625d^2) \int \frac{A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{(a+bx)^3} dx}{b^2 g^5} + \frac{(31250d(bc - ad)) \int \frac{A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{(a+bx)^3} dx}{b^2 g^5} \\
&= -\frac{15625(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{4b^3 g^5 (a + bx)^4} - \frac{31250d(bc - ad)}{3b^3 g^5} \\
&= -\frac{15625(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{4b^3 g^5 (a + bx)^4} - \frac{31250d(bc - ad)}{3b^3 g^5} \\
&= -\frac{15625(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{4b^3 g^5 (a + bx)^4} - \frac{31250d(bc - ad)}{3b^3 g^5} \\
&= -\frac{15625B(bc - ad)^2 n}{16b^3 g^5 (a + bx)^4} - \frac{78125Bd(bc - ad)n}{36b^3 g^5 (a + bx)^3} - \frac{15625Bd^2 n}{24b^3 g^5 (a + bx)^2}
\end{aligned}$$

Mathematica [B] time = 0.42, size = 474, normalized size = 2.51

$$\frac{d^2 i^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{2b^3 g^5 (a + bx)^2} - \frac{2di^2(bc - ad) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{3b^3 g^5 (a + bx)^3} - \frac{i^2(bc - ad)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{4b^3 g^5 (a + bx)^4} - \frac{Bd^2 n}{24b^3 g^5 (a + bx)^2}$$

Antiderivative was successfully verified.

[In] Integrate[(((c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b*g*x)^5, x]

[Out] -1/4*((b*c - a*d)^2*i^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(b^3*g^5*(a + b*x)^4) - (2*d*(b*c - a*d)*i^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(3*b^3*g^5*(a + b*x)^3) - (d^2*i^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(2*b^3*g^5*(a + b*x)^2) - (B*d^2*i^2*n*((a + b*x)^(-2) - (2*d)/((b*c - a*d)*(a + b*x)) - (2*d^2*Log[a + b*x])/(b*c - a*d)^2 + (2*d^2*Log[c + d*x])/(b*c - a*d)^2))/(4*b^3*g^5) - (B*d*i^2*n*((2*(b*c - a*d))/(a + b*x)^3 - (3*d)/(a + b*x)^2 + (6*d^2)/((b*c - a*d)*(a + b*x)) + (6*d^3*Log[a + b*x])/(b*c -

$$a*d)^2 - (6*d^3*\text{Log}[c + d*x])/(b*c - a*d)^2)/(9*b^3*g^5) - (B*i^2*n*((3*(b*c - a*d)^2)/(a + b*x)^4 - (4*d*(b*c - a*d))/(a + b*x)^3 + (6*d^2)/(a + b*x)^2 - (12*d^3)/((b*c - a*d)*(a + b*x)) - (12*d^4*\text{Log}[a + b*x])/(b*c - a*d)^2 + (12*d^4*\text{Log}[c + d*x])/(b*c - a*d)^2))/(48*b^3*g^5)$$

fricas [B] time = 0.87, size = 710, normalized size = 3.76

$$12(Bb^4cd^3 - Bab^3d^4)i^2nx^3 - (9Bb^4c^4 - 16Bab^3c^3d + 7Ba^4d^4)i^2n - 12(3Ab^4c^4 - 4Aab^3c^3d + Aa^4d^4)i^2 - 6((B$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^5,x, algorithm="fricas")

[Out] 1/144*(12*(B*b^4*c*d^3 - B*a*b^3*d^4)*i^2*n*x^3 - (9*B*b^4*c^4 - 16*B*a*b^3*c^3*d + 7*B*a^4*d^4)*i^2*n - 12*(3*A*b^4*c^4 - 4*A*a*b^3*c^3*d + A*a^4*d^4)*i^2 - 6*((B*b^4*c^2*d^2 - 8*B*a*b^3*c*d^3 + 7*B*a^2*b^2*d^4)*i^2*n + 12*(A*b^4*c^2*d^2 - 2*A*a*b^3*c*d^3 + A*a^2*b^2*d^4)*i^2)*x^2 - 4*((5*B*b^4*c^3*d - 12*B*a*b^3*c^2*d^2 + 7*B*a^3*b*d^4)*i^2*n + 12*(2*A*b^4*c^3*d - 3*A*a*b^3*c^2*d^2 + A*a^3*b*d^4)*i^2)*x - 12*(6*(B*b^4*c^2*d^2 - 2*B*a*b^3*c*d^3 + B*a^2*b^2*d^4)*i^2*x^2 + 4*(2*B*b^4*c^3*d - 3*B*a*b^3*c^2*d^2 + B*a^3*b*d^4)*i^2*x + (3*B*b^4*c^4 - 4*B*a*b^3*c^3*d + B*a^4*d^4)*i^2)*log(e) + 12*(B*b^4*d^4*i^2*n*x^4 + 4*B*a*b^3*d^4*i^2*n*x^3 - 6*(B*b^4*c^2*d^2 - 2*B*a*b^3*c*d^3)*i^2*n*x^2 - 4*(2*B*b^4*c^3*d - 3*B*a*b^3*c^2*d^2)*i^2*n*x - (3*B*b^4*c^4 - 4*B*a*b^3*c^3*d)*i^2*n)*log((b*x + a)/(d*x + c)))/((b^9*c^2 - 2*a*b^8*c*d + a^2*b^7*d^2)*g^5*x^4 + 4*(a*b^8*c^2 - 2*a^2*b^7*c*d + a^3*b^6*d^2)*g^5*x^3 + 6*(a^2*b^7*c^2 - 2*a^3*b^6*c*d + a^4*b^5*d^2)*g^5*x^2 + 4*(a^3*b^6*c^2 - 2*a^4*b^5*c*d + a^5*b^4*d^2)*g^5*x + (a^4*b^5*c^2 - 2*a^5*b^4*c*d + a^6*b^3*d^2)*g^5)

giac [A] time = 78.92, size = 222, normalized size = 1.17

$$\frac{1}{144} \left(\frac{12 \left(3Bbn - \frac{4(bx+a)Bdn}{dx+c} \right) \log\left(\frac{bx+a}{dx+c}\right)}{\frac{(bx+a)^4bcg^5}{(dx+c)^4} - \frac{(bx+a)^4adg^5}{(dx+c)^4}} + \frac{9Bbn - \frac{16(bx+a)Bdn}{dx+c} + 36Ab + 36Bb - \frac{48(bx+a)Ad}{dx+c} - \frac{48(bx+a)Bd}{dx+c}}{\frac{(bx+a)^4bcg^5}{(dx+c)^4} - \frac{(bx+a)^4adg^5}{(dx+c)^4}} \right) \left(\frac{bc}{bc - a} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^5,x, algorithm="giac")

[Out] 1/144*(12*(3*B*b*n - 4*(b*x + a)*B*d*n/(d*x + c))*log((b*x + a)/(d*x + c))/((b*x + a)^4*b*c*g^5/(d*x + c)^4 - (b*x + a)^4*a*d*g^5/(d*x + c)^4) + (9*B*b*n - 16*(b*x + a)*B*d*n/(d*x + c) + 36*A*b + 36*B*b - 48*(b*x + a)*A*d/(d

$x + c) - 48*(b*x + a)*B*d/(d*x + c))/((b*x + a)^4*b*c*g^5/(d*x + c)^4 - (b*x + a)^4*a*d*g^5/(d*x + c)^4))*(b*c/(b*c - a*d)^2 - a*d/(b*c - a*d)^2)$

maple [F] time = 0.46, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci)^2 \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)}{(bgx + ag)^5} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^5,x)

[Out] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^5,x)

maxima [B] time = 2.86, size = 2247, normalized size = 11.89

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^5,x, algorithm="maxima")

[Out] $\frac{1}{48}Bc^2i^2n*((12b^3d^3x^3 - 3b^3c^3 + 13a^2b^2c^2d - 23a^2b^2c^2d^2 + 25a^3d^3 - 6(b^3cd^2 - 7a^2b^2d^3)x^2 + 4(b^3c^2d - 5a^2b^2cd^2 + 13a^2b^2d^3)x)/((b^8c^3 - 3a^2b^7c^2d + 3a^2b^6c^2d^2 - a^3b^5d^3)g^5x^4 + 4(a^2b^7c^3 - 3a^2b^6c^2d + 3a^3b^5cd^2 - a^4b^4d^3)g^5x^3 + 6(a^2b^6c^3 - 3a^3b^5c^2d + 3a^4b^4cd^2 - a^5b^3d^3)g^5x^2 + 4(a^3b^5c^3 - 3a^4b^4c^2d + 3a^5b^3cd^2 - a^6b^2d^3)g^5x + (a^4b^4c^3 - 3a^5b^3c^2d + 3a^6b^2cd^2 - a^7b^2d^3)g^5) + 12d^4 \log(bx + a)/((b^5c^4 - 4a^2b^4c^3d + 6a^2b^3c^2d^2 - 4a^3b^2cd^3 + a^4b^2d^4)g^5) - 12d^4 \log(dx + c)/((b^5c^4 - 4a^2b^4c^3d + 6a^2b^3c^2d^2 - 4a^3b^2cd^3 + a^4b^2d^4)g^5)) - \frac{1}{144}Bd^2i^2n*((13a^2b^3c^3 - 75a^3b^2c^2d + 33a^4b^2cd^2 - 7a^5d^3 - 12(6b^5c^2d - 4a^2b^4cd^2 + a^2b^3d^3)x^3 + 6(6b^5c^3 - 46a^2b^4c^2d + 29a^2b^3cd^2 - 7a^3b^2d^3)x^2 + 4(10a^2b^4c^3 - 63a^2b^3c^2d + 33a^3b^2cd^2 - 7a^4b^2d^3)x)/((b^10c^3 - 3a^2b^9c^2d + 3a^2b^8cd^2 - a^3b^7d^3)g^5x^4 + 4(a^2b^9c^3 - 3a^2b^8c^2d + 3a^3b^7cd^2 - a^4b^6d^3)g^5x^3 + 6(a^2b^8c^3 - 3a^3b^7c^2d + 3a^4b^6cd^2 - a^5b^5d^3)g^5x^2 + 4(a^3b^7c^3 - 3a^4b^6c^2d + 3a^5b^5cd^2 - a^6b^4d^3)g^5x + (a^4b^6c^3 - 3a^5b^5c^2d + 3a^6b^4cd^2 - a^7b^3d^3)g^5) - 12(6b^2c^2d^2 - 4a^2b^2cd^3 + a^2d^4) \log(bx + a)/((b^7c^4 - 4a^2b^6c^3d + 6a^2b^5c^2d^2 - 4a^3b^4cd^3 + a^4b^3d^4)g^5) + 12(6b^2c^2d^2 - 4a^2b^2cd^3 + a^2d^4) \log(dx + c)/((b^7c^4 - 4a^2b^6c^3d + 6a^2b^5c^2d^2 - 4a^3b^4cd^3 + a^4b^3d^4)g^5))$

```

*c*d^3 + a^4*b^3*d^4)*g^5)) - 1/72*B*c*d*i^2*n*((7*a*b^3*c^3 - 33*a^2*b^2*c
^2*d + 75*a^3*b*c*d^2 - 13*a^4*d^3 + 12*(4*b^4*c*d^2 - a*b^3*d^3)*x^3 - 6*(
4*b^4*c^2*d - 29*a*b^3*c*d^2 + 7*a^2*b^2*d^3)*x^2 + 4*(4*b^4*c^3 - 21*a*b^3
*c^2*d + 57*a^2*b^2*c*d^2 - 13*a^3*b*d^3)*x)/((b^9*c^3 - 3*a*b^8*c^2*d + 3*
a^2*b^7*c*d^2 - a^3*b^6*d^3)*g^5*x^4 + 4*(a*b^8*c^3 - 3*a^2*b^7*c^2*d + 3*a
^3*b^6*c*d^2 - a^4*b^5*d^3)*g^5*x^3 + 6*(a^2*b^7*c^3 - 3*a^3*b^6*c^2*d + 3*
a^4*b^5*c*d^2 - a^5*b^4*d^3)*g^5*x^2 + 4*(a^3*b^6*c^3 - 3*a^4*b^5*c^2*d + 3
*a^5*b^4*c*d^2 - a^6*b^3*d^3)*g^5*x + (a^4*b^5*c^3 - 3*a^5*b^4*c^2*d + 3*a^
6*b^3*c*d^2 - a^7*b^2*d^3)*g^5)) + 12*(4*b*c*d^3 - a*d^4)*log(b*x + a)/((b^6
*c^4 - 4*a*b^5*c^3*d + 6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*g
^5) - 12*(4*b*c*d^3 - a*d^4)*log(d*x + c)/((b^6*c^4 - 4*a*b^5*c^3*d + 6*a^2
*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*g^5)) - 1/6*(4*b*x + a)*B*c*d
*i^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^6*g^5*x^4 + 4*a*b^5*g^5*x^3
+ 6*a^2*b^4*g^5*x^2 + 4*a^3*b^3*g^5*x + a^4*b^2*g^5) - 1/12*(6*b^2*x^2 + 4*
a*b*x + a^2)*B*d^2*i^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^7*g^5*x^4
+ 4*a*b^6*g^5*x^3 + 6*a^2*b^5*g^5*x^2 + 4*a^3*b^4*g^5*x + a^4*b^3*g^5) - 1/
6*(4*b*x + a)*A*c*d*i^2/(b^6*g^5*x^4 + 4*a*b^5*g^5*x^3 + 6*a^2*b^4*g^5*x^2
+ 4*a^3*b^3*g^5*x + a^4*b^2*g^5) - 1/12*(6*b^2*x^2 + 4*a*b*x + a^2)*A*d^2*i
^2/(b^7*g^5*x^4 + 4*a*b^6*g^5*x^3 + 6*a^2*b^5*g^5*x^2 + 4*a^3*b^4*g^5*x + a
^4*b^3*g^5) - 1/4*B*c^2*i^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^5*g^5
*x^4 + 4*a*b^4*g^5*x^3 + 6*a^2*b^3*g^5*x^2 + 4*a^3*b^2*g^5*x + a^4*b*g^5) -
1/4*A*c^2*i^2/(b^5*g^5*x^4 + 4*a*b^4*g^5*x^3 + 6*a^2*b^3*g^5*x^2 + 4*a^3*b
^2*g^5*x + a^4*b*g^5)

```

mupad [B] time = 6.07, size = 652, normalized size = 3.45

$$\frac{12 A a^3 d^3 i^2 - 36 A b^3 c^3 i^2 + 7 B a^3 d^3 i^2 n - 9 B b^3 c^3 i^2 n + 12 A a b^2 c^2 d i^2 + 12 A a^2 b c d^2 i^2 + 7 B a b^2 c^2 d i^2 n + 7 B a^2 b c d^2 i^2 n}{12(a d - b c)} + \frac{x(12 A a^2 b d^3 i^2 - 24 A a^3 b^2 c d^2 i^2 + 12 A a^2 b^2 c^2 d i^2 + 12 A a b^2 c^2 d^2 i^2 + 7 B a^3 d^3 i^2 n - 9 B b^3 c^3 i^2 n + 12 A a^2 b^2 c d^2 i^2 + 7 B a b^2 c^2 d i^2 n - 5 B b^3 c^2 d i^2 n + 7 B a^2 b^2 c d^2 i^2 n)}{12 a^4 b^3 g^5 + 48 a^3 b^4 g^5 x + 72 a^2 b^5 g^5 x^2 - (\log(e((a + b x)/(c + d x))^n) * (a((B a d^2 i^2)/(12 b^3) + (B c d i^2)/(6 b^2)) + x((B a d^2 i^2)/(12 b^3) + (B c d i^2)/(6 b^2)) + (B a d^2 i^2)/(4 b^2) + (B b^3 d^3 i^2 n x^3)/(a d - b c)))/(12 a^4 b^3 g^5 + 12 b^7 g^5 x^4 + 48 a^3 b^4 g^5 x + 48 a^2 b^5 g^5 x^2) - (\log(e((a + b x)/(c + d x))^n) * (a((B a d^2 i^2)/(12 b^3) + (B c d i^2)/(6 b^2)) + x((B a d^2 i^2)/(12 b^3) + (B c d i^2)/(6 b^2)) + (B a d^2 i^2)/(4 b^2) + (B b^3 d^3 i^2 n x^3)/(a d - b c)))/(12 a^4 b^3 g^5 + 12 b^7 g^5 x^4 + 48 a^3 b^4 g^5 x + 48 a^2 b^5 g^5 x^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x)^5,x)
```

```
[Out] - ((12*A*a^3*d^3*i^2 - 36*A*b^3*c^3*i^2 + 7*B*a^3*d^3*i^2*n - 9*B*b^3*c^3*i
^2*n + 12*A*a*b^2*c^2*d*i^2 + 12*A*a^2*b*c*d^2*i^2 + 7*B*a*b^2*c^2*d*i^2*n
+ 7*B*a^2*b*c*d^2*i^2*n)/(12*(a*d - b*c)) + (x*(12*A*a^2*b*d^3*i^2 - 24*A*b
^3*c^2*d*i^2 + 12*A*a*b^2*c*d^2*i^2 + 7*B*a^2*b*d^3*i^2*n - 5*B*b^3*c^2*d*i
^2*n + 7*B*a*b^2*c*d^2*i^2*n))/(3*(a*d - b*c)) + (x^2*(12*A*a*b^2*d^3*i^2 -
12*A*b^3*c*d^2*i^2 + 7*B*a*b^2*d^3*i^2*n - B*b^3*c*d^2*i^2*n))/(2*(a*d - b
*c)) + (B*b^3*d^3*i^2*n*x^3)/(a*d - b*c))/(12*a^4*b^3*g^5 + 12*b^7*g^5*x^4
+ 48*a^3*b^4*g^5*x + 48*a^2*b^5*g^5*x^2) - (log(e*((a +
b*x)/(c + d*x))^n)*(a*((B*a*d^2*i^2)/(12*b^3) + (B*c*d*i^2)/(6*b^2)) + x*(b
*((B*a*d^2*i^2)/(12*b^3) + (B*c*d*i^2)/(6*b^2)) + (B*a*d^2*i^2)/(4*b^2) + (

```

$$\frac{B*c*d*i^2/(2*b) + (B*c^2*i^2)/(4*b) + (B*d^2*i^2*x^2)/(2*b)}{(a^4*g^5 + b^4*g^5*x^4 + 4*a*b^3*g^5*x^3 + 6*a^2*b^2*g^5*x^2 + 4*a^3*b*g^5*x) - (B*d^4*i^2*n*atanh((12*b^5*c^2*g^5 - 12*a^2*b^3*d^2*g^5)/(12*b^3*g^5*(a*d - b*c)^2) - (2*b*d*x)/(a*d - b*c)))/(6*b^3*g^5*(a*d - b*c)^2)}$$

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n))/(b*g*x+a*g)**5,x)

[Out] Timed out

$$3.126 \quad \int \frac{(ci+dx)^2 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ag+bgx)^6} dx$$

Optimal. Leaf size=293

$$\frac{b^2 i^2 (c+dx)^5 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{5g^6 (a+bx)^5 (bc-ad)^3} - \frac{d^2 i^2 (c+dx)^3 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{3g^6 (a+bx)^3 (bc-ad)^3} + \frac{b d i^2 (c+dx)^4 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{2g^6 (a+bx)^4 (bc-ad)^3}$$

[Out] $-1/9*B*d^2*i^2*n*(d*x+c)^3/(-a*d+b*c)^3/g^6/(b*x+a)^3+1/8*b*B*d*i^2*n*(d*x+c)^4/(-a*d+b*c)^3/g^6/(b*x+a)^4-1/25*b^2*B*i^2*n*(d*x+c)^5/(-a*d+b*c)^3/g^6/(b*x+a)^5-1/3*d^2*i^2*(d*x+c)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^3/g^6/(b*x+a)^3+1/2*b*d*i^2*(d*x+c)^4*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^3/g^6/(b*x+a)^4-1/5*b^2*i^2*(d*x+c)^5*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^3/g^6/(b*x+a)^5$

Rubi [A] time = 0.72, antiderivative size = 375, normalized size of antiderivative = 1.28, number of steps used = 14, number of rules used = 4, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.093$, Rules used = {2528, 2525, 12, 44}

$$\frac{d^2 i^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{3b^3 g^6 (a+bx)^3} - \frac{d i^2 (bc-ad) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{2b^3 g^6 (a+bx)^4} - \frac{i^2 (bc-ad)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{5b^3 g^6 (a+bx)^5} - \frac{30b^3}{30b^3}$$

Antiderivative was successfully verified.

[In] $\text{Int}[(c*i + d*i*x)^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])]/(a*g + b*g*x)^6, x]$

[Out] $-(B*(b*c - a*d)^2*i^2*n)/(25*b^3*g^6*(a + b*x)^5) - (3*B*d*(b*c - a*d)*i^2*n)/(40*b^3*g^6*(a + b*x)^4) - (B*d^2*i^2*n)/(90*b^3*g^6*(a + b*x)^3) + (B*d^3*i^2*n)/(60*b^3*(b*c - a*d)*g^6*(a + b*x)^2) - (B*d^4*i^2*n)/(30*b^3*(b*c - a*d)^2*g^6*(a + b*x)) - (B*d^5*i^2*n*\text{Log}[a + b*x])/(30*b^3*(b*c - a*d)^3*g^6) - ((b*c - a*d)^2*i^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(5*b^3*g^6*(a + b*x)^5) - (d*(b*c - a*d)*i^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(2*b^3*g^6*(a + b*x)^4) - (d^2*i^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(3*b^3*g^6*(a + b*x)^3) + (B*d^5*i^2*n*\text{Log}[c + d*x])/(30*b^3*(b*c - a*d)^3*g^6)$

Rule 12

$\text{Int}[(a_*)*(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \ \&\& \ !\text{MatchQ}[u, (b_*)*(v_)] /; \text{FreeQ}[b, x]$

Rule 44

```
Int[((a_) + (b_)*(x_))^(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2525

```
Int[((a_) + Log[(c_)*(RFx_)^(p_)])*(b_)^(n_)*((d_) + (e_)*(x_))^(m_
), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_) + Log[(c_)*(RFx_)^(p_)])*(b_)^(n_)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunci
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(126c + 126dx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ag + bgx)^6} dx &= \int \left(\frac{15876(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^2 g^6 (a + bx)^6} + \frac{31752d(bc - ad)}{b^2 g^6} \right) dx \\
&= \frac{(15876d^2) \int \frac{A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{(a+bx)^4} dx}{b^2 g^6} + \frac{(31752d(bc - ad)) \int \frac{A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{(a+bx)^4} dx}{b^2 g^6} \\
&= -\frac{15876(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{5b^3 g^6 (a + bx)^5} - \frac{7938d(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^3 g^6 (a + bx)^5} \\
&= -\frac{15876(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{5b^3 g^6 (a + bx)^5} - \frac{7938d(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^3 g^6 (a + bx)^5} \\
&= -\frac{15876(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{5b^3 g^6 (a + bx)^5} - \frac{7938d(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^3 g^6 (a + bx)^5} \\
&= -\frac{15876B(bc - ad)^2 n}{25b^3 g^6 (a + bx)^5} - \frac{11907Bd(bc - ad)n}{10b^3 g^6 (a + bx)^4} - \frac{882Bd^2 n}{5b^3 g^6 (a + bx)^3} + \dots
\end{aligned}$$

Mathematica [A] time = 1.05, size = 357, normalized size = 1.22

$$i^2 \left(-\frac{360a^2 Ad^2}{(a+bx)^5} - \frac{60B(a^2 d^2 + abd(3c+5dx) + b^2(6c^2 + 15cdx + 10d^2 x^2)) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{(a+bx)^5} - \frac{72a^2 Bd^2 n}{(a+bx)^5} - \frac{360Ab^2 c^2}{(a+bx)^5} - \frac{900Abcd}{(a+bx)^4} + \frac{720aAbcd}{(a+bx)^5} - \frac{600A^2 d^2}{(a+bx)^5} \right)$$

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])/(a*g + b*g*x)^6, x]

[Out] (i^2*((-360*A*b^2*c^2)/(a + b*x)^5 + (720*a*A*b*c*d)/(a + b*x)^5 - (360*a^2*A*d^2)/(a + b*x)^5 - (72*b^2*B*c^2*n)/(a + b*x)^5 + (144*a*b*B*c*d*n)/(a + b*x)^5 - (72*a^2*B*d^2*n)/(a + b*x)^5 - (900*A*b*c*d)/(a + b*x)^4 + (900*a*A*d^2)/(a + b*x)^4 - (135*b*B*c*d*n)/(a + b*x)^4 + (135*a*B*d^2*n)/(a + b*x)^4 - (600*A*d^2)/(a + b*x)^3 - (20*B*d^2*n)/(a + b*x)^3 + (30*B*d^3*n)/((b*c - a*d)*(a + b*x)^2) - (60*B*d^4*n)/((b*c - a*d)^2*(a + b*x)) - (60*B*d^5*n)/((b*c - a*d)^3*(a + b*x)))

$5n \cdot \text{Log}[a + b \cdot x] / (b \cdot c - a \cdot d)^3 - (60 \cdot B \cdot (a^2 \cdot d^2 + a \cdot b \cdot d \cdot (3 \cdot c + 5 \cdot d \cdot x) + b^2 \cdot (6 \cdot c^2 + 15 \cdot c \cdot d \cdot x + 10 \cdot d^2 \cdot x^2))) \cdot \text{Log}[e \cdot ((a + b \cdot x) / (c + d \cdot x))^n] / (a + b \cdot x)^5 + (60 \cdot B \cdot d^5 \cdot n \cdot \text{Log}[c + d \cdot x]) / (b \cdot c - a \cdot d)^3) / (1800 \cdot b^3 \cdot g^6)$

fricas [B] time = 1.00, size = 1087, normalized size = 3.71

$$60 (Bb^5cd^4 - Bab^4d^5)i^2nx^4 - 30 (Bb^5c^2d^3 - 10Bab^4cd^4 + 9Ba^2b^3d^5)i^2nx^3 + (72Bb^5c^5 - 225Bab^4c^4d + 200B$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^6,x, algorithm="fricas")

[Out] $-1/1800 \cdot (60 \cdot (B \cdot b^5 \cdot c \cdot d^4 - B \cdot a \cdot b^4 \cdot d^5) \cdot i^2 \cdot n \cdot x^4 - 30 \cdot (B \cdot b^5 \cdot c^2 \cdot d^3 - 10 \cdot B \cdot a \cdot b^4 \cdot c \cdot d^4 + 9 \cdot B \cdot a^2 \cdot b^3 \cdot d^5) \cdot i^2 \cdot n \cdot x^3 + (72 \cdot B \cdot b^5 \cdot c^5 - 225 \cdot B \cdot a \cdot b^4 \cdot c^4 \cdot d + 200 \cdot B \cdot a^2 \cdot b^3 \cdot c^3 \cdot d^2 - 47 \cdot B \cdot a^5 \cdot d^5) \cdot i^2 \cdot n + 60 \cdot (6 \cdot A \cdot b^5 \cdot c^5 - 15 \cdot A \cdot a \cdot b^4 \cdot c^4 \cdot d + 10 \cdot A \cdot a^2 \cdot b^3 \cdot c^3 \cdot d^2 - A \cdot a^5 \cdot d^5) \cdot i^2 + 10 \cdot ((2 \cdot B \cdot b^5 \cdot c^3 \cdot d^2 - 15 \cdot B \cdot a \cdot b^4 \cdot c^2 \cdot d^3 + 60 \cdot B \cdot a^2 \cdot b^3 \cdot c \cdot d^4 - 47 \cdot B \cdot a^3 \cdot b^2 \cdot d^5) \cdot i^2 \cdot n + 60 \cdot (A \cdot b^5 \cdot c^3 \cdot d^2 - 3 \cdot A \cdot a \cdot b^4 \cdot c^2 \cdot d^3 + 3 \cdot A \cdot a^2 \cdot b^3 \cdot c \cdot d^4 - A \cdot a^3 \cdot b^2 \cdot d^5) \cdot i^2) \cdot x^2 + 5 \cdot ((27 \cdot B \cdot b^5 \cdot c^4 \cdot d - 100 \cdot B \cdot a \cdot b^4 \cdot c^3 \cdot d^2 + 120 \cdot B \cdot a^2 \cdot b^3 \cdot c^2 \cdot d^3 - 47 \cdot B \cdot a^4 \cdot b \cdot d^5) \cdot i^2 \cdot n + 60 \cdot (3 \cdot A \cdot b^5 \cdot c^4 \cdot d - 8 \cdot A \cdot a \cdot b^4 \cdot c^3 \cdot d^2 + 6 \cdot A \cdot a^2 \cdot b^3 \cdot c^2 \cdot d^3 - A \cdot a^4 \cdot b \cdot d^5) \cdot i^2) \cdot x + 60 \cdot (10 \cdot (B \cdot b^5 \cdot c^3 \cdot d^2 - 3 \cdot B \cdot a \cdot b^4 \cdot c^2 \cdot d^3 + 3 \cdot B \cdot a^2 \cdot b^3 \cdot c \cdot d^4 - B \cdot a^3 \cdot b^2 \cdot d^5) \cdot i^2 \cdot x^2 + 5 \cdot (3 \cdot B \cdot b^5 \cdot c^4 \cdot d - 8 \cdot B \cdot a \cdot b^4 \cdot c^3 \cdot d^2 + 6 \cdot B \cdot a^2 \cdot b^3 \cdot c^2 \cdot d^3 - B \cdot a^4 \cdot b \cdot d^5) \cdot i^2 \cdot x + (6 \cdot B \cdot b^5 \cdot c^5 - 15 \cdot B \cdot a \cdot b^4 \cdot c^4 \cdot d + 10 \cdot B \cdot a^2 \cdot b^3 \cdot c^3 \cdot d^2 - B \cdot a^5 \cdot d^5) \cdot i^2) \cdot \text{log}(e) + 60 \cdot (B \cdot b^5 \cdot d^5 \cdot i^2 \cdot n \cdot x^5 + 5 \cdot B \cdot a \cdot b^4 \cdot d^5 \cdot i^2 \cdot n \cdot x^4 + 10 \cdot B \cdot a^2 \cdot b^3 \cdot d^5 \cdot i^2 \cdot n \cdot x^3 + 10 \cdot (B \cdot b^5 \cdot c^3 \cdot d^2 - 3 \cdot B \cdot a \cdot b^4 \cdot c^2 \cdot d^3 + 3 \cdot B \cdot a^2 \cdot b^3 \cdot c \cdot d^4) \cdot i^2 \cdot n \cdot x^2 + 5 \cdot (3 \cdot B \cdot b^5 \cdot c^4 \cdot d - 8 \cdot B \cdot a \cdot b^4 \cdot c^3 \cdot d^2 + 6 \cdot B \cdot a^2 \cdot b^3 \cdot c^2 \cdot d^3) \cdot i^2 \cdot n \cdot x + (6 \cdot B \cdot b^5 \cdot c^5 - 15 \cdot B \cdot a \cdot b^4 \cdot c^4 \cdot d + 10 \cdot B \cdot a^2 \cdot b^3 \cdot c^3 \cdot d^2) \cdot i^2 \cdot n) \cdot \text{log}((b \cdot x + a) / (d \cdot x + c))) / ((b^11 \cdot c^3 - 3 \cdot a \cdot b^{10} \cdot c^2 \cdot d + 3 \cdot a^2 \cdot b^9 \cdot c \cdot d^2 - a^3 \cdot b^8 \cdot d^3) \cdot g^6 \cdot x^5 + 5 \cdot (a \cdot b^{10} \cdot c^3 - 3 \cdot a^2 \cdot b^9 \cdot c^2 \cdot d + 3 \cdot a^3 \cdot b^8 \cdot c \cdot d^2 - a^4 \cdot b^7 \cdot d^3) \cdot g^6 \cdot x^4 + 10 \cdot (a^2 \cdot b^9 \cdot c^3 - 3 \cdot a^3 \cdot b^8 \cdot c^2 \cdot d + 3 \cdot a^4 \cdot b^7 \cdot c \cdot d^2 - a^5 \cdot b^6 \cdot d^3) \cdot g^6 \cdot x^3 + 10 \cdot (a^3 \cdot b^8 \cdot c^3 - 3 \cdot a^4 \cdot b^7 \cdot c^2 \cdot d + 3 \cdot a^5 \cdot b^6 \cdot c \cdot d^2 - a^6 \cdot b^5 \cdot d^3) \cdot g^6 \cdot x^2 + 5 \cdot (a^4 \cdot b^7 \cdot c^3 - 3 \cdot a^5 \cdot b^6 \cdot c^2 \cdot d + 3 \cdot a^6 \cdot b^5 \cdot c \cdot d^2 - a^7 \cdot b^4 \cdot d^3) \cdot g^6 \cdot x + (a^5 \cdot b^6 \cdot c^3 - 3 \cdot a^6 \cdot b^5 \cdot c^2 \cdot d + 3 \cdot a^7 \cdot b^4 \cdot c \cdot d^2 - a^8 \cdot b^3 \cdot d^3) \cdot g^6)$

giac [A] time = 110.70, size = 376, normalized size = 1.28

$$\frac{1}{1800} \left(\frac{60 \left(6 B b^2 n - \frac{15 (b x + a) B b d n}{d x + c} + \frac{10 (b x + a)^2 B d^2 n}{(d x + c)^2} \right) \log \left(\frac{b x + a}{d x + c} \right)}{\frac{(b x + a)^5 b^2 c^2 g^6}{(d x + c)^5} - \frac{2 (b x + a)^5 a b c d g^6}{(d x + c)^5} + \frac{(b x + a)^5 a^2 d^2 g^6}{(d x + c)^5}} + \frac{72 B b^2 n - \frac{225 (b x + a) B b d n}{d x + c} + \frac{200 (b x + a)^2 B d^2 n}{(d x + c)^2} + 360 A b}{\frac{(b x + a)^5 b^2 c^2 g^6}{(d x + c)^5}} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^6,x, algorithm="giac")

[Out] 1/1800*(60*(6*B*b^2*n - 15*(b*x + a)*B*b*d*n/(d*x + c) + 10*(b*x + a)^2*B*d^2*n/(d*x + c)^2)*log((b*x + a)/(d*x + c))/((b*x + a)^5*b^2*c^2*g^6/(d*x + c)^5 - 2*(b*x + a)^5*a*b*c*d*g^6/(d*x + c)^5 + (b*x + a)^5*a^2*d^2*g^6/(d*x + c)^5) + (72*B*b^2*n - 225*(b*x + a)*B*b*d*n/(d*x + c) + 200*(b*x + a)^2*B*d^2*n/(d*x + c)^2 + 360*A*b^2 + 360*B*b^2 - 900*(b*x + a)*A*b*d/(d*x + c) - 900*(b*x + a)*B*b*d/(d*x + c) + 600*(b*x + a)^2*A*d^2/(d*x + c)^2 + 600*(b*x + a)^2*B*d^2/(d*x + c)^2)/((b*x + a)^5*b^2*c^2*g^6/(d*x + c)^5 - 2*(b*x + a)^5*a*b*c*d*g^6/(d*x + c)^5 + (b*x + a)^5*a^2*d^2*g^6/(d*x + c)^5))*(b*c/(b*c - a*d)^2 - a*d/(b*c - a*d)^2)

maple [F] time = 0.45, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci)^2 \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)}{(bgx + ag)^6} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^6,x)

[Out] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^6,x)

maxima [B] time = 3.18, size = 3058, normalized size = 10.44

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^6,x, algorithm="maxima")

[Out] -1/300*B*c^2*i^2*n*((60*b^4*d^4*x^4 + 12*b^4*c^4 - 63*a*b^3*c^3*d + 137*a^2*b^2*c^2*d^2 - 163*a^3*b*c*d^3 + 137*a^4*d^4 - 30*(b^4*c*d^3 - 9*a*b^3*d^4)*x^3 + 10*(2*b^4*c^2*d^2 - 13*a*b^3*c*d^3 + 47*a^2*b^2*d^4)*x^2 - 5*(3*b^4*c^3*d - 17*a*b^3*c^2*d^2 + 43*a^2*b^2*c*d^3 - 77*a^3*b*d^4)*x)/((b^10*c^4 - 4*a*b^9*c^3*d + 6*a^2*b^8*c^2*d^2 - 4*a^3*b^7*c*d^3 + a^4*b^6*d^4)*g^6*x^5 + 5*(a*b^9*c^4 - 4*a^2*b^8*c^3*d + 6*a^3*b^7*c^2*d^2 - 4*a^4*b^6*c*d^3 + a^5*b^5*d^4)*g^6*x^4 + 10*(a^2*b^8*c^4 - 4*a^3*b^7*c^3*d + 6*a^4*b^6*c^2*d^2 - 4*a^5*b^5*c*d^3 + a^6*b^4*d^4)*g^6*x^3 + 10*(a^3*b^7*c^4 - 4*a^4*b^6*c^3*d + 6*a^5*b^5*c^2*d^2 - 4*a^6*b^4*c*d^3 + a^7*b^3*d^4)*g^6*x^2 + 5*(a^4*b^6*c^4 - 4*a^5*b^5*c^3*d + 6*a^6*b^4*c^2*d^2 - 4*a^7*b^3*c*d^3 + a^8*b^2*d^4)*g^6*x + (a^5*b^5*c^4 - 4*a^6*b^4*c^3*d + 6*a^7*b^3*c^2*d^2 - 4*a^8*b^2*c*d^3 + a^9*b*d^4)*g^6) + 60*d^5*log(b*x + a)/((b^6*c^5 - 5*a*b^5*c^4*d + 10*

$$\begin{aligned}
& a^2 b^4 c^3 d^2 - 10 a^3 b^3 c^2 d^3 + 5 a^4 b^2 c d^4 - a^5 b d^5) g^6) - \\
& 60 d^5 \log(d x + c) / ((b^6 c^5 - 5 a b^5 c^4 d + 10 a^2 b^4 c^3 d^2 - 10 a^3 \\
& * b^3 c^2 d^3 + 5 a^4 b^2 c d^4 - a^5 b d^5) g^6)) - 1/1800 B d^2 i^2 n * ((47 \\
& * a^2 b^4 c^4 - 278 a^3 b^3 c^3 d + 822 a^4 b^2 c^2 d^2 - 278 a^5 b c d^3 + \\
& 47 a^6 d^4 + 60 * (10 b^6 c^2 d^2 - 5 a b^5 c d^3 + a^2 b^4 d^4) * x^4 - 30 * (10 \\
& * b^6 c^3 d - 95 a b^5 c^2 d^2 + 46 a^2 b^4 c d^3 - 9 a^3 b^3 d^4) * x^3 + 10 * \\
& (20 b^6 c^4 - 140 a b^5 c^3 d + 537 a^2 b^4 c^2 d^2 - 248 a^3 b^3 c d^3 + 4 \\
& 7 a^4 b^2 d^4) * x^2 + 5 * (35 a b^5 c^4 - 218 a^2 b^4 c^3 d + 702 a^3 b^3 c^2 \\
& d^2 - 278 a^4 b^2 c d^3 + 47 a^5 b d^4) * x) / ((b^12 c^4 - 4 a b^11 c^3 d + 6 * \\
& a^2 b^10 c^2 d^2 - 4 a^3 b^9 c d^3 + a^4 b^8 d^4) g^6 x^5 + 5 * (a b^11 c^4 - \\
& 4 a^2 b^10 c^3 d + 6 a^3 b^9 c^2 d^2 - 4 a^4 b^8 c d^3 + a^5 b^7 d^4) g^6 * \\
& x^4 + 10 * (a^2 b^10 c^4 - 4 a^3 b^9 c^3 d + 6 a^4 b^8 c^2 d^2 - 4 a^5 b^7 c * \\
& d^3 + a^6 b^6 d^4) g^6 x^3 + 10 * (a^3 b^9 c^4 - 4 a^4 b^8 c^3 d + 6 a^5 b^7 * \\
& c^2 d^2 - 4 a^6 b^6 c d^3 + a^7 b^5 d^4) g^6 x^2 + 5 * (a^4 b^8 c^4 - 4 a^5 b^7 \\
& ^7 c^3 d + 6 a^6 b^6 c^2 d^2 - 4 a^7 b^5 c d^3 + a^8 b^4 d^4) g^6 x + (a^5 b^7 \\
& c^4 - 4 a^6 b^6 c^3 d + 6 a^7 b^5 c^2 d^2 - 4 a^8 b^4 c d^3 + a^9 b^3 d^4) \\
& g^6) + 60 * (10 b^2 c^2 d^3 - 5 a b c d^4 + a^2 d^5) * \log(b x + a) / ((b^8 c^5 \\
& - 5 a b^7 c^4 d + 10 a^2 b^6 c^3 d^2 - 10 a^3 b^5 c^2 d^3 + 5 a^4 b^4 c * \\
& d^4 - a^5 b^3 d^5) g^6) - 60 * (10 b^2 c^2 d^3 - 5 a b c d^4 + a^2 d^5) * \log(d \\
& * x + c) / ((b^8 c^5 - 5 a b^7 c^4 d + 10 a^2 b^6 c^3 d^2 - 10 a^3 b^5 c^2 d^3 \\
& + 5 a^4 b^4 c d^4 - a^5 b^3 d^5) g^6)) - 1/600 B c d i^2 n * ((27 a b^4 c^4 \\
& - 148 a^2 b^3 c^3 d + 352 a^3 b^2 c^2 d^2 - 548 a^4 b c d^3 + 77 a^5 d^4 - \\
& 60 * (5 b^5 c d^3 - a b^4 d^4) * x^4 + 30 * (5 b^5 c^2 d^2 - 46 a b^4 c d^3 + 9 a \\
& ^2 b^3 d^4) * x^3 - 10 * (10 b^5 c^3 d - 67 a b^4 c^2 d^2 + 248 a^2 b^3 c d^3 - \\
& 47 a^3 b^2 d^4) * x^2 + 5 * (15 b^5 c^4 - 88 a b^4 c^3 d + 232 a^2 b^3 c^2 d^2 \\
& - 428 a^3 b^2 c d^3 + 77 a^4 b d^4) * x) / ((b^11 c^4 - 4 a b^10 c^3 d + 6 a^2 \\
& * b^9 c^2 d^2 - 4 a^3 b^8 c d^3 + a^4 b^7 d^4) g^6 x^5 + 5 * (a b^10 c^4 - 4 a \\
& ^2 b^9 c^3 d + 6 a^3 b^8 c^2 d^2 - 4 a^4 b^7 c d^3 + a^5 b^6 d^4) g^6 x^4 + \\
& 10 * (a^2 b^9 c^4 - 4 a^3 b^8 c^3 d + 6 a^4 b^7 c^2 d^2 - 4 a^5 b^6 c d^3 + \\
& a^6 b^5 d^4) g^6 x^3 + 10 * (a^3 b^8 c^4 - 4 a^4 b^7 c^3 d + 6 a^5 b^6 c^2 d^2 \\
& - 4 a^6 b^5 c d^3 + a^7 b^4 d^4) g^6 x^2 + 5 * (a^4 b^7 c^4 - 4 a^5 b^6 c^3 \\
& * d + 6 a^6 b^5 c^2 d^2 - 4 a^7 b^4 c d^3 + a^8 b^3 d^4) g^6 x + (a^5 b^6 c^4 \\
& - 4 a^6 b^5 c^3 d + 6 a^7 b^4 c^2 d^2 - 4 a^8 b^3 c d^3 + a^9 b^2 d^4) g^6 \\
& 6) - 60 * (5 b c d^4 - a d^5) * \log(b x + a) / ((b^7 c^5 - 5 a b^6 c^4 d + 10 a^2 \\
& * b^5 c^3 d^2 - 10 a^3 b^4 c^2 d^3 + 5 a^4 b^3 c d^4 - a^5 b^2 d^5) g^6) + 6 \\
& 0 * (5 b c d^4 - a d^5) * \log(d x + c) / ((b^7 c^5 - 5 a b^6 c^4 d + 10 a^2 b^5 c^3 \\
& ^3 d^2 - 10 a^3 b^4 c^2 d^3 + 5 a^4 b^3 c d^4 - a^5 b^2 d^5) g^6)) - 1/10 * (\\
& 5 b x + a) * B c d i^2 * \log(e * (b x / (d x + c) + a / (d x + c))^n) / (b^7 g^6 x^5 + \\
& 5 a b^6 g^6 x^4 + 10 a^2 b^5 g^6 x^3 + 10 a^3 b^4 g^6 x^2 + 5 a^4 b^3 g^6 x \\
& + a^5 b^2 g^6) - 1/30 * (10 b^2 x^2 + 5 a b x + a^2) * B d^2 i^2 * \log(e * (b x / (d \\
& * x + c) + a / (d x + c))^n) / (b^8 g^6 x^5 + 5 a b^7 g^6 x^4 + 10 a^2 b^6 g^6 x \\
& ^3 + 10 a^3 b^5 g^6 x^2 + 5 a^4 b^4 g^6 x + a^5 b^3 g^6) - 1/10 * (5 b x + a) \\
& * A c d i^2 / (b^7 g^6 x^5 + 5 a b^6 g^6 x^4 + 10 a^2 b^5 g^6 x^3 + 10 a^3 b^4 \\
& * g^6 x^2 + 5 a^4 b^3 g^6 x + a^5 b^2 g^6) - 1/30 * (10 b^2 x^2 + 5 a b x + a^2) \\
& * A d^2 i^2 / (b^8 g^6 x^5 + 5 a b^7 g^6 x^4 + 10 a^2 b^6 g^6 x^3 + 10 a^3 b
\end{aligned}$$

$$\begin{aligned} &^5g^6x^2 + 5a^4b^4g^6x + a^5b^3g^6) - 1/5Bc^2i^2\log(e*(b*x/(d*x \\ &+ c) + a/(d*x + c))^n)/(b^6g^6x^5 + 5a*b^5g^6x^4 + 10a^2b^4g^6x^3 \\ &+ 10a^3b^3g^6x^2 + 5a^4b^2g^6x + a^5b*g^6) - 1/5Ac^2i^2/(b^6g^ \\ &^6x^5 + 5a*b^5g^6x^4 + 10a^2b^4g^6x^3 + 10a^3b^3g^6x^2 + 5a^4* \\ &b^2g^6x + a^5b*g^6) \end{aligned}$$

mupad [B] time = 6.71, size = 954, normalized size = 3.26

$$\frac{B d^5 i^2 n \operatorname{atanh}\left(\frac{30 a^3 b^3 d^3 g^6 - 30 a^2 b^4 c d^2 g^6 - 30 a b^5 c^2 d g^6 + 30 b^6 c^3 g^6}{30 b^3 g^6 (a d - b c)^3} + \frac{2 b d x (a^2 d^2 - 2 a b c d + b^2 c^2)}{(a d - b c)^3}\right) \ln\left(e\left(\frac{a+b x}{c+d x}\right)^n\right) \left(a\left(\frac{B a d^2 i^2}{30 b^3}\right)}{15 b^3 g^6 (a d - b c)^3} - \frac{a^5 g^6 + 5 a^4 b g^6}{a^5 g^6 + 5 a^4 b g^6}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x)^6,x)

[Out] (B*d^5*i^2*n*atanh((30*b^6*c^3*g^6 + 30*a^3*b^3*d^3*g^6 - 30*a*b^5*c^2*d*g^6 - 30*a^2*b^4*c*d^2*g^6)/(30*b^3*g^6*(a*d - b*c)^3) + (2*b*d*x*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))/(a*d - b*c)^3))/(15*b^3*g^6*(a*d - b*c)^3) - (log(e*((a + b*x)/(c + d*x))^n)*(a*((B*a*d^2*i^2)/(30*b^3) + (B*c*d*i^2)/(10*b^2)) + x*(b*((B*a*d^2*i^2)/(30*b^3) + (B*c*d*i^2)/(10*b^2)) + (2*B*a*d^2*i^2)/(15*b^2) + (2*B*c*d*i^2)/(5*b)) + (B*c^2*i^2)/(5*b) + (B*d^2*i^2*x^2)/(3*b)))/(a^5*g^6 + b^5*g^6*x^5 + 5*a*b^4*g^6*x^4 + 10*a^3*b^2*g^6*x^2 + 10*a^2*b^3*g^6*x^3 + 5*a^4*b*g^6*x) - ((60*A*a^4*d^4*i^2 + 360*A*b^4*c^4*i^2 + 47*B*a^4*d^4*i^2*n + 72*B*b^4*c^4*i^2*n + 60*A*a^2*b^2*c^2*d^2*i^2 - 540*A*a*b^3*c^3*d*i^2 + 60*A*a^3*b*c*d^3*i^2 - 153*B*a*b^3*c^3*d*i^2*n + 47*B*a^3*b*c*d^3*i^2*n + 47*B*a^2*b^2*c^2*d^2*i^2*n)/(60*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (x^2*(60*A*a^2*b^2*d^4*i^2 + 60*A*b^4*c^2*d^2*i^2 + 47*B*a^2*b^2*d^4*i^2*n + 2*B*b^4*c^2*d^2*i^2*n - 120*A*a*b^3*c*d^3*i^2 - 13*B*a*b^3*c*d^3*i^2*n))/(6*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (x*(60*A*a^3*b*d^4*i^2 + 180*A*b^4*c^3*d*i^2 - 300*A*a*b^3*c^2*d^2*i^2 + 60*A*a^2*b^2*c*d^3*i^2 + 47*B*a^3*b*d^4*i^2*n + 27*B*b^4*c^3*d*i^2*n - 73*B*a*b^3*c^2*d^2*i^2*n + 47*B*a^2*b^2*c*d^3*i^2*n))/(12*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (d*x^3*(9*B*a*b^3*d^3*i^2*n - B*b^4*c*d^2*i^2*n))/(2*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (B*b^4*d^4*i^2*n*x^4)/(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))/(30*a^5*b^3*g^6 + 30*b^8*g^6*x^5 + 150*a^4*b^4*g^6*x + 150*a*b^7*g^6*x^4 + 300*a^3*b^5*g^6*x^2 + 300*a^2*b^6*g^6*x^3)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n))/(b*g*x+a*g)**6,x)

[Out] Timed out

$$3.127 \quad \int (ag+bgx)^3(ci+dix)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) dx$$

Optimal. Leaf size=477

$$\frac{b^3 g^3 i^3 (c+dx)^7 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{7d^4} - \frac{b^2 g^3 i^3 (c+dx)^6 (bc-ad) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{2d^4} - \frac{g^3 i^3 (c+dx)^4 (bc-ad)}{2d^4}$$

[Out] $\frac{1}{140} B (-a*d+b*c)^6 g^3 i^3 n^3 x / b^3 / d^3 + \frac{1}{280} B (-a*d+b*c)^5 g^3 i^3 n^3 (d*x+c)^2 / b^2 / d^4 + \frac{1}{420} B (-a*d+b*c)^4 g^3 i^3 n^3 (d*x+c)^3 / b / d^4 - \frac{17}{280} B (-a*d+b*c)^3 g^3 i^3 n^3 (d*x+c)^4 / d^4 + \frac{1}{14} b^2 B (-a*d+b*c)^2 g^3 i^3 n^3 (d*x+c)^5 / d^4 - \frac{1}{42} b^2 B (-a*d+b*c) g^3 i^3 n^3 (d*x+c)^6 / d^4 - \frac{1}{4} (-a*d+b*c)^3 g^3 i^3 n^3 (d*x+c)^4 (A+B*\ln(e*((b*x+a)/(d*x+c))^n)) / d^4 + \frac{3}{5} b^2 (-a*d+b*c)^2 g^3 i^3 n^3 (d*x+c)^5 (A+B*\ln(e*((b*x+a)/(d*x+c))^n)) / d^4 - \frac{1}{2} b^2 (-a*d+b*c) g^3 i^3 n^3 (d*x+c)^6 (A+B*\ln(e*((b*x+a)/(d*x+c))^n)) / d^4 + \frac{1}{7} b^3 g^3 i^3 n^3 (d*x+c)^7 (A+B*\ln(e*((b*x+a)/(d*x+c))^n)) / d^4 + \frac{1}{140} B (-a*d+b*c)^7 g^3 i^3 n^3 \ln((b*x+a)/(d*x+c)) / b^4 / d^4 + \frac{1}{140} B (-a*d+b*c)^7 g^3 i^3 n^3 \ln(d*x+c) / b^4 / d^4$

Rubi [A] time = 0.99, antiderivative size = 435, normalized size of antiderivative = 0.91, number of steps used = 18, number of rules used = 4, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.093$, Rules used = {2528, 2525, 12, 43}

$$\frac{d^2 g^3 i^3 (a+bx)^6 (bc-ad) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{2b^4} + \frac{d^3 g^3 i^3 (a+bx)^7 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{7b^4} + \frac{g^3 i^3 (a+bx)^4 (bc-ad)}{2b^4}$$

Antiderivative was successfully verified.

[In] Int[(a*g + b*g*x)^3*(c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]), x]

[Out] $-\frac{B*(b*c - a*d)^6 g^3 i^3 n^3 x}{(140*b^3*d^3)} + \frac{B*(b*c - a*d)^5 g^3 i^3 n^3 (a + b*x)^2}{(280*b^4*d^2)} - \frac{B*(b*c - a*d)^4 g^3 i^3 n^3 (a + b*x)^3}{(420*b^4*d)} - \frac{17*B*(b*c - a*d)^3 g^3 i^3 n^3 (a + b*x)^4}{(280*b^4)} - \frac{B*d*(b*c - a*d)^2 g^3 i^3 n^3 (a + b*x)^5}{(14*b^4)} - \frac{B*d^2*(b*c - a*d) g^3 i^3 n^3 (a + b*x)^6}{(42*b^4)} + \frac{(b*c - a*d)^3 g^3 i^3 n^3 (a + b*x)^4 (A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])}{(4*b^4)} + \frac{3*d*(b*c - a*d)^2 g^3 i^3 n^3 (a + b*x)^5 (A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])}{(5*b^4)} + \frac{d^2*(b*c - a*d) g^3 i^3 n^3 (a + b*x)^6 (A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])}{(2*b^4)} + \frac{d^3 g^3 i^3 n^3 (a + b*x)^7 (A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])}{(7*b^4)} + \frac{B*(b*c - a*d)^7 g^3 i^3 n^3 \text{Log}[c + d*x]}{(140*b^4*d^4)}$

Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && (!IntegerQ[n] || (EqQ[c, 0] && LeQ[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int (127c + 127dx)^3 (ag + bgx)^3 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right) dx &= \int \left(\frac{(-bc + ad)^3 g^3 (127c + 127dx)^3 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)}{d^3} \right. \\
&= \frac{(b^3 g^3) \int (127c + 127dx)^6 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)}{2048383 d^3} \\
&= -\frac{2048383 (bc - ad)^3 g^3 (c + dx)^4 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)}{4d^4} \\
&= -\frac{2048383 (bc - ad)^3 g^3 (c + dx)^4 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)}{4d^4} \\
&= -\frac{2048383 (bc - ad)^3 g^3 (c + dx)^4 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)}{4d^4} \\
&= \frac{2048383 B (bc - ad)^6 g^3 n x}{140 b^3 d^3} + \frac{2048383 B (bc - ad)^5 g^3}{280 b^2 d^4}
\end{aligned}$$

Mathematica [A] time = 0.67, size = 631, normalized size = 1.32

$$g^3 i^3 \left(120 d^7 (a + bx)^7 \left(B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) + A \right) + 420 d^6 (a + bx)^6 (bc - ad) \left(B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) + A \right) + 504 d^5 (a + bx)^5 \right)$$

Antiderivative was successfully verified.

[In] Integrate[(a*g + b*g*x)^3*(c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]),x]

[Out] (g^3*i^3*(210*d^4*(b*c - a*d)^3*(a + b*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 504*d^5*(b*c - a*d)^2*(a + b*x)^5*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 420*d^6*(b*c - a*d)*(a + b*x)^6*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 120*d^7*(a + b*x)^7*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 35*B*(b*c - a*d)^4*n*(6*b*d*(b*c - a*d)^2*x + 3*d^2*(-(b*c) + a*d)*(a + b*x)^2 + 2*d^3*(a + b*x)^3 - 6*(b*c - a*d)^3*Log[c + d*x]) + 42*B*(b*c - a*d)^3*n*(12*b*d*(b*c - a*d)^3*x - 6*d^2*(b*c - a*d)^2*(a + b*x)^2 + 4*d^3*(b*c - a*d)*(a + b*x)^3 - 3*d^4*(a + b*x)^4 - 12*(b*c - a*d)^4*Log[c + d*x]) - 7*B*(b*c - a*d)^2*n*(60*b*d*(b*c - a*d)^4*x + 30*d^2*(-(b*c) + a*d)^3*(a + b*x)^2

$$+ 20*d^3*(b*c - a*d)^2*(a + b*x)^3 + 15*d^4*(-(b*c) + a*d)*(a + b*x)^4 + 12*d^5*(a + b*x)^5 - 60*(b*c - a*d)^5*\text{Log}[c + d*x]] + 2*B*(b*c - a*d)*n*(60*b*d*(b*c - a*d)^5*x - 30*d^2*(b*c - a*d)^4*(a + b*x)^2 + 20*d^3*(b*c - a*d)^3*(a + b*x)^3 - 15*d^4*(b*c - a*d)^2*(a + b*x)^4 + 12*d^5*(b*c - a*d)*(a + b*x)^5 - 10*d^6*(a + b*x)^6 - 60*(b*c - a*d)^6*\text{Log}[c + d*x]))/(840*b^4*d^4)$$

fricas [B] time = 2.59, size = 1336, normalized size = 2.80

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="fricas")

[Out] $\frac{1}{840}*(120*A*b^7*d^7*g^3*i^3*x^7 + 6*(35*B*a^4*b^3*c^3*d^4 - 21*B*a^5*b^2*c^2*d^5 + 7*B*a^6*b*c*d^6 - B*a^7*d^7)*g^3*i^3*n*\log(b*x + a) + 6*(B*b^7*c^7 - 7*B*a*b^6*c^6*d + 21*B*a^2*b^5*c^5*d^2 - 35*B*a^3*b^4*c^4*d^3)*g^3*i^3*n*\log(d*x + c) - 20*((B*b^7*c*d^6 - B*a*b^6*d^7)*g^3*i^3*n - 21*(A*b^7*c*d^6 + A*a*b^6*d^7)*g^3*i^3)*x^6 - 12*(5*(B*b^7*c^2*d^5 - B*a^2*b^5*d^7)*g^3*i^3*n - 42*(A*b^7*c^2*d^5 + 3*A*a*b^6*c*d^6 + A*a^2*b^5*d^7)*g^3*i^3)*x^5 - 3*((17*B*b^7*c^3*d^4 + 49*B*a*b^6*c^2*d^5 - 49*B*a^2*b^5*c*d^6 - 17*B*a^3*b^4*d^7)*g^3*i^3*n - 70*(A*b^7*c^3*d^4 + 9*A*a*b^6*c^2*d^5 + 9*A*a^2*b^5*c*d^6 + A*a^3*b^4*d^7)*g^3*i^3)*x^4 - 2*((B*b^7*c^4*d^3 + 98*B*a*b^6*c^3*d^4 - 98*B*a^3*b^4*c*d^6 - B*a^4*b^3*d^7)*g^3*i^3*n - 420*(A*a*b^6*c^3*d^4 + 3*A*a^2*b^5*c^2*d^5 + A*a^3*b^4*c*d^6)*g^3*i^3)*x^3 + 3*((B*b^7*c^5*d^2 - 7*B*a*b^6*c^4*d^3 - 84*B*a^2*b^5*c^3*d^4 + 84*B*a^3*b^4*c^2*d^5 + 7*B*a^4*b^3*c*d^6 - B*a^5*b^2*d^7)*g^3*i^3*n + 420*(A*a^2*b^5*c^3*d^4 + A*a^3*b^4*c^2*d^5)*g^3*i^3)*x^2 + 6*(140*A*a^3*b^4*c^3*d^4*g^3*i^3 - (B*b^7*c^6*d - 7*B*a*b^6*c^5*d^2 + 21*B*a^2*b^5*c^4*d^3 - 21*B*a^4*b^3*c^2*d^5 + 7*B*a^5*b^2*c*d^6 - B*a^6*b*d^7)*g^3*i^3*n)*x + 6*(20*B*b^7*d^7*g^3*i^3*x^7 + 140*B*a^3*b^4*c^3*d^4*g^3*i^3*x + 70*(B*b^7*c*d^6 + B*a*b^6*d^7)*g^3*i^3*x^6 + 84*(B*b^7*c^2*d^5 + 3*B*a*b^6*c*d^6 + B*a^2*b^5*d^7)*g^3*i^3*x^5 + 35*(B*b^7*c^3*d^4 + 9*B*a*b^6*c^2*d^5 + 9*B*a^2*b^5*c*d^6 + B*a^3*b^4*d^7)*g^3*i^3*x^4 + 140*(B*a*b^6*c^3*d^4 + 3*B*a^2*b^5*c^2*d^5 + B*a^3*b^4*c*d^6)*g^3*i^3*x^3 + 210*(B*a^2*b^5*c^3*d^4 + B*a^3*b^4*c^2*d^5)*g^3*i^3*x^2)*\log(e) + 6*(20*B*b^7*d^7*g^3*i^3*n*x^7 + 140*B*a^3*b^4*c^3*d^4*g^3*i^3*n*x + 70*(B*b^7*c*d^6 + B*a*b^6*d^7)*g^3*i^3*n*x^6 + 84*(B*b^7*c^2*d^5 + 3*B*a*b^6*c*d^6 + B*a^2*b^5*d^7)*g^3*i^3*n*x^5 + 35*(B*b^7*c^3*d^4 + 9*B*a*b^6*c^2*d^5 + 9*B*a^2*b^5*c*d^6 + B*a^3*b^4*d^7)*g^3*i^3*n*x^4 + 140*(B*a*b^6*c^3*d^4 + 3*B*a^2*b^5*c^2*d^5 + B*a^3*b^4*c*d^6)*g^3*i^3*n*x^3 + 210*(B*a^2*b^5*c^3*d^4 + B*a^3*b^4*c^2*d^5)*g^3*i^3*n*x^2)*\log((b*x + a)/(d*x + c)))/(b^4*d^4)$

giac [B] time = 15.02, size = 5502, normalized size = 11.53

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="giac")

[Out]
$$\begin{aligned} & 1/840*(6*(B*b^{11}*c^8*g^3*i^n - 8*B*a*b^{10}*c^7*d*g^3*i^n - 7*(b*x + a)*B*b^{10}*c^8*d*g^3*i^n/(d*x + c) + 28*B*a^2*b^9*c^6*d^2*g^3*i^n + 56*(b*x + a)*B*a*b^9*c^7*d^2*g^3*i^n/(d*x + c) + 21*(b*x + a)^2*B*b^9*c^8*d^2*g^3*i^n/(d*x + c)^2 - 56*B*a^3*b^8*c^5*d^3*g^3*i^n - 196*(b*x + a)*B*a^2*b^8*c^6*d^3*g^3*i^n/(d*x + c) - 168*(b*x + a)^2*B*a*b^8*c^7*d^3*g^3*i^n/(d*x + c)^2 - 35*(b*x + a)^3*B*b^8*c^8*d^3*g^3*i^n/(d*x + c)^3 + 70*B*a^4*b^7*c^4*d^4*g^3*i^n + 392*(b*x + a)*B*a^3*b^7*c^5*d^4*g^3*i^n/(d*x + c) + 588*(b*x + a)^2*B*a^2*b^7*c^6*d^4*g^3*i^n/(d*x + c)^2 + 280*(b*x + a)^3*B*a*b^7*c^7*d^4*g^3*i^n/(d*x + c)^3 - 56*B*a^5*b^6*c^3*d^5*g^3*i^n - 490*(b*x + a)*B*a^4*b^6*c^4*d^5*g^3*i^n/(d*x + c) - 1176*(b*x + a)^2*B*a^3*b^6*c^5*d^5*g^3*i^n/(d*x + c)^2 - 980*(b*x + a)^3*B*a^2*b^6*c^6*d^5*g^3*i^n/(d*x + c)^3 + 28*B*a^6*b^5*c^2*d^6*g^3*i^n + 392*(b*x + a)*B*a^5*b^5*c^3*d^6*g^3*i^n/(d*x + c) + 1470*(b*x + a)^2*B*a^4*b^5*c^4*d^6*g^3*i^n/(d*x + c)^2 + 1960*(b*x + a)^3*B*a^3*b^5*c^5*d^6*g^3*i^n/(d*x + c)^3 - 8*B*a^7*b^4*c*d^7*g^3*i^n - 196*(b*x + a)*B*a^6*b^4*c^2*d^7*g^3*i^n/(d*x + c) - 1176*(b*x + a)^2*B*a^5*b^4*c^3*d^7*g^3*i^n/(d*x + c)^2 - 2450*(b*x + a)^3*B*a^4*b^4*c^4*d^7*g^3*i^n/(d*x + c)^3 + B*a^8*b^3*d^8*g^3*i^n + 56*(b*x + a)*B*a^7*b^3*c*d^8*g^3*i^n/(d*x + c) + 588*(b*x + a)^2*B*a^6*b^3*c^2*d^8*g^3*i^n/(d*x + c)^2 + 1960*(b*x + a)^3*B*a^5*b^3*c^3*d^8*g^3*i^n/(d*x + c)^3 - 7*(b*x + a)*B*a^8*b^2*d^9*g^3*i^n/(d*x + c) - 168*(b*x + a)^2*B*a^7*b^2*c*d^9*g^3*i^n/(d*x + c)^2 - 980*(b*x + a)^3*B*a^6*b^2*c^2*d^9*g^3*i^n/(d*x + c)^3 + 21*(b*x + a)^2*B*a^8*b*d^10*g^3*i^n/(d*x + c)^2 + 280*(b*x + a)^3*B*a^7*b*c*d^10*g^3*i^n/(d*x + c)^3 - 35*(b*x + a)^3*B*a^8*d^11*g^3*i^n/(d*x + c)^3)*log((b*x + a)/(d*x + c))/(b^7*d^4 - 7*(b*x + a)*b^6*d^5/(d*x + c) + 21*(b*x + a)^2*b^5*d^6/(d*x + c)^2 - 35*(b*x + a)^3*b^4*d^7/(d*x + c)^3 + 35*(b*x + a)^4*b^3*d^8/(d*x + c)^4 - 21*(b*x + a)^5*b^2*d^9/(d*x + c)^5 + 7*(b*x + a)^6*b*d^10/(d*x + c)^6 - (b*x + a)^7*d^11/(d*x + c)^7) + (6*(b*x + a)*B*b^{13}*c^8*d*g^3*i^n/(d*x + c) - 48*(b*x + a)*B*a*b^{12}*c^7*d^2*g^3*i^n/(d*x + c) - 39*(b*x + a)^2*B*b^{12}*c^8*d^2*g^3*i^n/(d*x + c)^2 + 168*(b*x + a)*B*a^2*b^{11}*c^6*d^3*g^3*i^n/(d*x + c) + 312*(b*x + a)^2*B*a*b^{11}*c^7*d^3*g^3*i^n/(d*x + c)^2 + 107*(b*x + a)^3*B*b^{11}*c^8*d^3*g^3*i^n/(d*x + c)^3 - 336*(b*x + a)*B*a^3*b^{10}*c^5*d^4*g^3*i^n/(d*x + c) - 1092*(b*x + a)^2*B*a^2*b^{10}*c^6*d^4*g^3*i^n/(d*x + c)^2 - 856*(b*x + a)^3*B*a*b^{10}*c^7*d^4*g^3*i^n/(d*x + c)^3 - 107*(b*x + a)^4*B*b^{10}*c^8*d^4*g^3*i^n/(d*x + c)^4 + 420*(b*x + a)*B*a^4*b^9*c^4*d^5*g^3*i^n/(d*x + c) + 2184*(b*x + a)^2*B*a^3*b^9*c^5*d^5*g^3*i^n/(d*x + c)^2 + 2996*(b*x + a)^3*B*a^2*b^9*c^6*d^5*g^3*i^n/(d*x + c)^3 + 856*(b*x + a)^4*B*a*b^9*c^7*d^5*g^3*i^n/(d*x + c)^4 + 39*(b*x + a)^5*B*b^9*c^8*d^5*g^3*i^n/(d*x + c)^5 - 336*(b*x + a)*B*a^5*b^8*c^3*d^6*g^3*i^n/(d*x + c) - 2730*(b*x + a)^2*B*a^4*b^8*c^4*d^6*g^3*i^n/(d*x + c)^2 - 5992*(b*x + a)^3*B*a^3*b^8*c^5*d^6*g^3*i^n/(d*x + c)^3 - 2996*(b*x + a)^4*B*a^2*b^8*c^6*d^6*g^3*i^n/(d*x + c)^4 - 3$$

$$\begin{aligned}
& 12*(b*x + a)^5*B*a*b^8*c^7*d^6*g^3*i*n/(d*x + c)^5 - 6*(b*x + a)^6*B*b^8*c^8*d^6*g^3*i*n/(d*x + c)^6 + 168*(b*x + a)*B*a^6*b^7*c^2*d^7*g^3*i*n/(d*x + c) + 2184*(b*x + a)^2*B*a^5*b^7*c^3*d^7*g^3*i*n/(d*x + c)^2 + 7490*(b*x + a)^3*B*a^4*b^7*c^4*d^7*g^3*i*n/(d*x + c)^3 + 5992*(b*x + a)^4*B*a^3*b^7*c^5*d^7*g^3*i*n/(d*x + c)^4 + 1092*(b*x + a)^5*B*a^2*b^7*c^6*d^7*g^3*i*n/(d*x + c)^5 + 48*(b*x + a)^6*B*a*b^7*c^7*d^7*g^3*i*n/(d*x + c)^6 - 48*(b*x + a)*B*a^7*b^6*c*d^8*g^3*i*n/(d*x + c) - 1092*(b*x + a)^2*B*a^6*b^6*c^2*d^8*g^3*i*n/(d*x + c)^2 - 5992*(b*x + a)^3*B*a^5*b^6*c^3*d^8*g^3*i*n/(d*x + c)^3 - 7490*(b*x + a)^4*B*a^4*b^6*c^4*d^8*g^3*i*n/(d*x + c)^4 - 2184*(b*x + a)^5*B*a^3*b^6*c^5*d^8*g^3*i*n/(d*x + c)^5 - 168*(b*x + a)^6*B*a^2*b^6*c^6*d^8*g^3*i*n/(d*x + c)^6 + 6*(b*x + a)*B*a^8*b^5*d^9*g^3*i*n/(d*x + c) + 312*(b*x + a)^2*B*a^7*b^5*c*d^9*g^3*i*n/(d*x + c)^2 + 2996*(b*x + a)^3*B*a^6*b^5*c^2*d^9*g^3*i*n/(d*x + c)^3 + 5992*(b*x + a)^4*B*a^5*b^5*c^3*d^9*g^3*i*n/(d*x + c)^4 + 2730*(b*x + a)^5*B*a^4*b^5*c^4*d^9*g^3*i*n/(d*x + c)^5 + 336*(b*x + a)^6*B*a^3*b^5*c^5*d^9*g^3*i*n/(d*x + c)^6 - 39*(b*x + a)^2*B*a^8*b^4*d^10*g^3*i*n/(d*x + c)^2 - 856*(b*x + a)^3*B*a^7*b^4*c*d^10*g^3*i*n/(d*x + c)^3 - 2996*(b*x + a)^4*B*a^6*b^4*c^2*d^10*g^3*i*n/(d*x + c)^4 - 2184*(b*x + a)^5*B*a^5*b^4*c^3*d^10*g^3*i*n/(d*x + c)^5 - 420*(b*x + a)^6*B*a^4*b^4*c^4*d^10*g^3*i*n/(d*x + c)^6 + 107*(b*x + a)^3*B*a^8*b^3*d^11*g^3*i*n/(d*x + c)^3 + 856*(b*x + a)^4*B*a^7*b^3*c*d^11*g^3*i*n/(d*x + c)^4 + 1092*(b*x + a)^5*B*a^6*b^3*c^2*d^11*g^3*i*n/(d*x + c)^5 + 336*(b*x + a)^6*B*a^5*b^3*c^3*d^11*g^3*i*n/(d*x + c)^6 - 107*(b*x + a)^4*B*a^8*b^2*d^12*g^3*i*n/(d*x + c)^4 - 312*(b*x + a)^5*B*a^7*b^2*c*d^12*g^3*i*n/(d*x + c)^5 - 168*(b*x + a)^6*B*a^6*b^2*c^2*d^12*g^3*i*n/(d*x + c)^6 + 39*(b*x + a)^5*B*a^8*b*d^13*g^3*i*n/(d*x + c)^5 + 48*(b*x + a)^6*B*a^7*b*c*d^13*g^3*i*n/(d*x + c)^6 - 6*(b*x + a)^6*B*a^8*d^14*g^3*i*n/(d*x + c)^6 + 6*A*b^14*c^8*g^3*i + 6*B*b^14*c^8*g^3*i - 48*A*a*b^13*c^7*d*g^3*i - 48*B*a*b^13*c^7*d*g^3*i - 42*(b*x + a)*A*b^13*c^8*d*g^3*i/(d*x + c) - 42*(b*x + a)*B*b^13*c^8*d*g^3*i/(d*x + c) + 168*A*a^2*b^12*c^6*d^2*g^3*i + 168*B*a^2*b^12*c^6*d^2*g^3*i + 336*(b*x + a)*A*a*b^12*c^7*d^2*g^3*i/(d*x + c) + 336*(b*x + a)*B*a*b^12*c^7*d^2*g^3*i/(d*x + c) + 126*(b*x + a)^2*A*b^12*c^8*d^2*g^3*i/(d*x + c)^2 + 126*(b*x + a)^2*B*b^12*c^8*d^2*g^3*i/(d*x + c)^2 - 336*A*a^3*b^11*c^5*d^3*g^3*i - 336*B*a^3*b^11*c^5*d^3*g^3*i - 1176*(b*x + a)*A*a^2*b^11*c^6*d^3*g^3*i/(d*x + c) - 1176*(b*x + a)*B*a^2*b^11*c^6*d^3*g^3*i/(d*x + c) - 1008*(b*x + a)^2*A*a*b^11*c^7*d^3*g^3*i/(d*x + c)^2 - 1008*(b*x + a)^2*B*a*b^11*c^7*d^3*g^3*i/(d*x + c)^2 - 210*(b*x + a)^3*A*b^11*c^8*d^3*g^3*i/(d*x + c)^3 - 210*(b*x + a)^3*B*b^11*c^8*d^3*g^3*i/(d*x + c)^3 + 420*A*a^4*b^10*c^4*d^4*g^3*i + 420*B*a^4*b^10*c^4*d^4*g^3*i + 2352*(b*x + a)*A*a^3*b^10*c^5*d^4*g^3*i/(d*x + c) + 2352*(b*x + a)*B*a^3*b^10*c^5*d^4*g^3*i/(d*x + c) + 3528*(b*x + a)^2*A*a^2*b^10*c^6*d^4*g^3*i/(d*x + c)^2 + 3528*(b*x + a)^2*B*a^2*b^10*c^6*d^4*g^3*i/(d*x + c)^2 + 1680*(b*x + a)^3*A*a*b^10*c^7*d^4*g^3*i/(d*x + c)^3 + 1680*(b*x + a)^3*B*a*b^10*c^7*d^4*g^3*i/(d*x + c)^3 - 336*A*a^5*b^9*c^3*d^5*g^3*i - 336*B*a^5*b^9*c^3*d^5*g^3*i - 2940*(b*x + a)*A*a^4*b^9*c^4*d^5*g^3*i/(d*x + c) - 2940*(b*x + a)*B*a^4*b^9*c^4*d^5*g^3*i/(d*x + c) - 7056*(b*x + a)^2*A*a^3*b^9*c^5*d^5*g^3*i/(d*x + c)^2 - 7056*(b*x + a)^2*B*a^3*b^9*c^5*d^5*g^3*i/(d*x + c)^2
\end{aligned}$$

```

i/(d*x + c)^2 - 5880*(b*x + a)^3*A*a^2*b^9*c^6*d^5*g^3*i/(d*x + c)^3 - 5880
*(b*x + a)^3*B*a^2*b^9*c^6*d^5*g^3*i/(d*x + c)^3 + 168*A*a^6*b^8*c^2*d^6*g^
3*i + 168*B*a^6*b^8*c^2*d^6*g^3*i + 2352*(b*x + a)*A*a^5*b^8*c^3*d^6*g^3*i/
(d*x + c) + 2352*(b*x + a)*B*a^5*b^8*c^3*d^6*g^3*i/(d*x + c) + 8820*(b*x +
a)^2*A*a^4*b^8*c^4*d^6*g^3*i/(d*x + c)^2 + 8820*(b*x + a)^2*B*a^4*b^8*c^4*d
^6*g^3*i/(d*x + c)^2 + 11760*(b*x + a)^3*A*a^3*b^8*c^5*d^6*g^3*i/(d*x + c)^
3 + 11760*(b*x + a)^3*B*a^3*b^8*c^5*d^6*g^3*i/(d*x + c)^3 - 48*A*a^7*b^7*c*
d^7*g^3*i - 48*B*a^7*b^7*c*d^7*g^3*i - 1176*(b*x + a)*A*a^6*b^7*c^2*d^7*g^3
*i/(d*x + c) - 1176*(b*x + a)*B*a^6*b^7*c^2*d^7*g^3*i/(d*x + c) - 7056*(b*x
+ a)^2*A*a^5*b^7*c^3*d^7*g^3*i/(d*x + c)^2 - 7056*(b*x + a)^2*B*a^5*b^7*c^
3*d^7*g^3*i/(d*x + c)^2 - 14700*(b*x + a)^3*A*a^4*b^7*c^4*d^7*g^3*i/(d*x +
c)^3 - 14700*(b*x + a)^3*B*a^4*b^7*c^4*d^7*g^3*i/(d*x + c)^3 + 6*A*a^8*b^6*
d^8*g^3*i + 6*B*a^8*b^6*d^8*g^3*i + 336*(b*x + a)*A*a^7*b^6*c*d^8*g^3*i/(d*
x + c) + 336*(b*x + a)*B*a^7*b^6*c*d^8*g^3*i/(d*x + c) + 3528*(b*x + a)^2*A
*a^6*b^6*c^2*d^8*g^3*i/(d*x + c)^2 + 3528*(b*x + a)^2*B*a^6*b^6*c^2*d^8*g^3
*i/(d*x + c)^2 + 11760*(b*x + a)^3*A*a^5*b^6*c^3*d^8*g^3*i/(d*x + c)^3 + 11
760*(b*x + a)^3*B*a^5*b^6*c^3*d^8*g^3*i/(d*x + c)^3 - 42*(b*x + a)*A*a^8*b^
5*d^9*g^3*i/(d*x + c) - 42*(b*x + a)*B*a^8*b^5*d^9*g^3*i/(d*x + c) - 1008*(
b*x + a)^2*A*a^7*b^5*c*d^9*g^3*i/(d*x + c)^2 - 1008*(b*x + a)^2*B*a^7*b^5*c
*d^9*g^3*i/(d*x + c)^2 - 5880*(b*x + a)^3*A*a^6*b^5*c^2*d^9*g^3*i/(d*x + c)
^3 - 5880*(b*x + a)^3*B*a^6*b^5*c^2*d^9*g^3*i/(d*x + c)^3 + 126*(b*x + a)^2
*A*a^8*b^4*d^10*g^3*i/(d*x + c)^2 + 126*(b*x + a)^2*B*a^8*b^4*d^10*g^3*i/(d
*x + c)^2 + 1680*(b*x + a)^3*A*a^7*b^4*c*d^10*g^3*i/(d*x + c)^3 + 1680*(b*x
+ a)^3*B*a^7*b^4*c*d^10*g^3*i/(d*x + c)^3 - 210*(b*x + a)^3*A*a^8*b^3*d^11
*g^3*i/(d*x + c)^3 - 210*(b*x + a)^3*B*a^8*b^3*d^11*g^3*i/(d*x + c)^3)/(b^1
0*d^4 - 7*(b*x + a)*b^9*d^5/(d*x + c) + 21*(b*x + a)^2*b^8*d^6/(d*x + c)^2
- 35*(b*x + a)^3*b^7*d^7/(d*x + c)^3 + 35*(b*x + a)^4*b^6*d^8/(d*x + c)^4 -
21*(b*x + a)^5*b^5*d^9/(d*x + c)^5 + 7*(b*x + a)^6*b^4*d^10/(d*x + c)^6 -
(b*x + a)^7*b^3*d^11/(d*x + c)^7) + 6*(B*b^8*c^8*g^3*i*n - 8*B*a*b^7*c^7*d*
g^3*i*n + 28*B*a^2*b^6*c^6*d^2*g^3*i*n - 56*B*a^3*b^5*c^5*d^3*g^3*i*n + 70*
B*a^4*b^4*c^4*d^4*g^3*i*n - 56*B*a^5*b^3*c^3*d^5*g^3*i*n + 28*B*a^6*b^2*c^2
*d^6*g^3*i*n - 8*B*a^7*b*c*d^7*g^3*i*n + B*a^8*d^8*g^3*i*n)*log(b - (b*x +
a)*d/(d*x + c))/(b^4*d^4) - 6*(B*b^8*c^8*g^3*i*n - 8*B*a*b^7*c^7*d*g^3*i*n
+ 28*B*a^2*b^6*c^6*d^2*g^3*i*n - 56*B*a^3*b^5*c^5*d^3*g^3*i*n + 70*B*a^4*b^
4*c^4*d^4*g^3*i*n - 56*B*a^5*b^3*c^3*d^5*g^3*i*n + 28*B*a^6*b^2*c^2*d^6*g^3
*i*n - 8*B*a^7*b*c*d^7*g^3*i*n + B*a^8*d^8*g^3*i*n)*log((b*x + a)/(d*x + c)
)/(b^4*d^4))*(b*c/(b*c - a*d)^2 - a*d/(b*c - a*d)^2)

```

maple [F] time = 0.44, size = 0, normalized size = 0.00

$$\int (bgx + ag)^3 (dix + ci)^3 \left(B \ln \left(e \left(\frac{bx + a}{dx + c} \right)^n \right) + A \right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{int}((b*g*x+a*g)^3*(d*i*x+c*i)^3*(B*\ln(e*((b*x+a)/(d*x+c)))^n)+A), x)$

[Out] $\text{int}((b*g*x+a*g)^3*(d*i*x+c*i)^3*(B*\ln(e*((b*x+a)/(d*x+c)))^n)+A), x)$

maxima [B] time = 1.89, size = 2901, normalized size = 6.08

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{integrate}((b*g*x+a*g)^3*(d*i*x+c*i)^3*(A+B*\log(e*((b*x+a)/(d*x+c)))^n)), x, \text{algorithm}="maxima")$

[Out]
$$\begin{aligned} & 1/7*B*b^3*d^3*g^3*i^3*x^7*\log(e*(b*x/(d*x+c) + a/(d*x+c))^n) + 1/7*A*b^3*d^3*g^3*i^3*x^7 \\ & + 1/2*B*b^3*c*d^2*g^3*i^3*x^6*\log(e*(b*x/(d*x+c) + a/(d*x+c))^n) + 1/2*B*a*b^2*d^3*g^3*i^3*x^6*\log(e*(b*x/(d*x+c) + a/(d*x+c))^n) \\ & + 1/2*A*b^3*c*d^2*g^3*i^3*x^6 + 1/2*A*a*b^2*d^3*g^3*i^3*x^6 + 3/5*B*b^3*c^2*d*g^3*i^3*x^5*\log(e*(b*x/(d*x+c) + a/(d*x+c))^n) + 9/5*B*a*b^2*c*d^2*g^3*i^3*x^5*\log(e*(b*x/(d*x+c) + a/(d*x+c))^n) \\ & + 3/5*B*a^2*b*d^3*g^3*i^3*x^5*\log(e*(b*x/(d*x+c) + a/(d*x+c))^n) + 3/5*A*b^3*c^2*d*g^3*i^3*x^5 \\ & + 9/5*A*a*b^2*c*d^2*g^3*i^3*x^5 + 3/5*A*a^2*b*d^3*g^3*i^3*x^5 + 1/4*B*b^3*c^3*g^3*i^3*x^4*\log(e*(b*x/(d*x+c) + a/(d*x+c))^n) + 9/4*B*a*b^2*c^2*d*g^3*i^3*x^4*\log(e*(b*x/(d*x+c) + a/(d*x+c))^n) \\ & + 9/4*B*a^2*b*c*d^2*g^3*i^3*x^4*\log(e*(b*x/(d*x+c) + a/(d*x+c))^n) + 1/4*B*a^3*d^3*g^3*i^3*x^4*\log(e*(b*x/(d*x+c) + a/(d*x+c))^n) + 1/4*A*b^3*c^3*g^3*i^3*x^4 \\ & + 9/4*A*a*b^2*c^2*d*g^3*i^3*x^4 + 9/4*A*a^2*b*c*d^2*g^3*i^3*x^4 + 1/4*A*a^3*d^3*g^3*i^3*x^4 + B*a*b^2*c^3*g^3*i^3*x^3*\log(e*(b*x/(d*x+c) + a/(d*x+c))^n) + 3*B*a^2*b*c^2*d*g^3*i^3*x^3*\log(e*(b*x/(d*x+c) + a/(d*x+c))^n) + B*a^3*c*d^2*g^3*i^3*x^3*\log(e*(b*x/(d*x+c) + a/(d*x+c))^n) + A*a*b^2*c^3*g^3*i^3*x^3 \\ & + 3*A*a^2*b*c^2*d*g^3*i^3*x^3 + A*a^3*c*d^2*g^3*i^3*x^3 + 3/2*B*a^2*b*c^3*g^3*i^3*x^2*\log(e*(b*x/(d*x+c) + a/(d*x+c))^n) + 3/2*B*a^3*c^2*d*g^3*i^3*x^2*\log(e*(b*x/(d*x+c) + a/(d*x+c))^n) + 3/2*A*a^2*b*c^3*g^3*i^3*x^2 \\ & + 3/2*A*a^3*c^2*d*g^3*i^3*x^2 + 1/420*B*b^3*d^3*g^3*i^3*n*(60*a^7*\log(b*x+a)/b^7 - 60*c^7*\log(d*x+c)/d^7 - (10*(b^6*c*d^5 - a*b^5*d^6)*x^6 - 12*(b^6*c^2*d^4 - a^2*b^4*d^6)*x^5 + 15*(b^6*c^3*d^3 - a^3*b^3*d^6)*x^4 - 20*(b^6*c^4*d^2 - a^4*b^2*d^6)*x^3 + 30*(b^6*c^5*d - a^5*b*d^6)*x^2 - 60*(b^6*c^6 - a^6*d^6)*x)/(b^6*d^6)) - 1/120*B*b^3*c*d^2*g^3*i^3*n*(60*a^6*\log(b*x+a)/b^6 - 60*c^6*\log(d*x+c)/d^6 + (12*(b^5*c*d^4 - a*b^4*d^5)*x^5 - 15*(b^5*c^2*d^3 - a^2*b^3*d^5)*x^4 + 20*(b^5*c^3*d^2 - a^3*b^2*d^5)*x^3 - 30*(b^5*c^4*d - a^4*b*d^5)*x^2 + 60*(b^5*c^5 - a^5*d^5)*x)/(b^5*d^5)) - 1/120*B*a*b^2*d^3*g^3*i^3*n*(60*a^6*\log(b*x+a)/b^6 - 60*c^6*\log(d*x+c)/d^6 + (12*(b^5*c*d^4 - a*b^4*d^5)*x^5 - 15*(b^5*c^2*d^3 - a^2*b^3*d^5)*x^4 + 20*(b^5*c^3*d^2 - a^3*b^2*d^5)*x^3 - 30*(b^5*c^4*d - a^4*b*d^5)*x^2 + 60*(b^5*c^5 - a^5*d^5)*x)/(b^5*d^5)) + 1/20*B*b^3*c^2*d*g^3*i^3*n*(12*a^5*\log(b*x+a)/b^5 - 12*c^5*\log(d*x+c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4*c^2*d^2 - a^2*b^2*d^4)*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4*d^2 - a^4*b^2*d^4)*x - 6*(b^4*c^5 - a^5*d^5)*x)/(b^4*d^4)) - 1/20*A*b^3*c^2*d*g^3*i^3*n*(12*a^5*\log(b*x+a)/b^5 - 12*c^5*\log(d*x+c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4*c^2*d^2 - a^2*b^2*d^4)*x - 6*(b^4*c^3*d - a^3*b*d^4)*x - 6*(b^4*c^4*d^2 - a^4*b^2*d^4)*x - 6*(b^4*c^5 - a^5*d^5)*x)/(b^4*d^4)) \end{aligned}$$

```

*c^4 - a^4*d^4)*x)/(b^4*d^4)) + 3/20*B*a*b^2*c*d^2*g^3*i^3*n*(12*a^5*log(b*x
+ a)/b^5 - 12*c^5*log(d*x + c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(
b^4*c^2*d^2 - a^2*b^2*d^4)*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^
4 - a^4*d^4)*x)/(b^4*d^4)) + 1/20*B*a^2*b*d^3*g^3*i^3*n*(12*a^5*log(b*x + a
)/b^5 - 12*c^5*log(d*x + c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4*c
^2*d^2 - a^2*b^2*d^4)*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 - a
^4*d^4)*x)/(b^4*d^4)) - 1/24*B*b^3*c^3*g^3*i^3*n*(6*a^4*log(b*x + a)/b^4 -
6*c^4*log(d*x + c)/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^
2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3)) - 3/8*B*a*b^2*c^2*d*g^3*
i^3*n*(6*a^4*log(b*x + a)/b^4 - 6*c^4*log(d*x + c)/d^4 + (2*(b^3*c*d^2 - a*
b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^
3*d^3)) - 3/8*B*a^2*b*c*d^2*g^3*i^3*n*(6*a^4*log(b*x + a)/b^4 - 6*c^4*log(d
*x + c)/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^
2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3)) - 1/24*B*a^3*d^3*g^3*i^3*n*(6*a^4*1
og(b*x + a)/b^4 - 6*c^4*log(d*x + c)/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 -
3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3)) + 1/2*
B*a*b^2*c^3*g^3*i^3*n*(2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((
b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) + 3/2*B*a^2*b*
c^2*d*g^3*i^3*n*(2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*
d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) + 1/2*B*a^3*c*d^2*g^
3*i^3*n*(2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*
d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) - 3/2*B*a^2*b*c^3*g^3*i^3*n*
(a^2*log(b*x + a)/b^2 - c^2*log(d*x + c)/d^2 + (b*c - a*d)*x/(b*d)) - 3/2*B
*a^3*c^2*d*g^3*i^3*n*(a^2*log(b*x + a)/b^2 - c^2*log(d*x + c)/d^2 + (b*c -
a*d)*x/(b*d)) + B*a^3*c^3*g^3*i^3*n*(a*log(b*x + a)/b - c*log(d*x + c)/d) +
B*a^3*c^3*g^3*i^3*x*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A*a^3*c^3*g^3
*i^3*x

```

mupad [B] time = 6.56, size = 4476, normalized size = 9.38

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```

[In] int((a*g + b*g*x)^3*(c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n)),
x)

```

```

[Out] x^4*((g^3*i^3*(20*A*a^3*d^3 + 20*A*b^3*c^3 + 3*B*a^3*d^3*n - 3*B*b^3*c^3*n
+ 120*A*a*b^2*c^2*d + 120*A*a^2*b*c*d^2 - 6*B*a*b^2*c^2*d*n + 6*B*a^2*b*c*d
^2*n))/20 + ((140*a*d + 140*b*c)*(((b^2*d^2*g^3*i^3*(28*A*a*d + 28*A*b*c +
B*a*d*n - B*b*c*n))/7 - (A*b^2*d^2*g^3*i^3*(140*a*d + 140*b*c))/140)*(140*
a*d + 140*b*c))/(140*b*d) - (b*d*g^3*i^3*(12*A*a^2*d^2 + 12*A*b^2*c^2 + B*a
^2*d^2*n - B*b^2*c^2*n + 32*A*a*b*c*d))/2 + A*a*b^2*c*d^2*g^3*i^3))/(560*b*
d) - (a*c*((b^2*d^2*g^3*i^3*(28*A*a*d + 28*A*b*c + B*a*d*n - B*b*c*n))/7 -
(A*b^2*d^2*g^3*i^3*(140*a*d + 140*b*c))/140))/(4*b*d)) + x^3*((g^3*i^3*(4*A
*a^4*d^4 + 4*A*b^4*c^4 + B*a^4*d^4*n - B*b^4*c^4*n + 144*A*a^2*b^2*c^2*d^2

```

$$\begin{aligned}
& + 64*A*a*b^3*c^3*d + 64*A*a^3*b*c*d^3 - 8*B*a*b^3*c^3*d*n + 8*B*a^3*b*c*d^3 \\
& *n)/(12*b*d) - ((140*a*d + 140*b*c)*((g^3*i^3*(20*A*a^3*d^3 + 20*A*b^3*c^3 \\
& + 3*B*a^3*d^3*n - 3*B*b^3*c^3*n + 120*A*a*b^2*c^2*d + 120*A*a^2*b*c*d^2 - \\
& 6*B*a*b^2*c^2*d*n + 6*B*a^2*b*c*d^2*n))/5 + ((140*a*d + 140*b*c)*(((b^2*d^2 \\
& *g^3*i^3*(28*A*a*d + 28*A*b*c + B*a*d*n - B*b*c*n))/7 - (A*b^2*d^2*g^3*i^3 \\
& *(140*a*d + 140*b*c))/140)*(140*a*d + 140*b*c))/(140*b*d) - (b*d*g^3*i^3*(1 \\
& 2*A*a^2*d^2 + 12*A*b^2*c^2 + B*a^2*d^2*n - B*b^2*c^2*n + 32*A*a*b*c*d))/2 + \\
& A*a*b^2*c*d^2*g^3*i^3))/(140*b*d) - (a*c*((b^2*d^2*g^3*i^3*(28*A*a*d + 28* \\
& A*b*c + B*a*d*n - B*b*c*n))/7 - (A*b^2*d^2*g^3*i^3*(140*a*d + 140*b*c))/140 \\
&))/(b*d))/(420*b*d) + (a*c*(((b^2*d^2*g^3*i^3*(28*A*a*d + 28*A*b*c + B*a \\
& d*n - B*b*c*n))/7 - (A*b^2*d^2*g^3*i^3*(140*a*d + 140*b*c))/140)*(140*a*d + \\
& 140*b*c))/(140*b*d) - (b*d*g^3*i^3*(12*A*a^2*d^2 + 12*A*b^2*c^2 + B*a^2*d^2 \\
& *n - B*b^2*c^2*n + 32*A*a*b*c*d))/2 + A*a*b^2*c*d^2*g^3*i^3))/(3*b*d)) + x \\
& ^6*((b^2*d^2*g^3*i^3*(28*A*a*d + 28*A*b*c + B*a*d*n - B*b*c*n))/42 - (A*b^2 \\
& *d^2*g^3*i^3*(140*a*d + 140*b*c))/840) - x^2*(((140*a*d + 140*b*c)*((g^3*i^ \\
& 3*(4*A*a^4*d^4 + 4*A*b^4*c^4 + B*a^4*d^4*n - B*b^4*c^4*n + 144*A*a^2*b^2*c^ \\
& 2*d^2 + 64*A*a*b^3*c^3*d + 64*A*a^3*b*c*d^3 - 8*B*a*b^3*c^3*d*n + 8*B*a^3*b \\
& *c*d^3*n))/(4*b*d) - ((140*a*d + 140*b*c)*((g^3*i^3*(20*A*a^3*d^3 + 20*A*b^ \\
& 3*c^3 + 3*B*a^3*d^3*n - 3*B*b^3*c^3*n + 120*A*a*b^2*c^2*d + 120*A*a^2*b*c*d \\
& ^2 - 6*B*a*b^2*c^2*d*n + 6*B*a^2*b*c*d^2*n))/5 + ((140*a*d + 140*b*c)*(((b \\
& ^2*d^2*g^3*i^3*(28*A*a*d + 28*A*b*c + B*a*d*n - B*b*c*n))/7 - (A*b^2*d^2*g^ \\
& 3*i^3*(140*a*d + 140*b*c))/140)*(140*a*d + 140*b*c))/(140*b*d) - (b*d*g^3*i \\
& ^3*(12*A*a^2*d^2 + 12*A*b^2*c^2 + B*a^2*d^2*n - B*b^2*c^2*n + 32*A*a*b*c*d) \\
&))/2 + A*a*b^2*c*d^2*g^3*i^3))/(140*b*d) - (a*c*((b^2*d^2*g^3*i^3*(28*A*a*d \\
& + 28*A*b*c + B*a*d*n - B*b*c*n))/7 - (A*b^2*d^2*g^3*i^3*(140*a*d + 140*b*c) \\
&))/140))/(b*d))/(140*b*d) + (a*c*(((b^2*d^2*g^3*i^3*(28*A*a*d + 28*A*b*c + \\
& B*a*d*n - B*b*c*n))/7 - (A*b^2*d^2*g^3*i^3*(140*a*d + 140*b*c))/140)*(140* \\
& a*d + 140*b*c))/(140*b*d) - (b*d*g^3*i^3*(12*A*a^2*d^2 + 12*A*b^2*c^2 + B*a \\
& ^2*d^2*n - B*b^2*c^2*n + 32*A*a*b*c*d))/2 + A*a*b^2*c*d^2*g^3*i^3))/(b*d)) \\
& /((280*b*d) + (a*c*((g^3*i^3*(20*A*a^3*d^3 + 20*A*b^3*c^3 + 3*B*a^3*d^3*n - \\
& 3*B*b^3*c^3*n + 120*A*a*b^2*c^2*d + 120*A*a^2*b*c*d^2 - 6*B*a*b^2*c^2*d*n + \\
& 6*B*a^2*b*c*d^2*n))/5 + ((140*a*d + 140*b*c)*(((b^2*d^2*g^3*i^3*(28*A*a*d \\
& + 28*A*b*c + B*a*d*n - B*b*c*n))/7 - (A*b^2*d^2*g^3*i^3*(140*a*d + 140*b*c) \\
&))/140)*(140*a*d + 140*b*c))/(140*b*d) - (b*d*g^3*i^3*(12*A*a^2*d^2 + 12*A* \\
& b^2*c^2 + B*a^2*d^2*n - B*b^2*c^2*n + 32*A*a*b*c*d))/2 + A*a*b^2*c*d^2*g^3* \\
& i^3))/(140*b*d) - (a*c*((b^2*d^2*g^3*i^3*(28*A*a*d + 28*A*b*c + B*a*d*n - B \\
& *b*c*n))/7 - (A*b^2*d^2*g^3*i^3*(140*a*d + 140*b*c))/140))/(b*d)))/(2*b*d) \\
& - (a*c*g^3*i^3*(4*A*a^3*d^3 + 4*A*b^3*c^3 + B*a^3*d^3*n - B*b^3*c^3*n + 24* \\
& A*a*b^2*c^2*d + 24*A*a^2*b*c*d^2 - 2*B*a*b^2*c^2*d*n + 2*B*a^2*b*c*d^2*n))/ \\
& (2*b*d)) - x^5*(((b^2*d^2*g^3*i^3*(28*A*a*d + 28*A*b*c + B*a*d*n - B*b*c*n) \\
&))/7 - (A*b^2*d^2*g^3*i^3*(140*a*d + 140*b*c))/140)*(140*a*d + 140*b*c))/(7 \\
& 00*b*d) - (b*d*g^3*i^3*(12*A*a^2*d^2 + 12*A*b^2*c^2 + B*a^2*d^2*n - B*b^2*c \\
& ^2*n + 32*A*a*b*c*d))/10 + (A*a*b^2*c*d^2*g^3*i^3)/5) + x*(((140*a*d + 140* \\
& b*c)*(((140*a*d + 140*b*c)*((g^3*i^3*(4*A*a^4*d^4 + 4*A*b^4*c^4 + B*a^4*d^4 \\
& *n - B*b^4*c^4*n + 144*A*a^2*b^2*c^2*d^2 + 64*A*a*b^3*c^3*d + 64*A*a^3*b*c*
\end{aligned}$$

$$\begin{aligned}
& d^3 - 8B^*a^*b^3*c^3*d^n + 8B^*a^3*b^*c*d^3*n)) / (4*b*d) - ((140*a*d + 140*b*c) \\
&) * ((g^3*i^3*(20*A^*a^3*d^3 + 20*A^*b^3*c^3 + 3*B^*a^3*d^3*n - 3*B^*b^3*c^3*n + \\
& 120*A^*a^*b^2*c^2*d + 120*A^*a^2*b^*c*d^2 - 6*B^*a^*b^2*c^2*d*n + 6*B^*a^2*b^*c*d^2 \\
& *n)) / 5 + ((140*a*d + 140*b*c) * (((b^2*d^2*g^3*i^3*(28*A^*a*d + 28*A^*b*c + B^* \\
& a*d*n - B^*b*c*n)) / 7 - (A^*b^2*d^2*g^3*i^3*(140*a*d + 140*b*c)) / 140) * (140*a*d \\
& + 140*b*c)) / (140*b*d) - (b*d*g^3*i^3*(12*A^*a^2*d^2 + 12*A^*b^2*c^2 + B^*a^2* \\
& d^2*n - B^*b^2*c^2*n + 32*A^*a^*b^*c*d)) / 2 + A^*a^*b^2*c*d^2*g^3*i^3)) / (140*b*d) \\
& - (a*c * ((b^2*d^2*g^3*i^3*(28*A^*a*d + 28*A^*b*c + B^*a*d*n - B^*b*c*n)) / 7 - (A^* \\
& b^2*d^2*g^3*i^3*(140*a*d + 140*b*c)) / 140)) / (b*d)) / (140*b*d) + (a*c * (((b^2 \\
& *d^2*g^3*i^3*(28*A^*a*d + 28*A^*b*c + B^*a*d*n - B^*b*c*n)) / 7 - (A^*b^2*d^2*g^3* \\
& i^3*(140*a*d + 140*b*c)) / 140) * (140*a*d + 140*b*c)) / (140*b*d) - (b*d*g^3*i^3 \\
& * (12*A^*a^2*d^2 + 12*A^*b^2*c^2 + B^*a^2*d^2*n - B^*b^2*c^2*n + 32*A^*a^*b^*c*d)) / \\
& 2 + A^*a^*b^2*c*d^2*g^3*i^3)) / (b*d)) / (140*b*d) + (a*c * ((g^3*i^3*(20*A^*a^3*d^ \\
& 3 + 20*A^*b^3*c^3 + 3*B^*a^3*d^3*n - 3*B^*b^3*c^3*n + 120*A^*a^*b^2*c^2*d + 120* \\
& A^*a^2*b^*c*d^2 - 6*B^*a^*b^2*c^2*d*n + 6*B^*a^2*b^*c*d^2*n)) / 5 + ((140*a*d + 140 \\
& *b*c) * (((b^2*d^2*g^3*i^3*(28*A^*a*d + 28*A^*b*c + B^*a*d*n - B^*b*c*n)) / 7 - (A^* \\
& b^2*d^2*g^3*i^3*(140*a*d + 140*b*c)) / 140) * (140*a*d + 140*b*c)) / (140*b*d) - \\
& (b*d*g^3*i^3*(12*A^*a^2*d^2 + 12*A^*b^2*c^2 + B^*a^2*d^2*n - B^*b^2*c^2*n + 32 \\
& *A^*a^*b^*c*d)) / 2 + A^*a^*b^2*c*d^2*g^3*i^3)) / (140*b*d) - (a*c * ((b^2*d^2*g^3*i^3 \\
& * (28*A^*a*d + 28*A^*b*c + B^*a*d*n - B^*b*c*n)) / 7 - (A^*b^2*d^2*g^3*i^3*(140*a*d \\
& + 140*b*c)) / 140)) / (b*d)) / (b*d) - (a*c * g^3*i^3 * (4*A^*a^3*d^3 + 4*A^*b^3*c^3 \\
& + B^*a^3*d^3*n - B^*b^3*c^3*n + 24*A^*a^*b^2*c^2*d + 24*A^*a^2*b^*c*d^2 - 2*B^*a^*b^ \\
& ^2*c^2*d*n + 2*B^*a^2*b^*c*d^2*n)) / (b*d)) / (140*b*d) - (a*c * ((g^3*i^3 * (4*A^*a^ \\
& 4*d^4 + 4*A^*b^4*c^4 + B^*a^4*d^4*n - B^*b^4*c^4*n + 144*A^*a^2*b^2*c^2*d^2 + 6 \\
& 4*A^*a^*b^3*c^3*d + 64*A^*a^3*b^*c*d^3 - 8*B^*a^*b^3*c^3*d*n + 8*B^*a^3*b^*c*d^3*n) \\
&)) / (4*b*d) - ((140*a*d + 140*b*c) * ((g^3*i^3*(20*A^*a^3*d^3 + 20*A^*b^3*c^3 + 3 \\
& *B^*a^3*d^3*n - 3*B^*b^3*c^3*n + 120*A^*a^*b^2*c^2*d + 120*A^*a^2*b^*c*d^2 - 6*B^* \\
& a^*b^2*c^2*d*n + 6*B^*a^2*b^*c*d^2*n)) / 5 + ((140*a*d + 140*b*c) * (((b^2*d^2*g^ \\
& 3*i^3*(28*A^*a*d + 28*A^*b*c + B^*a*d*n - B^*b*c*n)) / 7 - (A^*b^2*d^2*g^3*i^3*(14 \\
& 0*a*d + 140*b*c)) / 140) * (140*a*d + 140*b*c)) / (140*b*d) - (b*d*g^3*i^3*(12*A^* \\
& a^2*d^2 + 12*A^*b^2*c^2 + B^*a^2*d^2*n - B^*b^2*c^2*n + 32*A^*a^*b^*c*d)) / 2 + A^*a^ \\
& *b^2*c*d^2*g^3*i^3)) / (140*b*d) - (a*c * ((b^2*d^2*g^3*i^3*(28*A^*a*d + 28*A^*b^* \\
& c + B^*a*d*n - B^*b*c*n)) / 7 - (A^*b^2*d^2*g^3*i^3*(140*a*d + 140*b*c)) / 140)) / (\\
& b*d)) / (140*b*d) + (a*c * (((b^2*d^2*g^3*i^3*(28*A^*a*d + 28*A^*b*c + B^*a*d*n \\
& - B^*b*c*n)) / 7 - (A^*b^2*d^2*g^3*i^3*(140*a*d + 140*b*c)) / 140) * (140*a*d + 140 \\
& *b*c)) / (140*b*d) - (b*d*g^3*i^3*(12*A^*a^2*d^2 + 12*A^*b^2*c^2 + B^*a^2*d^2*n \\
& - B^*b^2*c^2*n + 32*A^*a^*b^*c*d)) / 2 + A^*a^*b^2*c*d^2*g^3*i^3)) / (b*d)) / (b*d) + \\
& (a^2*c^2*g^3*i^3*(12*A^*a^2*d^2 + 12*A^*b^2*c^2 + 3*B^*a^2*d^2*n - 3*B^*b^2*c^2 \\
& *n + 32*A^*a^*b^*c*d)) / (2*b*d) + \log(e * ((a + b*x) / (c + d*x))^n) * ((B^*g^3*i^3*x \\
& ^4 * (a^3*d^3 + b^3*c^3 + 9*a^*b^2*c^2*d + 9*a^2*b^*c*d^2)) / 4 + B^*a^3*c^3*g^3*i^ \\
& ^3*x + (B^*b^3*d^3*g^3*i^3*x^7) / 7 + (3*B^*a^2*c^2*g^3*i^3*x^2 * (a*d + b*c)) / 2 \\
& + (B^*b^2*d^2*g^3*i^3*x^6 * (a*d + b*c)) / 2 + B^*a^*c^3*g^3*i^3*x^3 * (a^2*d^2 + b^2* \\
& c^2 + 3*a^*b^*c*d) + (3*B^*b^*d^3*g^3*i^3*x^5 * (a^2*d^2 + b^2*c^2 + 3*a^*b^*c*d)) / 5) \\
& - (\log(a + b*x) * (B^*a^7*d^3*g^3*i^3*n - 35*B^*a^4*b^3*c^3*g^3*i^3*n + 21*B^*a^ \\
& ^5*b^2*c^2*d^3*g^3*i^3*n - 7*B^*a^6*b^*c*d^2*g^3*i^3*n)) / (140*b^4) + (\log(c + d
\end{aligned}$$

```
*x)*(B*b^3*c^7*g^3*i^3*n - 35*B*a^3*c^4*d^3*g^3*i^3*n + 21*B*a^2*b*c^5*d^2*
g^3*i^3*n - 7*B*a*b^2*c^6*d*g^3*i^3*n))/(140*d^4) + (A*b^3*d^3*g^3*i^3*x^7)
/7
```

```
sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00
```

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**3*(d*i*x+c*i)**3*(A+B*ln(e*((b*x+a)/(d*x+c))**n)),x)
```

```
[Out] Timed out
```

$$3.128 \quad \int (ag+bgx)^2(ci+dix)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) dx$$

Optimal. Leaf size=387

$$\frac{b^2 g^2 i^3 (c+dx)^6 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{6d^3} + \frac{g^2 i^3 (c+dx)^4 (bc-ad)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{4d^3} - \frac{2bg^2 i^3 (c+dx)^5 (bc-a)}{d^3}$$

[Out] $-1/60*B*(-a*d+b*c)^5*g^2*i^3*n*x/b^3/d^2-1/120*B*(-a*d+b*c)^4*g^2*i^3*n*(d*x+c)^2/b^2/d^3-1/180*B*(-a*d+b*c)^3*g^2*i^3*n*(d*x+c)^3/b/d^3+7/120*B*(-a*d+b*c)^2*g^2*i^3*n*(d*x+c)^4/d^3-1/30*b*B*(-a*d+b*c)*g^2*i^3*n*(d*x+c)^5/d^3+1/4*(-a*d+b*c)^2*g^2*i^3*(d*x+c)^4*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/d^3-2/5*b*(-a*d+b*c)*g^2*i^3*(d*x+c)^5*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/d^3+1/6*b^2*g^2*i^3*(d*x+c)^6*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/d^3-1/60*B*(-a*d+b*c)^6*g^2*i^3*n*\ln((b*x+a)/(d*x+c))/b^4/d^3-1/60*B*(-a*d+b*c)^6*g^2*i^3*n*\ln(d*x+c)/b^4/d^3$

Rubi [A] time = 0.70, antiderivative size = 345, normalized size of antiderivative = 0.89, number of steps used = 14, number of rules used = 4, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.093$, Rules used = {2528, 2525, 12, 43}

$$\frac{b^2 g^2 i^3 (c+dx)^6 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{6d^3} + \frac{g^2 i^3 (c+dx)^4 (bc-ad)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{4d^3} - \frac{2bg^2 i^3 (c+dx)^5 (bc-a)}{d^3}$$

Antiderivative was successfully verified.

[In] Int[(a*g + b*g*x)^2*(c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]), x]

[Out] $-(B*(b*c - a*d)^5*g^2*i^3*n*x)/(60*b^3*d^2) - (B*(b*c - a*d)^4*g^2*i^3*n*(c + d*x)^2)/(120*b^2*d^3) - (B*(b*c - a*d)^3*g^2*i^3*n*(c + d*x)^3)/(180*b*d^3) + (7*B*(b*c - a*d)^2*g^2*i^3*n*(c + d*x)^4)/(120*d^3) - (b*B*(b*c - a*d)*g^2*i^3*n*(c + d*x)^5)/(30*d^3) - (B*(b*c - a*d)^6*g^2*i^3*n*\text{Log}[a + b*x])/(60*b^4*d^3) + ((b*c - a*d)^2*g^2*i^3*(c + d*x)^4*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(4*d^3) - (2*b*(b*c - a*d)*g^2*i^3*(c + d*x)^5*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(5*d^3) + (b^2*g^2*i^3*(c + d*x)^6*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(6*d^3)$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_) /; FreeQ[b, x]]

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && (!IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunci
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int (128c + 128dx)^3 (ag + bgx)^2 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right) dx &= \int \left(\frac{(-bc + ad)^2 g^2 (128c + 128dx)^3 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)}{d^2} \right) dx \\
&= \frac{(b^2 g^2) \int (128c + 128dx)^5 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)}{16384 d^2} \\
&= \frac{524288 (bc - ad)^2 g^2 (c + dx)^4 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)}{d^3} \\
&= \frac{524288 (bc - ad)^2 g^2 (c + dx)^4 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)}{d^3} \\
&= \frac{524288 (bc - ad)^2 g^2 (c + dx)^4 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)}{d^3} \\
&= -\frac{524288 B (bc - ad)^5 g^2 n x}{15 b^3 d^2} - \frac{262144 B (bc - ad)^4 g^2}{15 b^2 d^3}
\end{aligned}$$

Mathematica [A] time = 0.34, size = 441, normalized size = 1.14

$$g^2 i^3 \left(60 b^6 (c + dx)^6 \left(B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) + A \right) - 144 b^5 (c + dx)^5 (bc - ad) \left(B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) + A \right) + 90 b^4 (c + dx)^4 (bc - ad)^2 \left(B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) + A \right) \right)$$

Antiderivative was successfully verified.

[In] Integrate[(a*g + b*g*x)^2*(c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]),x]

[Out] (g^2*i^3*(-15*B*(b*c - a*d)^3*n*(6*b*d*(b*c - a*d)^2*x + 3*b^2*(b*c - a*d)*(c + d*x)^2 + 2*b^3*(c + d*x)^3 + 6*(b*c - a*d)^3*Log[a + b*x]) + 12*B*(b*c - a*d)^2*n*(12*b*d*(b*c - a*d)^3*x + 6*b^2*(b*c - a*d)^2*(c + d*x)^2 + 4*b^3*(b*c - a*d)*(c + d*x)^3 + 3*b^4*(c + d*x)^4 + 12*(b*c - a*d)^4*Log[a + b*x]) - B*(b*c - a*d)*n*(60*b*d*(b*c - a*d)^4*x + 30*b^2*(b*c - a*d)^3*(c + d*x)^2 + 20*b^3*(b*c - a*d)^2*(c + d*x)^3 + 15*b^4*(b*c - a*d)*(c + d*x)^4 + 12*b^5*(c + d*x)^5 + 60*(b*c - a*d)^5*Log[a + b*x]) + 90*b^4*(b*c - a*d)^2*(c + d*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 144*b^5*(b*c - a*d)*(c + d*x)^5*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 60*b^6*(c + d*x)^6*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(360*b^4*d^3)

fricas [B] time = 1.50, size = 1075, normalized size = 2.78

$$60 Ab^6 d^6 g^2 i^3 x^6 + 6 (20 Ba^3 b^3 c^3 d^3 - 15 Ba^4 b^2 c^2 d^4 + 6 Ba^5 b c d^5 - Ba^6 d^6) g^2 i^3 n \log(bx + a) - 6 (Bb^6 c^6 - 6 Bab^5 c^5$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="fricas")

[Out] 1/360*(60*A*b^6*d^6*g^2*i^3*x^6 + 6*(20*B*a^3*b^3*c^3*d^3 - 15*B*a^4*b^2*c^2*d^4 + 6*B*a^5*b*c*d^5 - B*a^6*d^6)*g^2*i^3*n*log(b*x + a) - 6*(B*b^6*c^6 - 6*B*a*b^5*c^5*d + 15*B*a^2*b^4*c^4*d^2)*g^2*i^3*n*log(d*x + c) - 12*((B*b^6*c*d^5 - B*a*b^5*d^6)*g^2*i^3*n - 6*(3*A*b^6*c*d^5 + 2*A*a*b^5*d^6)*g^2*i^3)*x^5 - 3*((13*B*b^6*c^2*d^4 - 6*B*a*b^5*c*d^5 - 7*B*a^2*b^4*d^6)*g^2*i^3*n - 30*(3*A*b^6*c^2*d^4 + 6*A*a*b^5*c*d^5 + A*a^2*b^4*d^6)*g^2*i^3)*x^4 - 2*((19*B*b^6*c^3*d^3 + 21*B*a*b^5*c^2*d^4 - 39*B*a^2*b^4*c*d^5 - B*a^3*b^3*d^6)*g^2*i^3*n - 60*(A*b^6*c^3*d^3 + 6*A*a*b^5*c^2*d^4 + 3*A*a^2*b^4*c*d^5)*g^2*i^3)*x^3 - 3*((B*b^6*c^4*d^2 + 34*B*a*b^5*c^3*d^3 - 30*B*a^2*b^4*c^2*d^4 - 6*B*a^3*b^3*c*d^5 + B*a^4*b^2*d^6)*g^2*i^3*n - 60*(2*A*a*b^5*c^3*d^3 + 3*A*a^2*b^4*c^2*d^4)*g^2*i^3)*x^2 + 6*(60*A*a^2*b^4*c^3*d^3*g^2*i^3 + (B*b^6*c^5*d - 6*B*a*b^5*c^4*d^2 - 5*B*a^2*b^4*c^3*d^3 + 15*B*a^3*b^3*c^2*d^4 - 6*B*a^4*b^2*c*d^5 + B*a^5*b*d^6)*g^2*i^3*n)*x + 6*(10*B*b^6*d^6*g^2*i^3*x^6 + 60*B*a^2*b^4*c^3*d^3*g^2*i^3*x^5 + 12*(3*B*b^6*c*d^5 + 2*B*a*b^5*d^6)*g^2*i^3*x^4 + 15*(3*B*b^6*c^2*d^4 + 6*B*a*b^5*c*d^5 + B*a^2*b^4*d^6)*g^2*i^3*x^3 + 20*(B*b^6*c^3*d^3 + 6*B*a*b^5*c^2*d^4 + 3*B*a^2*b^4*c*d^5)*g^2*i^3*x^2 + 30*(2*B*a*b^5*c^3*d^3 + 3*B*a^2*b^4*c^2*d^4)*g^2*i^3*x)*log(e) + 6*(10*B*b^6*d^6*g^2*i^3*n*x^6 + 60*B*a^2*b^4*c^3*d^3*g^2*i^3*n*x^5 + 12*(3*B*b^6*c*d^5 + 2*B*a*b^5*d^6)*g^2*i^3*n*x^4 + 15*(3*B*b^6*c^2*d^4 + 6*B*a*b^5*c*d^5 + B*a^2*b^4*d^6)*g^2*i^3*n*x^3 + 20*(B*b^6*c^3*d^3 + 6*B*a*b^5*c^2*d^4 + 3*B*a^2*b^4*c*d^5)*g^2*i^3*n*x^2 + 30*(2*B*a*b^5*c^3*d^3 + 3*B*a^2*b^4*c^2*d^4)*g^2*i^3*n*x)*log((b*x + a)/(d*x + c)))/(b^4*d^3)

giac [B] time = 10.15, size = 3980, normalized size = 10.28

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="giac")

[Out] -1/360*(6*(B*b^9*c^7*g^2*i^n - 7*B*a*b^8*c^6*d*g^2*i^n - 6*(b*x + a)*B*b^8*c^7*d*g^2*i^n/(d*x + c) + 21*B*a^2*b^7*c^5*d^2*g^2*i^n + 42*(b*x + a)*B*a*b^7*c^6*d^2*g^2*i^n/(d*x + c) + 15*(b*x + a)^2*B*b^7*c^7*d^2*g^2*i^n/(d*x +

$$\begin{aligned}
& c)^2 - 35*B*a^3*b^6*c^4*d^3*g^2*i*n - 126*(b*x + a)*B*a^2*b^6*c^5*d^3*g^2*i \\
& *n/(d*x + c) - 105*(b*x + a)^2*B*a*b^6*c^6*d^3*g^2*i*n/(d*x + c)^2 + 35*B*a \\
& ^4*b^5*c^3*d^4*g^2*i*n + 210*(b*x + a)*B*a^3*b^5*c^4*d^4*g^2*i*n/(d*x + c) \\
& + 315*(b*x + a)^2*B*a^2*b^5*c^5*d^4*g^2*i*n/(d*x + c)^2 - 21*B*a^5*b^4*c^2* \\
& d^5*g^2*i*n - 210*(b*x + a)*B*a^4*b^4*c^3*d^5*g^2*i*n/(d*x + c) - 525*(b*x \\
& + a)^2*B*a^3*b^4*c^4*d^5*g^2*i*n/(d*x + c)^2 + 7*B*a^6*b^3*c*d^6*g^2*i*n + \\
& 126*(b*x + a)*B*a^5*b^3*c^2*d^6*g^2*i*n/(d*x + c) + 525*(b*x + a)^2*B*a^4*b \\
& ^3*c^3*d^6*g^2*i*n/(d*x + c)^2 - B*a^7*b^2*d^7*g^2*i*n - 42*(b*x + a)*B*a^6 \\
& *b^2*c*d^7*g^2*i*n/(d*x + c) - 315*(b*x + a)^2*B*a^5*b^2*c^2*d^7*g^2*i*n/(d \\
& *x + c)^2 + 6*(b*x + a)*B*a^7*b*d^8*g^2*i*n/(d*x + c) + 105*(b*x + a)^2*B*a \\
& ^6*b*c*d^8*g^2*i*n/(d*x + c)^2 - 15*(b*x + a)^2*B*a^7*d^9*g^2*i*n/(d*x + c) \\
& ^2)*log((b*x + a)/(d*x + c))/(b^6*d^3 - 6*(b*x + a)*b^5*d^4/(d*x + c) + 15* \\
& (b*x + a)^2*b^4*d^5/(d*x + c)^2 - 20*(b*x + a)^3*b^3*d^6/(d*x + c)^3 + 15*(\\
& b*x + a)^4*b^2*d^7/(d*x + c)^4 - 6*(b*x + a)^5*b*d^8/(d*x + c)^5 + (b*x + a \\
&)^6*d^9/(d*x + c)^6) - (2*B*b^12*c^7*g^2*i*n - 14*B*a*b^11*c^6*d*g^2*i*n - \\
& 18*(b*x + a)*B*b^11*c^7*d*g^2*i*n/(d*x + c) + 42*B*a^2*b^10*c^5*d^2*g^2*i*n \\
& + 126*(b*x + a)*B*a*b^10*c^6*d^2*g^2*i*n/(d*x + c) + 63*(b*x + a)^2*B*b^10 \\
& *c^7*d^2*g^2*i*n/(d*x + c)^2 - 70*B*a^3*b^9*c^4*d^3*g^2*i*n - 378*(b*x + a) \\
& *B*a^2*b^9*c^5*d^3*g^2*i*n/(d*x + c) - 441*(b*x + a)^2*B*a*b^9*c^6*d^3*g^2* \\
& i*n/(d*x + c)^2 - 74*(b*x + a)^3*B*b^9*c^7*d^3*g^2*i*n/(d*x + c)^3 + 70*B*a \\
& ^4*b^8*c^3*d^4*g^2*i*n + 630*(b*x + a)*B*a^3*b^8*c^4*d^4*g^2*i*n/(d*x + c) \\
& + 1323*(b*x + a)^2*B*a^2*b^8*c^5*d^4*g^2*i*n/(d*x + c)^2 + 518*(b*x + a)^3* \\
& B*a*b^8*c^6*d^4*g^2*i*n/(d*x + c)^3 + 33*(b*x + a)^4*B*b^8*c^7*d^4*g^2*i*n/ \\
& (d*x + c)^4 - 42*B*a^5*b^7*c^2*d^5*g^2*i*n - 630*(b*x + a)*B*a^4*b^7*c^3*d^ \\
& 5*g^2*i*n/(d*x + c) - 2205*(b*x + a)^2*B*a^3*b^7*c^4*d^5*g^2*i*n/(d*x + c)^ \\
& 2 - 1554*(b*x + a)^3*B*a^2*b^7*c^5*d^5*g^2*i*n/(d*x + c)^3 - 231*(b*x + a)^ \\
& 4*B*a*b^7*c^6*d^5*g^2*i*n/(d*x + c)^4 - 6*(b*x + a)^5*B*b^7*c^7*d^5*g^2*i*n \\
& /(d*x + c)^5 + 14*B*a^6*b^6*c*d^6*g^2*i*n + 378*(b*x + a)*B*a^5*b^6*c^2*d^6 \\
& *g^2*i*n/(d*x + c) + 2205*(b*x + a)^2*B*a^4*b^6*c^3*d^6*g^2*i*n/(d*x + c)^2 \\
& + 2590*(b*x + a)^3*B*a^3*b^6*c^4*d^6*g^2*i*n/(d*x + c)^3 + 693*(b*x + a)^4 \\
& *B*a^2*b^6*c^5*d^6*g^2*i*n/(d*x + c)^4 + 42*(b*x + a)^5*B*a*b^6*c^6*d^6*g^2 \\
& *i*n/(d*x + c)^5 - 2*B*a^7*b^5*d^7*g^2*i*n - 126*(b*x + a)*B*a^6*b^5*c*d^7* \\
& g^2*i*n/(d*x + c) - 1323*(b*x + a)^2*B*a^5*b^5*c^2*d^7*g^2*i*n/(d*x + c)^2 \\
& - 2590*(b*x + a)^3*B*a^4*b^5*c^3*d^7*g^2*i*n/(d*x + c)^3 - 1155*(b*x + a)^4 \\
& *B*a^3*b^5*c^4*d^7*g^2*i*n/(d*x + c)^4 - 126*(b*x + a)^5*B*a^2*b^5*c^5*d^7* \\
& g^2*i*n/(d*x + c)^5 + 18*(b*x + a)*B*a^7*b^4*d^8*g^2*i*n/(d*x + c) + 441*(b \\
& *x + a)^2*B*a^6*b^4*c*d^8*g^2*i*n/(d*x + c)^2 + 1554*(b*x + a)^3*B*a^5*b^4* \\
& c^2*d^8*g^2*i*n/(d*x + c)^3 + 1155*(b*x + a)^4*B*a^4*b^4*c^3*d^8*g^2*i*n/(d \\
& *x + c)^4 + 210*(b*x + a)^5*B*a^3*b^4*c^4*d^8*g^2*i*n/(d*x + c)^5 - 63*(b*x \\
& + a)^2*B*a^7*b^3*d^9*g^2*i*n/(d*x + c)^2 - 518*(b*x + a)^3*B*a^6*b^3*c*d^9 \\
& *g^2*i*n/(d*x + c)^3 - 693*(b*x + a)^4*B*a^5*b^3*c^2*d^9*g^2*i*n/(d*x + c)^ \\
& 4 - 210*(b*x + a)^5*B*a^4*b^3*c^3*d^9*g^2*i*n/(d*x + c)^5 + 74*(b*x + a)^3* \\
& B*a^7*b^2*d^10*g^2*i*n/(d*x + c)^3 + 231*(b*x + a)^4*B*a^6*b^2*c*d^10*g^2*i \\
& *n/(d*x + c)^4 + 126*(b*x + a)^5*B*a^5*b^2*c^2*d^10*g^2*i*n/(d*x + c)^5 - 3 \\
& 3*(b*x + a)^4*B*a^7*b*d^11*g^2*i*n/(d*x + c)^4 - 42*(b*x + a)^5*B*a^6*b*c*d
\end{aligned}$$

$$\begin{aligned}
& ^{11}g^{2i}n/(dx + c)^5 + 6*(bx + a)^5B^7a^7d^{12}g^{2i}n/(dx + c)^5 - 6* \\
& A*b^{12}c^7g^{2i} - 6*B*b^{12}c^7g^{2i} + 42*A*a*b^{11}c^6d^2g^{2i} + 42*B*a*b^{11} \\
& c^6d^2g^{2i} + 36*(bx + a)*A*b^{11}c^7d^2g^{2i}/(dx + c) + 36*(bx + a)*B \\
& *b^{11}c^7d^2g^{2i}/(dx + c) - 126*A*a^2b^{10}c^5d^2g^{2i} - 126*B*a^2b^{10} \\
& c^5d^2g^{2i} - 252*(bx + a)*A*a*b^{10}c^6d^2g^{2i}/(dx + c) - 252*(bx \\
& + a)*B*a*b^{10}c^6d^2g^{2i}/(dx + c) - 90*(bx + a)^2A*b^{10}c^7d^2g^{2i} \\
& / (dx + c)^2 - 90*(bx + a)^2B*b^{10}c^7d^2g^{2i}/(dx + c)^2 + 210*A*a^3* \\
& b^9c^4d^3g^{2i} + 210*B*a^3b^9c^4d^3g^{2i} + 756*(bx + a)*A*a^2b^9c^5 \\
& d^3g^{2i}/(dx + c) + 756*(bx + a)*B*a^2b^9c^5d^3g^{2i}/(dx + c) + \\
& 630*(bx + a)^2A*a*b^9c^6d^3g^{2i}/(dx + c)^2 + 630*(bx + a)^2B*a*b^9 \\
& c^6d^3g^{2i}/(dx + c)^2 - 210*A*a^4b^8c^3d^4g^{2i} - 210*B*a^4b^8c^3 \\
& d^4g^{2i} - 1260*(bx + a)*A*a^3b^8c^4d^4g^{2i}/(dx + c) - 1260*(bx \\
& + a)*B*a^3b^8c^4d^4g^{2i}/(dx + c) - 1890*(bx + a)^2A*a^2b^8c^5d^4 \\
& g^{2i}/(dx + c)^2 - 1890*(bx + a)^2B*a^2b^8c^5d^4g^{2i}/(dx + c)^2 + \\
& 126*A*a^5b^7c^2d^5g^{2i} + 126*B*a^5b^7c^2d^5g^{2i} + 1260*(bx + a) \\
& *A*a^4b^7c^3d^5g^{2i}/(dx + c) + 1260*(bx + a)*B*a^4b^7c^3d^5g^{2i} \\
& / (dx + c) + 3150*(bx + a)^2A*a^3b^7c^4d^5g^{2i}/(dx + c)^2 + 3150*(b \\
& x + a)^2B*a^3b^7c^4d^5g^{2i}/(dx + c)^2 - 42*A*a^6b^6c^2d^6g^{2i} - \\
& 42*B*a^6b^6c^2d^6g^{2i} - 756*(bx + a)*A*a^5b^6c^2d^6g^{2i}/(dx + c) \\
& - 756*(bx + a)*B*a^5b^6c^2d^6g^{2i}/(dx + c) - 3150*(bx + a)^2A*a^4* \\
& b^6c^3d^6g^{2i}/(dx + c)^2 - 3150*(bx + a)^2B*a^4b^6c^3d^6g^{2i}/(d \\
& x + c)^2 + 6*A*a^7b^5d^7g^{2i} + 6*B*a^7b^5d^7g^{2i} + 252*(bx + a)*A \\
& *a^6b^5c^2d^7g^{2i}/(dx + c) + 252*(bx + a)*B*a^6b^5c^2d^7g^{2i}/(dx + \\
& c) + 1890*(bx + a)^2A*a^5b^5c^2d^7g^{2i}/(dx + c)^2 + 1890*(bx + a) \\
& ^2B*a^5b^5c^2d^7g^{2i}/(dx + c)^2 - 36*(bx + a)*A*a^7b^4d^8g^{2i}/(\\
& dx + c) - 36*(bx + a)*B*a^7b^4d^8g^{2i}/(dx + c) - 630*(bx + a)^2A*a \\
& ^6b^4c^2d^8g^{2i}/(dx + c)^2 - 630*(bx + a)^2B*a^6b^4c^2d^8g^{2i}/(dx \\
& + c)^2 + 90*(bx + a)^2A*a^7b^3d^9g^{2i}/(dx + c)^2 + 90*(bx + a)^2B \\
& *a^7b^3d^9g^{2i}/(dx + c)^2)/(b^9d^3 - 6*(bx + a)*b^8d^4/(dx + c) + \\
& 15*(bx + a)^2b^7d^5/(dx + c)^2 - 20*(bx + a)^3b^6d^6/(dx + c)^3 + 1 \\
& 5*(bx + a)^4b^5d^7/(dx + c)^4 - 6*(bx + a)^5b^4d^8/(dx + c)^5 + (b \\
& x + a)^6b^3d^9/(dx + c)^6) + 6*(B*b^7c^7g^{2i}n - 7*B*a*b^6c^6d^2g^{2i} \\
& i^n + 21*B*a^2b^5c^5d^2g^{2i}n - 35*B*a^3b^4c^4d^3g^{2i}n + 35*B*a^4 \\
& b^3c^3d^4g^{2i}n - 21*B*a^5b^2c^2d^5g^{2i}n + 7*B*a^6b*c^2d^6g^{2i} \\
& i^n - B*a^7d^7g^{2i}n)*log(-b + (bx + a)*d/(dx + c))/(b^4d^3) - 6*(B*b \\
& ^7c^7g^{2i}n - 7*B*a*b^6c^6d^2g^{2i}n + 21*B*a^2b^5c^5d^2g^{2i}n - 3 \\
& 5*B*a^3b^4c^4d^3g^{2i}n + 35*B*a^4b^3c^3d^4g^{2i}n - 21*B*a^5b^2c^2 \\
& ^2d^5g^{2i}n + 7*B*a^6b*c^2d^6g^{2i}n - B*a^7d^7g^{2i}n)*log((bx + a) \\
& / (dx + c))/(b^4d^3))*(b*c/(b*c - a*d))^2 - a*d/(b*c - a*d)^2)
\end{aligned}$$

maple [F] time = 0.45, size = 0, normalized size = 0.00

$$\int (bgx + ag)^2 (dix + ci)^3 \left(B \ln \left(e \left(\frac{bx + a}{dx + c} \right)^n \right) + A \right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{int}((b*g*x+a*g)^2*(d*i*x+c*i)^3*(B*\ln(e*((b*x+a)/(d*x+c)))^n)+A), x)$

[Out] $\text{int}((b*g*x+a*g)^2*(d*i*x+c*i)^3*(B*\ln(e*((b*x+a)/(d*x+c)))^n)+A), x)$

maxima [B] time = 1.68, size = 1978, normalized size = 5.11

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{integrate}((b*g*x+a*g)^2*(d*i*x+c*i)^3*(A+B*\log(e*((b*x+a)/(d*x+c)))^n)), x, \text{algorithm}="maxima")$

[Out] $\frac{1}{6}B*b^2*d^3*g^2*i^3*x^6*\log(e*(b*x/(d*x+c) + a/(d*x+c))^n) + \frac{1}{6}A*b^2*d^3*g^2*i^3*x^6 + \frac{3}{5}B*b^2*c*d^2*g^2*i^3*x^5*\log(e*(b*x/(d*x+c) + a/(d*x+c))^n) + \frac{2}{5}B*a*b*d^3*g^2*i^3*x^5*\log(e*(b*x/(d*x+c) + a/(d*x+c))^n) + \frac{3}{5}A*b^2*c*d^2*g^2*i^3*x^5 + \frac{2}{5}A*a*b*d^3*g^2*i^3*x^5 + \frac{3}{4}B*b^2*c^2*d*g^2*i^3*x^4*\log(e*(b*x/(d*x+c) + a/(d*x+c))^n) + \frac{3}{2}B*a*b*c*d^2*g^2*i^3*x^4*\log(e*(b*x/(d*x+c) + a/(d*x+c))^n) + \frac{1}{4}B*a^2*d^3*g^2*i^3*x^4*\log(e*(b*x/(d*x+c) + a/(d*x+c))^n) + \frac{3}{4}A*b^2*c^2*d*g^2*i^3*x^4 + \frac{3}{2}A*a*b*c*d^2*g^2*i^3*x^4 + \frac{1}{4}A*a^2*d^3*g^2*i^3*x^4 + \frac{1}{3}B*b^2*c^3*g^2*i^3*x^3*\log(e*(b*x/(d*x+c) + a/(d*x+c))^n) + 2*B*a*b*c^2*d*g^2*i^3*x^3*\log(e*(b*x/(d*x+c) + a/(d*x+c))^n) + B*a^2*c*d^2*g^2*i^3*x^3*\log(e*(b*x/(d*x+c) + a/(d*x+c))^n) + \frac{1}{3}A*b^2*c^3*g^2*i^3*x^3 + 2*A*a*b*c^2*d*g^2*i^3*x^3 + A*a^2*c*d^2*g^2*i^3*x^3 + B*a*b*c^3*g^2*i^3*x^2*\log(e*(b*x/(d*x+c) + a/(d*x+c))^n) + \frac{3}{2}B*a^2*c^2*d*g^2*i^3*x^2*\log(e*(b*x/(d*x+c) + a/(d*x+c))^n) + A*a*b*c^3*g^2*i^3*x^2 + \frac{3}{2}A*a^2*c^2*d*g^2*i^3*x^2 - \frac{1}{360}B*b^2*d^3*g^2*i^3*n*(60*a^6*\log(b*x+a)/b^6 - 60*c^6*\log(d*x+c)/d^6 + (12*(b^5*c*d^4 - a*b^4*d^5)*x^5 - 15*(b^5*c^2*d^3 - a^2*b^3*d^5)*x^4 + 20*(b^5*c^3*d^2 - a^3*b^2*d^5)*x^3 - 30*(b^5*c^4*d - a^4*b*d^5)*x^2 + 60*(b^5*c^5 - a^5*d^5)*x)/(b^5*d^5)) + \frac{1}{20}B*b^2*c*d^2*g^2*i^3*n*(12*a^5*\log(b*x+a)/b^5 - 12*c^5*\log(d*x+c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4*c^2*d^2 - a^2*b^2*d^4)*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 - a^4*d^4)*x)/(b^4*d^4)) + \frac{1}{30}B*a*b*d^3*g^2*i^3*n*(12*a^5*\log(b*x+a)/b^5 - 12*c^5*\log(d*x+c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4*c^2*d^2 - a^2*b^2*d^4)*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 - a^4*d^4)*x)/(b^4*d^4)) - \frac{1}{8}B*b^2*c^2*d*g^2*i^3*n*(6*a^4*\log(b*x+a)/b^4 - 6*c^4*\log(d*x+c)/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3)) - \frac{1}{24}B*a^2*d^3*g^2*i^3*n*(6*a^4*\log(b*x+a)/b^4 - 6*c^4*\log(d*x+c)/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3)) + \frac{1}{6}B*b^2*c^3*g^2*i^3*n*(2*a^3*\log(b*x+a)$

$$\begin{aligned} & a)/b^3 - 2*c^3*\log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - \\ & a^2*d^2)*x)/(b^2*d^2)) + B*a*b*c^2*d*g^2*i^3*n*(2*a^3*\log(b*x + a)/b^3 - 2* \\ & c^3*\log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/ \\ & (b^2*d^2)) + 1/2*B*a^2*c*d^2*g^2*i^3*n*(2*a^3*\log(b*x + a)/b^3 - 2*c^3*\log(\\ & d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2 \\ &)) - B*a*b*c^3*g^2*i^3*n*(a^2*\log(b*x + a)/b^2 - c^2*\log(d*x + c)/d^2 + (b* \\ & c - a*d)*x/(b*d)) - 3/2*B*a^2*c^2*d*g^2*i^3*n*(a^2*\log(b*x + a)/b^2 - c^2* \\ & \log(d*x + c)/d^2 + (b*c - a*d)*x/(b*d)) + B*a^2*c^3*g^2*i^3*n*(a*\log(b*x + a \\ &)/b - c*\log(d*x + c)/d) + B*a^2*c^3*g^2*i^3*x*\log(e*(b*x/(d*x + c) + a/(d*x \\ & + c)))^n) + A*a^2*c^3*g^2*i^3*x \end{aligned}$$

mupad [B] time = 6.26, size = 2547, normalized size = 6.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{int}((a*g + b*g*x)^2*(c*i + d*i*x)^3*(A + B*\log(e*((a + b*x)/(c + d*x))^n)), x)$

[Out]
$$\begin{aligned} & x^2*((a*c*(((b*d^2*g^2*i^3*(18*A*a*d + 24*A*b*c + B*a*d*n - B*b*c*n))/6 - \\ & (A*b*d^2*g^2*i^3*(60*a*d + 60*b*c))/60)*(60*a*d + 60*b*c))/(60*b*d) - (d*g^ \\ & 2*i^3*(15*A*a^2*d^2 + 30*A*b^2*c^2 + 2*B*a^2*d^2*n - 3*B*b^2*c^2*n + 60*A*a \\ & *b*c*d + B*a*b*c*d*n))/5 + A*a*b*c*d^2*g^2*i^3))/(2*b*d) - ((60*a*d + 60*b* \\ & c)*(g^2*i^3*(4*A*a^3*d^3 + 16*A*b^3*c^3 + B*a^3*d^3*n - 3*B*b^3*c^3*n + 72 \\ & *A*a*b^2*c^2*d + 48*A*a^2*b*c*d^2 - 3*B*a*b^2*c^2*d*n + 5*B*a^2*b*c*d^2*n)) \\ &)/(4*b) + ((60*a*d + 60*b*c)*(((b*d^2*g^2*i^3*(18*A*a*d + 24*A*b*c + B*a*d* \\ & n - B*b*c*n))/6 - (A*b*d^2*g^2*i^3*(60*a*d + 60*b*c))/60)*(60*a*d + 60*b*c) \\ &))/(60*b*d) - (d*g^2*i^3*(15*A*a^2*d^2 + 30*A*b^2*c^2 + 2*B*a^2*d^2*n - 3*B* \\ & b^2*c^2*n + 60*A*a*b*c*d + B*a*b*c*d*n))/5 + A*a*b*c*d^2*g^2*i^3))/(60*b*d) \\ & - (a*c*(((b*d^2*g^2*i^3*(18*A*a*d + 24*A*b*c + B*a*d*n - B*b*c*n))/6 - (A*b \\ & *d^2*g^2*i^3*(60*a*d + 60*b*c))/60))/(b*d)))/(120*b*d) + (c*g^2*i^3*(12*A*a \\ & ^3*d^3 + 3*A*b^3*c^3 + 3*B*a^3*d^3*n - B*b^3*c^3*n + 36*A*a*b^2*c^2*d + 54* \\ & A*a^2*b*c*d^2 - 5*B*a*b^2*c^2*d*n + 3*B*a^2*b*c*d^2*n))/(6*b*d) + x^3*((g^ \\ & 2*i^3*(4*A*a^3*d^3 + 16*A*b^3*c^3 + B*a^3*d^3*n - 3*B*b^3*c^3*n + 72*A*a*b^ \\ & 2*c^2*d + 48*A*a^2*b*c*d^2 - 3*B*a*b^2*c^2*d*n + 5*B*a^2*b*c*d^2*n))/(12*b) \\ & + ((60*a*d + 60*b*c)*(((b*d^2*g^2*i^3*(18*A*a*d + 24*A*b*c + B*a*d*n - B* \\ & b*c*n))/6 - (A*b*d^2*g^2*i^3*(60*a*d + 60*b*c))/60)*(60*a*d + 60*b*c))/(60* \\ & b*d) - (d*g^2*i^3*(15*A*a^2*d^2 + 30*A*b^2*c^2 + 2*B*a^2*d^2*n - 3*B*b^2*c^ \\ & 2*n + 60*A*a*b*c*d + B*a*b*c*d*n))/5 + A*a*b*c*d^2*g^2*i^3))/(180*b*d) - (a \\ & *c*(((b*d^2*g^2*i^3*(18*A*a*d + 24*A*b*c + B*a*d*n - B*b*c*n))/6 - (A*b*d^2* \\ & g^2*i^3*(60*a*d + 60*b*c))/60))/(3*b*d)) - x^4*(((((b*d^2*g^2*i^3*(18*A*a*d \\ & + 24*A*b*c + B*a*d*n - B*b*c*n))/6 - (A*b*d^2*g^2*i^3*(60*a*d + 60*b*c))/60 \\ &)*(60*a*d + 60*b*c))/(240*b*d) - (d*g^2*i^3*(15*A*a^2*d^2 + 30*A*b^2*c^2 + \\ & 2*B*a^2*d^2*n - 3*B*b^2*c^2*n + 60*A*a*b*c*d + B*a*b*c*d*n))/20 + (A*a*b*c* \\ & d^2*g^2*i^3)/4) + x^5*((b*d^2*g^2*i^3*(18*A*a*d + 24*A*b*c + B*a*d*n - B*b* \end{aligned}$$

$$\begin{aligned}
& c^n)/30 - (A*b*d^2*g^2*i^3*(60*a*d + 60*b*c))/300) - x*(((60*a*d + 60*b*c) \\
& *((a*c*(((b*d^2*g^2*i^3*(18*A*a*d + 24*A*b*c + B*a*d*n - B*b*c*n))/6 - (A* \\
& b*d^2*g^2*i^3*(60*a*d + 60*b*c))/60)*(60*a*d + 60*b*c))/(60*b*d) - (d*g^2*i \\
& ^3*(15*A*a^2*d^2 + 30*A*b^2*c^2 + 2*B*a^2*d^2*n - 3*B*b^2*c^2*n + 60*A*a*b* \\
& c*d + B*a*b*c*d*n))/5 + A*a*b*c*d^2*g^2*i^3))/(b*d) - ((60*a*d + 60*b*c)*((\\
& g^2*i^3*(4*A*a^3*d^3 + 16*A*b^3*c^3 + B*a^3*d^3*n - 3*B*b^3*c^3*n + 72*A*a* \\
& b^2*c^2*d + 48*A*a^2*b*c*d^2 - 3*B*a*b^2*c^2*d*n + 5*B*a^2*b*c*d^2*n))/(4*b \\
&) + ((60*a*d + 60*b*c)*(((b*d^2*g^2*i^3*(18*A*a*d + 24*A*b*c + B*a*d*n - B \\
& *b*c*n))/6 - (A*b*d^2*g^2*i^3*(60*a*d + 60*b*c))/60)*(60*a*d + 60*b*c))/(60 \\
& *b*d) - (d*g^2*i^3*(15*A*a^2*d^2 + 30*A*b^2*c^2 + 2*B*a^2*d^2*n - 3*B*b^2*c \\
& ^2*n + 60*A*a*b*c*d + B*a*b*c*d*n))/5 + A*a*b*c*d^2*g^2*i^3))/(60*b*d) - (a \\
& *c*((b*d^2*g^2*i^3*(18*A*a*d + 24*A*b*c + B*a*d*n - B*b*c*n))/6 - (A*b*d^2* \\
& g^2*i^3*(60*a*d + 60*b*c))/60))/(b*d)))/(60*b*d) + (c*g^2*i^3*(12*A*a^3*d^3 \\
& + 3*A*b^3*c^3 + 3*B*a^3*d^3*n - B*b^3*c^3*n + 36*A*a*b^2*c^2*d + 54*A*a^2* \\
& b*c*d^2 - 5*B*a*b^2*c^2*d*n + 3*B*a^2*b*c*d^2*n))/(3*b*d)))/(60*b*d) + (a*c \\
& *((g^2*i^3*(4*A*a^3*d^3 + 16*A*b^3*c^3 + B*a^3*d^3*n - 3*B*b^3*c^3*n + 72*A \\
& *a*b^2*c^2*d + 48*A*a^2*b*c*d^2 - 3*B*a*b^2*c^2*d*n + 5*B*a^2*b*c*d^2*n))/(\\
& 4*b) + ((60*a*d + 60*b*c)*(((b*d^2*g^2*i^3*(18*A*a*d + 24*A*b*c + B*a*d*n \\
& - B*b*c*n))/6 - (A*b*d^2*g^2*i^3*(60*a*d + 60*b*c))/60)*(60*a*d + 60*b*c))/ \\
& (60*b*d) - (d*g^2*i^3*(15*A*a^2*d^2 + 30*A*b^2*c^2 + 2*B*a^2*d^2*n - 3*B*b^ \\
& ^2*c^2*n + 60*A*a*b*c*d + B*a*b*c*d*n))/5 + A*a*b*c*d^2*g^2*i^3))/(60*b*d) - \\
& (a*c*((b*d^2*g^2*i^3*(18*A*a*d + 24*A*b*c + B*a*d*n - B*b*c*n))/6 - (A*b*d \\
& ^2*g^2*i^3*(60*a*d + 60*b*c))/60))/(b*d)))/(b*d) - (a*c^2*g^2*i^3*(12*A*a^2 \\
& *d^2 + 6*A*b^2*c^2 + 3*B*a^2*d^2*n - 2*B*b^2*c^2*n + 24*A*a*b*c*d - B*a*b*c \\
& *d*n))/(2*b*d)) + log(e*((a + b*x)/(c + d*x))^n)*(B*a^2*c^3*g^2*i^3*x + (B* \\
& c*g^2*i^3*x^3*(3*a^2*d^2 + b^2*c^2 + 6*a*b*c*d))/3 + (B*d*g^2*i^3*x^4*(a^2* \\
& d^2 + 3*b^2*c^2 + 6*a*b*c*d))/4 + (B*b^2*d^3*g^2*i^3*x^6)/6 + (B*a*c^2*g^2* \\
& i^3*x^2*(3*a*d + 2*b*c))/2 + (B*b*d^2*g^2*i^3*x^5*(2*a*d + 3*b*c))/5) - (lo \\
& g(a + b*x)*(B*a^6*d^3*g^2*i^3*n - 20*B*a^3*b^3*c^3*g^2*i^3*n + 15*B*a^4*b^2 \\
& *c^2*d*g^2*i^3*n - 6*B*a^5*b*c*d^2*g^2*i^3*n))/(60*b^4) - (log(c + d*x)*(B* \\
& b^2*c^6*g^2*i^3*n + 15*B*a^2*c^4*d^2*g^2*i^3*n - 6*B*a*b*c^5*d*g^2*i^3*n))/ \\
& (60*d^3) + (A*b^2*d^3*g^2*i^3*x^6)/6
\end{aligned}$$

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)**2*(d*i*x+c*i)**3*(A+B*ln(e*((b*x+a)/(d*x+c)**n)),x)

[Out] Timed out

$$3.129 \quad \int (ag+bgx)(ci+dix)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) dx$$

Optimal. Leaf size=283

$$\frac{gi^3(c+dx)^4(bc-ad) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{4d^2} + \frac{bgi^3(c+dx)^5 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{5d^2} + \frac{Bgi^3n(bc-ad)^5 \log \left(\frac{a}{c} \right)}{20b^4d^2}$$

[Out] $\frac{1}{20} B (-a*d+b*c)^4 g^i^3 n^3 x / b^3 / d + \frac{1}{40} B (-a*d+b*c)^3 g^i^3 n^3 (d*x+c)^2 / b^2 / d^2 + \frac{1}{60} B (-a*d+b*c)^2 g^i^3 n^3 (d*x+c)^3 / b / d^2 - \frac{1}{20} B (-a*d+b*c) g^i^3 n^3 (d*x+c)^4 / d^2 - \frac{1}{4} (-a*d+b*c) g^i^3 n^3 (d*x+c)^4 (A+B*\ln(e*((b*x+a)/(d*x+c))^n)) / d^2 + \frac{1}{5} b g^i^3 n^3 (d*x+c)^5 (A+B*\ln(e*((b*x+a)/(d*x+c))^n)) / d^2 + \frac{1}{20} B (-a*d+b*c)^5 g^i^3 n^3 \ln((b*x+a)/(d*x+c)) / b^4 / d^2 + \frac{1}{20} B (-a*d+b*c)^5 g^i^3 n^3 \ln(d*x+c) / b^4 / d^2$

Rubi [A] time = 0.38, antiderivative size = 243, normalized size of antiderivative = 0.86, number of steps used = 10, number of rules used = 4, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}} = 0.098$, Rules used = {2528, 2525, 12, 43}

$$\frac{gi^3(c+dx)^4(bc-ad) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{4d^2} + \frac{bgi^3(c+dx)^5 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{5d^2} + \frac{Bgi^3n(c+dx)^2(bc-ad)}{40b^2d^2}$$

Antiderivative was successfully verified.

[In] Int[(a*g + b*g*x)*(c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]),x]

[Out] $\frac{B*(b*c - a*d)^4 g^i^3 n^3 x}{(20*b^3*d)} + \frac{B*(b*c - a*d)^3 g^i^3 n^3 (c + d*x)^2}{(40*b^2*d^2)} + \frac{B*(b*c - a*d)^2 g^i^3 n^3 (c + d*x)^3}{(60*b*d^2)} - \frac{B*(b*c - a*d) g^i^3 n^3 (c + d*x)^4}{(20*d^2)} + \frac{B*(b*c - a*d)^5 g^i^3 n^3 \text{Log}[a + b*x]}{(20*b^4*d^2)} - \frac{((b*c - a*d) g^i^3 n^3 (c + d*x)^4 (A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))}{(4*d^2)} + \frac{(b g^i^3 n^3 (c + d*x)^5 (A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))}{(5*d^2)}$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 43

Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && (!IntegerQ[n] || (EqQ[c, 0] && Le

Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])

Rule 2525

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_.))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
 \int (129c + 129dx)^3 (ag + bgx) \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right) dx &= \int \left(\frac{(-bc + ad)g(129c + 129dx)^3 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)}{d} \right) dx \\
 &= \frac{(bg) \int (129c + 129dx)^4 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right) dx}{129d} \\
 &= -\frac{2146689(bc - ad)g(c + dx)^4 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)}{4d^2} \\
 &= -\frac{2146689(bc - ad)g(c + dx)^4 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)}{4d^2} \\
 &= -\frac{2146689(bc - ad)g(c + dx)^4 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)}{4d^2} \\
 &= \frac{2146689B(bc - ad)^4 gnx}{20b^3d} + \frac{2146689B(bc - ad)^3 gnx}{40b^2d^2}
 \end{aligned}$$

Mathematica [A] time = 0.23, size = 269, normalized size = 0.95

$$gi^3 \left(24b(c+dx)^5 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right) - 30(c+dx)^4(bc-ad) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right) + \frac{5Bn(bc-ad)^2(3b^2(c+dx)^2)}{\dots} \right)$$

Antiderivative was successfully verified.

[In] Integrate[(a*g + b*g*x)*(c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]),x]

[Out] (g*i^3*((5*B*(b*c - a*d)^2*n*(6*b*d*(b*c - a*d)^2*x + 3*b^2*(b*c - a*d)*(c + d*x)^2 + 2*b^3*(c + d*x)^3 + 6*(b*c - a*d)^3*Log[a + b*x]))/b^4 - (2*B*(b*c - a*d)*n*(12*b*d*(b*c - a*d)^3*x + 6*b^2*(b*c - a*d)^2*(c + d*x)^2 + 4*b^3*(b*c - a*d)*(c + d*x)^3 + 3*b^4*(c + d*x)^4 + 12*(b*c - a*d)^4*Log[a + b*x]))/b^4 - 30*(b*c - a*d)*(c + d*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 24*b*(c + d*x)^5*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(120*d^2)

fricas [B] time = 1.16, size = 721, normalized size = 2.55

$$24 Ab^5 d^5 gi^3 x^5 + 6 (10 Ba^2 b^3 c^3 d^2 - 10 Ba^3 b^2 c^2 d^3 + 5 Ba^4 b c d^4 - Ba^5 d^5) gi^3 n \log(bx + a) + 6 (Bb^5 c^5 - 5 Bab^4 c^4 d)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="fricas")

[Out] 1/120*(24*A*b^5*d^5*g*i^3*x^5 + 6*(10*B*a^2*b^3*c^3*d^2 - 10*B*a^3*b^2*c^2*d^3 + 5*B*a^4*b*c*d^4 - B*a^5*d^5)*g*i^3*n*log(b*x + a) + 6*(B*b^5*c^5 - 5*B*a*b^4*c^4*d)*g*i^3*n*log(d*x + c) - 6*((B*b^5*c*d^4 - B*a*b^4*d^5)*g*i^3*n - 5*(3*A*b^5*c*d^4 + A*a*b^4*d^5)*g*i^3)*x^4 - 2*((11*B*b^5*c^2*d^3 - 10*B*a*b^4*c*d^4 - B*a^2*b^3*d^5)*g*i^3*n - 60*(A*b^5*c^2*d^3 + A*a*b^4*c*d^4)*g*i^3)*x^3 - 3*((9*B*b^5*c^3*d^2 - 5*B*a*b^4*c^2*d^3 - 5*B*a^2*b^3*c*d^4 + B*a^3*b^2*d^5)*g*i^3*n - 20*(A*b^5*c^3*d^2 + 3*A*a*b^4*c^2*d^3)*g*i^3)*x^2 + 6*(20*A*a*b^4*c^3*d^2*g*i^3 - (B*b^5*c^4*d + 5*B*a*b^4*c^3*d^2 - 10*B*a^2*b^3*c^2*d^3 + 5*B*a^3*b^2*c*d^4 - B*a^4*b*d^5)*g*i^3*n)*x + 6*(4*B*b^5*d^5*g*i^3*x^5 + 20*B*a*b^4*c^3*d^2*g*i^3*x + 5*(3*B*b^5*c*d^4 + B*a*b^4*d^5)*g*i^3*x^4 + 20*(B*b^5*c^2*d^3 + B*a*b^4*c*d^4)*g*i^3*x^3 + 10*(B*b^5*c^3*d^2 + 3*B*a*b^4*c^2*d^3)*g*i^3*x^2)*log(e) + 6*(4*B*b^5*d^5*g*i^3*n*x^5 + 20*B*a*b^4*c^3*d^2*g*i^3*n*x + 5*(3*B*b^5*c*d^4 + B*a*b^4*d^5)*g*i^3*n*x^4 + 20*(B*b^5*c^2*d^3 + B*a*b^4*c*d^4)*g*i^3*n*x^3 + 10*(B*b^5*c^3*d^2 + 3*B*a*b^4*c^2*d^3)*g*i^3*n*x^2)*log((b*x + a)/(d*x + c)))/(b^4*d^2)

giac [B] time = 5.67, size = 2374, normalized size = 8.39

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="giac")

[Out]
$$\frac{1}{120} \cdot (6 \cdot (B \cdot b^7 \cdot c^6 \cdot g \cdot i^n - 6 \cdot B \cdot a \cdot b^6 \cdot c^5 \cdot d \cdot g \cdot i^n - 5 \cdot (b \cdot x + a) \cdot B \cdot b^6 \cdot c^6 \cdot d \cdot g \cdot i^n / (d \cdot x + c) + 15 \cdot B \cdot a^2 \cdot b^5 \cdot c^4 \cdot d^2 \cdot g \cdot i^n + 30 \cdot (b \cdot x + a) \cdot B \cdot a \cdot b^5 \cdot c^5 \cdot d^2 \cdot g \cdot i^n / (d \cdot x + c) - 20 \cdot B \cdot a^3 \cdot b^4 \cdot c^3 \cdot d^3 \cdot g \cdot i^n - 75 \cdot (b \cdot x + a) \cdot B \cdot a^2 \cdot b^4 \cdot c^4 \cdot d^3 \cdot g \cdot i^n / (d \cdot x + c) + 15 \cdot B \cdot a^4 \cdot b^3 \cdot c^2 \cdot d^4 \cdot g \cdot i^n + 100 \cdot (b \cdot x + a) \cdot B \cdot a^3 \cdot b^3 \cdot c^3 \cdot d^4 \cdot g \cdot i^n / (d \cdot x + c) - 6 \cdot B \cdot a^5 \cdot b^2 \cdot c \cdot d^5 \cdot g \cdot i^n - 75 \cdot (b \cdot x + a) \cdot B \cdot a^4 \cdot b^2 \cdot c^2 \cdot d^5 \cdot g \cdot i^n / (d \cdot x + c) + B \cdot a^6 \cdot b \cdot d^6 \cdot g \cdot i^n + 30 \cdot (b \cdot x + a) \cdot B \cdot a^5 \cdot b \cdot c \cdot d^6 \cdot g \cdot i^n / (d \cdot x + c) - 5 \cdot (b \cdot x + a) \cdot B \cdot a^6 \cdot d^7 \cdot g \cdot i^n / (d \cdot x + c)) \cdot \log((b \cdot x + a) / (d \cdot x + c)) / (b^5 \cdot d^2 - 5 \cdot (b \cdot x + a) \cdot b^4 \cdot d^3 / (d \cdot x + c) + 10 \cdot (b \cdot x + a)^2 \cdot b^3 \cdot d^4 / (d \cdot x + c)^2 - 10 \cdot (b \cdot x + a)^3 \cdot b^2 \cdot d^5 / (d \cdot x + c)^3 + 5 \cdot (b \cdot x + a)^4 \cdot b \cdot d^6 / (d \cdot x + c)^4 - (b \cdot x + a)^5 \cdot d^7 / (d \cdot x + c)^5) - (5 \cdot B \cdot b^{10} \cdot c^6 \cdot g \cdot i^n - 30 \cdot B \cdot a \cdot b^9 \cdot c^5 \cdot d \cdot g \cdot i^n - 31 \cdot (b \cdot x + a) \cdot B \cdot b^9 \cdot c^6 \cdot d \cdot g \cdot i^n / (d \cdot x + c) + 75 \cdot B \cdot a^2 \cdot b^8 \cdot c^4 \cdot d^2 \cdot g \cdot i^n + 186 \cdot (b \cdot x + a) \cdot B \cdot a \cdot b^8 \cdot c^5 \cdot d^2 \cdot g \cdot i^n / (d \cdot x + c) + 47 \cdot (b \cdot x + a)^2 \cdot B \cdot b^8 \cdot c^6 \cdot d^2 \cdot g \cdot i^n / (d \cdot x + c)^2 - 100 \cdot B \cdot a^3 \cdot b^7 \cdot c^3 \cdot d^3 \cdot g \cdot i^n - 465 \cdot (b \cdot x + a) \cdot B \cdot a^2 \cdot b^7 \cdot c^4 \cdot d^3 \cdot g \cdot i^n / (d \cdot x + c) - 282 \cdot (b \cdot x + a)^2 \cdot B \cdot a \cdot b^7 \cdot c^5 \cdot d^3 \cdot g \cdot i^n / (d \cdot x + c)^2 - 27 \cdot (b \cdot x + a)^3 \cdot B \cdot b^7 \cdot c^6 \cdot d^3 \cdot g \cdot i^n / (d \cdot x + c)^3 + 75 \cdot B \cdot a^4 \cdot b^6 \cdot c^2 \cdot d^4 \cdot g \cdot i^n + 620 \cdot (b \cdot x + a) \cdot B \cdot a^3 \cdot b^6 \cdot c^3 \cdot d^4 \cdot g \cdot i^n / (d \cdot x + c) + 705 \cdot (b \cdot x + a)^2 \cdot B \cdot a^2 \cdot b^6 \cdot c^4 \cdot d^4 \cdot g \cdot i^n / (d \cdot x + c)^2 + 162 \cdot (b \cdot x + a)^3 \cdot B \cdot a \cdot b^6 \cdot c^5 \cdot d^4 \cdot g \cdot i^n / (d \cdot x + c)^3 + 6 \cdot (b \cdot x + a)^4 \cdot B \cdot b^6 \cdot c^6 \cdot d^4 \cdot g \cdot i^n / (d \cdot x + c)^4 - 30 \cdot B \cdot a^5 \cdot b^5 \cdot c \cdot d^5 \cdot g \cdot i^n - 465 \cdot (b \cdot x + a) \cdot B \cdot a^4 \cdot b^5 \cdot c^2 \cdot d^5 \cdot g \cdot i^n / (d \cdot x + c) - 940 \cdot (b \cdot x + a)^2 \cdot B \cdot a^3 \cdot b^5 \cdot c^3 \cdot d^5 \cdot g \cdot i^n / (d \cdot x + c)^2 - 405 \cdot (b \cdot x + a)^3 \cdot B \cdot a^2 \cdot b^5 \cdot c^4 \cdot d^5 \cdot g \cdot i^n / (d \cdot x + c)^3 - 36 \cdot (b \cdot x + a)^4 \cdot B \cdot a \cdot b^5 \cdot c^5 \cdot d^5 \cdot g \cdot i^n / (d \cdot x + c)^4 + 5 \cdot B \cdot a^6 \cdot b^4 \cdot d^6 \cdot g \cdot i^n + 186 \cdot (b \cdot x + a) \cdot B \cdot a^5 \cdot b^4 \cdot c \cdot d^6 \cdot g \cdot i^n / (d \cdot x + c) + 705 \cdot (b \cdot x + a)^2 \cdot B \cdot a^4 \cdot b^4 \cdot c^2 \cdot d^6 \cdot g \cdot i^n / (d \cdot x + c)^2 + 540 \cdot (b \cdot x + a)^3 \cdot B \cdot a^3 \cdot b^4 \cdot c^3 \cdot d^6 \cdot g \cdot i^n / (d \cdot x + c)^3 + 90 \cdot (b \cdot x + a)^4 \cdot B \cdot a^2 \cdot b^4 \cdot c^4 \cdot d^6 \cdot g \cdot i^n / (d \cdot x + c)^4 - 31 \cdot (b \cdot x + a) \cdot B \cdot a^6 \cdot b^3 \cdot d^7 \cdot g \cdot i^n / (d \cdot x + c) - 282 \cdot (b \cdot x + a)^2 \cdot B \cdot a^5 \cdot b^3 \cdot c \cdot d^7 \cdot g \cdot i^n / (d \cdot x + c)^2 - 405 \cdot (b \cdot x + a)^3 \cdot B \cdot a^4 \cdot b^3 \cdot c^2 \cdot d^7 \cdot g \cdot i^n / (d \cdot x + c)^3 - 120 \cdot (b \cdot x + a)^4 \cdot B \cdot a^3 \cdot b^3 \cdot c^3 \cdot d^7 \cdot g \cdot i^n / (d \cdot x + c)^4 + 47 \cdot (b \cdot x + a)^2 \cdot B \cdot a^6 \cdot b^2 \cdot d^8 \cdot g \cdot i^n / (d \cdot x + c)^2 + 162 \cdot (b \cdot x + a)^3 \cdot B \cdot a^5 \cdot b^2 \cdot c \cdot d^8 \cdot g \cdot i^n / (d \cdot x + c)^3 + 90 \cdot (b \cdot x + a)^4 \cdot B \cdot a^4 \cdot b^2 \cdot c^2 \cdot d^8 \cdot g \cdot i^n / (d \cdot x + c)^4 - 27 \cdot (b \cdot x + a)^3 \cdot B \cdot a^6 \cdot b \cdot d^9 \cdot g \cdot i^n / (d \cdot x + c)^3 - 36 \cdot (b \cdot x + a)^4 \cdot B \cdot a^5 \cdot b \cdot c \cdot d^9 \cdot g \cdot i^n / (d \cdot x + c)^4 + 6 \cdot (b \cdot x + a)^4 \cdot B \cdot a^6 \cdot d^{10} \cdot g \cdot i^n / (d \cdot x + c)^4 - 6 \cdot A \cdot b^{10} \cdot c^6 \cdot g \cdot i - 6 \cdot B \cdot b^{10} \cdot c^6 \cdot g \cdot i + 36 \cdot A \cdot a \cdot b^9 \cdot c^5 \cdot d \cdot g \cdot i + 36 \cdot B \cdot a \cdot b^9 \cdot c^5 \cdot d \cdot g \cdot i + 30 \cdot (b \cdot x + a) \cdot A \cdot a \cdot b^9 \cdot c^6 \cdot d \cdot g \cdot i / (d \cdot x + c) + 30 \cdot (b \cdot x + a) \cdot B \cdot b^9 \cdot c^6 \cdot d \cdot g \cdot i / (d \cdot x + c) - 90 \cdot A \cdot a^2 \cdot b^8 \cdot c^4 \cdot d^2 \cdot g \cdot i - 90 \cdot B \cdot a^2 \cdot b^8 \cdot c^4 \cdot d^2 \cdot g \cdot i - 180 \cdot (b \cdot x + a) \cdot A \cdot a \cdot b^8 \cdot c^5 \cdot d^2 \cdot g \cdot i / (d \cdot x + c) - 180 \cdot (b \cdot x + a) \cdot B \cdot a \cdot b^8 \cdot c^5 \cdot d^2 \cdot g \cdot i / (d \cdot x + c) + 120 \cdot A \cdot a^3 \cdot b^7 \cdot c^3 \cdot d^3 \cdot g \cdot i + 120 \cdot B \cdot a^3 \cdot b^7 \cdot c^3 \cdot d^3 \cdot g \cdot i + 450 \cdot (b \cdot x + a) \cdot A \cdot a^2 \cdot b^7 \cdot c^4 \cdot d^3 \cdot g \cdot i / (d \cdot x + c) + 450 \cdot (b \cdot x + a) \cdot B \cdot a^2 \cdot b^7 \cdot c^4 \cdot d^3 \cdot g \cdot i / (d \cdot x + c) - 90 \cdot A \cdot a^4 \cdot b^6 \cdot c^2 \cdot d^4 \cdot g \cdot i - 90 \cdot B \cdot a^4 \cdot b^6 \cdot c^2 \cdot d^4 \cdot g \cdot i - 600 \cdot (b \cdot x + a) \cdot A \cdot a^3 \cdot b^6 \cdot c^3 \cdot d^4 \cdot g \cdot i / (d \cdot x + c) - 600 \cdot (b \cdot x + a) \cdot B \cdot a^3 \cdot b^6 \cdot c^3 \cdot d^4 \cdot g \cdot i / (d \cdot x + c) + 36 \cdot A \cdot a^5 \cdot b^5 \cdot c \cdot d^5 \cdot g \cdot i + 36 \cdot B \cdot a^5 \cdot b^5 \cdot c \cdot d^5 \cdot g \cdot i + 450 \cdot (b \cdot x + a) \cdot A \cdot a^4 \cdot b^5 \cdot$$

$c^2 d^5 g^i / (d x + c) + 450 (b x + a) B a^4 b^5 c^2 d^5 g^i / (d x + c) - 6 A a^6 b^4 d^6 g^i - 6 B a^6 b^4 d^6 g^i - 180 (b x + a) A a^5 b^4 c d^6 g^i / (d x + c) - 180 (b x + a) B a^5 b^4 c d^6 g^i / (d x + c) + 30 (b x + a) A a^6 b^3 d^7 g^i / (d x + c) + 30 (b x + a) B a^6 b^3 d^7 g^i / (d x + c) / (b^8 d^2 - 5 (b x + a) b^7 d^3 / (d x + c) + 10 (b x + a)^2 b^6 d^4 / (d x + c)^2 - 10 (b x + a)^3 b^5 d^5 / (d x + c)^3 + 5 (b x + a)^4 b^4 d^6 / (d x + c)^4 - (b x + a)^5 b^3 d^7 / (d x + c)^5) + 6 (B b^6 c^6 g^i n - 6 B a b^5 c^5 d g^i n + 15 B a^2 b^4 c^4 d^2 g^i n - 20 B a^3 b^3 c^3 d^3 g^i n + 15 B a^4 b^2 c^2 d^4 g^i n - 6 B a^5 b c d^5 g^i n + B a^6 d^6 g^i n) \log(b - (b x + a) d / (d x + c)) / (b^4 d^2) - 6 (B b^6 c^6 g^i n - 6 B a b^5 c^5 d g^i n + 15 B a^2 b^4 c^4 d^2 g^i n - 20 B a^3 b^3 c^3 d^3 g^i n + 15 B a^4 b^2 c^2 d^4 g^i n - 6 B a^5 b c d^5 g^i n + B a^6 d^6 g^i n) \log((b x + a) / (d x + c)) / (b^4 d^2) * (b c / (b c - a d)^2 - a d / (b c - a d)^2)$

maple [F] time = 0.32, size = 0, normalized size = 0.00

$$\int (b g x + a g) (d i x + c i)^3 \left(B \ln \left(e \left(\frac{b x + a}{d x + c} \right)^n \right) + A \right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)*(d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)

[Out] int((b*g*x+a*g)*(d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)

maxima [B] time = 1.40, size = 1118, normalized size = 3.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="maxima")

[Out] $1/5 B b d^3 g^i^3 x^5 \log(e*(b x / (d x + c) + a / (d x + c))^n) + 1/5 A b d^3 g^i^3 x^5 + 3/4 B b c d^2 g^i^3 x^4 \log(e*(b x / (d x + c) + a / (d x + c))^n) + 1/4 B a d^3 g^i^3 x^4 \log(e*(b x / (d x + c) + a / (d x + c))^n) + 3/4 A b c d^2 g^i^3 x^4 + 1/4 A a d^3 g^i^3 x^4 + B b c^2 d g^i^3 x^3 \log(e*(b x / (d x + c) + a / (d x + c))^n) + B a c d^2 g^i^3 x^3 \log(e*(b x / (d x + c) + a / (d x + c))^n) + A b c^2 d g^i^3 x^3 + A a c d^2 g^i^3 x^3 + 1/2 B b c^3 g^i^3 x^2 \log(e*(b x / (d x + c) + a / (d x + c))^n) + 3/2 B a c^2 d g^i^3 x^2 \log(e*(b x / (d x + c) + a / (d x + c))^n) + 1/2 A b c^3 g^i^3 x^2 + 3/2 A a c^2 d g^i^3 x^2 + 1/60 B b d^3 g^i^3 n * (12 a^5 \log(b x + a) / b^5 - 12 c^5 \log(d x + c) / d^5 - (3 (b^4 c d^3 - a b^3 d^4) x^4 - 4 (b^4 c^2 d^2 - a^2 b^2 d^4) x^3 + 6 (b^4 c^3 d - a^3 b d^4) x^2 - 12 (b^4 c^4 - a^4 d^4) x) / (b^4 d^4)) - 1/8 B b c d^2 g^i^3 n * (6 a^4 \log(b x + a) / b^4 - 6 c^4 \log(d x + c) / d^4 + (2 ($

$$b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3) - 1/24*B*a*d^3*g*i^3*n*(6*a^4*log(b*x + a)/b^4 - 6*c^4*log(d*x + c)/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3)) + 1/2*B*b*c^2*d*g*i^3*n*(2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) + 1/2*B*a*c*d^2*g*i^3*n*(2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) - 1/2*B*b*c^3*g*i^3*n*(a^2*log(b*x + a)/b^2 - c^2*log(d*x + c)/d^2 + (b*c - a*d)*x/(b*d)) - 3/2*B*a*c^2*d*g*i^3*n*(a^2*log(b*x + a)/b^2 - c^2*log(d*x + c)/d^2 + (b*c - a*d)*x/(b*d)) + B*a*c^3*g*i^3*n*(a*log(b*x + a)/b - c*log(d*x + c)/d) + B*a*c^3*g*i^3*x*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A*a*c^3*g*i^3*x$$

mupad [B] time = 5.40, size = 1234, normalized size = 4.36

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)*(c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n)),x)
[Out] x*((a*c*((((20*a*d + 20*b*c))*((d^2*g*i^3*(10*A*a*d + 20*A*b*c + B*a*d*n - B*b*c*n))/5 - (A*d^2*g*i^3*(20*a*d + 20*b*c))/20)))/(20*b*d) - (d*g*i^3*(4*A*a^2*d^2 + 24*A*b^2*c^2 + B*a^2*d^2*n - 3*B*b^2*c^2*n + 32*A*a*b*c*d + 2*B*a*b*c*d*n))/(4*b) + A*a*c*d^2*g*i^3))/(b*d) - ((20*a*d + 20*b*c)*(((20*a*d + 20*b*c))*((d^2*g*i^3*(10*A*a*d + 20*A*b*c + B*a*d*n - B*b*c*n))/5 - (A*d^2*g*i^3*(20*a*d + 20*b*c))/20)))/(20*b*d) - (d*g*i^3*(4*A*a^2*d^2 + 24*A*b^2*c^2 + B*a^2*d^2*n - 3*B*b^2*c^2*n + 32*A*a*b*c*d + 2*B*a*b*c*d*n))/(4*b) + A*a*c*d^2*g*i^3))/(20*b*d) - (a*c*((d^2*g*i^3*(10*A*a*d + 20*A*b*c + B*a*d*n - B*b*c*n))/5 - (A*d^2*g*i^3*(20*a*d + 20*b*c))/20))/(b*d) + (c*g*i^3*(4*A*a^2*d^2 + 4*A*b^2*c^2 + B*a^2*d^2*n - B*b^2*c^2*n + 12*A*a*b*c*d))/b))/(20*b*d) + (c^2*g*i^3*(12*A*a^2*d^2 + 2*A*b^2*c^2 + 3*B*a^2*d^2*n - B*b^2*c^2*n + 16*A*a*b*c*d - 2*B*a*b*c*d*n))/(2*b*d)) - x^3*((((20*a*d + 20*b*c))*((d^2*g*i^3*(10*A*a*d + 20*A*b*c + B*a*d*n - B*b*c*n))/5 - (A*d^2*g*i^3*(20*a*d + 20*b*c))/20)))/(60*b*d) - (d*g*i^3*(4*A*a^2*d^2 + 24*A*b^2*c^2 + B*a^2*d^2*n - 3*B*b^2*c^2*n + 32*A*a*b*c*d + 2*B*a*b*c*d*n))/(12*b) + (A*a*c*d^2*g*i^3)/3) + x^2*((((20*a*d + 20*b*c))*(((20*a*d + 20*b*c))*((d^2*g*i^3*(10*A*a*d + 20*A*b*c + B*a*d*n - B*b*c*n))/5 - (A*d^2*g*i^3*(20*a*d + 20*b*c))/20)))/(20*b*d) - (d*g*i^3*(4*A*a^2*d^2 + 24*A*b^2*c^2 + B*a^2*d^2*n - 3*B*b^2*c^2*n + 32*A*a*b*c*d + 2*B*a*b*c*d*n))/(4*b) + A*a*c*d^2*g*i^3))/(40*b*d) - (a*c*((d^2*g*i^3*(10*A*a*d + 20*A*b*c + B*a*d*n - B*b*c*n))/5 - (A*d^2*g*i^3*(20*a*d + 20*b*c))/20))/(2*b*d) + (c*g*i^3*(4*A*a^2*d^2 + 4*A*b^2*c^2 + B*a^2*d^2*n - B*b^2*c^2*n + 12*A*a*b*c*d))/(2*b)) + log(e*((a + b*x)/(c + d*x))^n)*((B*c^2*g*i^3*x^2*(3*a*d + b*c))/2 + (B*d^2*g*i^3*x^4*(a*d + 3*b*c))/4 + B*a*c^3*g*i^3*x + (B*b*d^3*g*i^3*x^5)/5 + B*c*d*g*i^3*x^3*(a*d + b*c)) + x^4*((d^2*g*i^3*(10*A*a*d + 20*A*b*c + B*a*d*n - B*b*c*n
```

$$\left. \right)/20 - (A*d^2*g*i^3*(20*a*d + 20*b*c))/80) + (\log(c + d*x)*(B*b*c^5*g*i^3*n - 5*B*a*c^4*d*g*i^3*n))/(20*d^2) - (\log(a + b*x)*(B*a^5*d^3*g*i^3*n - 10*B*a^2*b^3*c^3*g*i^3*n - 5*B*a^4*b*c*d^2*g*i^3*n + 10*B*a^3*b^2*c^2*d*g*i^3*n))/(20*b^4) + (A*b*d^3*g*i^3*x^5)/5$$

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(d*i*x+c*i)**3*(A+B*ln(e*((b*x+a)/(d*x+c))**n)),x)

[Out] Timed out

$$3.130 \quad \int (ci + dix)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) dx$$

Optimal. Leaf size=156

$$\frac{i^3(c+dx)^4 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{4d} - \frac{Bi^3n(bc-ad)^4 \log(a+bx)}{4b^4d} - \frac{Bi^3nx(bc-ad)^3}{4b^3} - \frac{Bi^3n(c+dx)^2(bc-ad)^2}{8b^2d} - \frac{Bi^3n}{8b^2d}$$

[Out] $-1/4*B*(-a*d+b*c)^3*i^3*n*x/b^3-1/8*B*(-a*d+b*c)^2*i^3*n*(d*x+c)^2/b^2/d-1/12*B*(-a*d+b*c)*i^3*n*(d*x+c)^3/b/d-1/4*B*(-a*d+b*c)^4*i^3*n*\ln(b*x+a)/b^4/d+1/4*i^3*(d*x+c)^4*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/d$

Rubi [A] time = 0.09, antiderivative size = 156, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {2525, 12, 43}

$$\frac{i^3(c+dx)^4 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{4d} - \frac{Bi^3nx(bc-ad)^3}{4b^3} - \frac{Bi^3n(c+dx)^2(bc-ad)^2}{8b^2d} - \frac{Bi^3n(bc-ad)^4 \log(a+bx)}{4b^4d} - \frac{Bi^3n}{8b^2d}$$

Antiderivative was successfully verified.

[In] $\text{Int}[(c*i + d*i*x)^3*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]), x]$

[Out] $-(B*(b*c - a*d)^3*i^3*n*x)/(4*b^3) - (B*(b*c - a*d)^2*i^3*n*(c + d*x)^2)/(8*b^2*d) - (B*(b*c - a*d)*i^3*n*(c + d*x)^3)/(12*b*d) - (B*(b*c - a*d)^4*i^3*n*\text{Log}[a + b*x])/(4*b^4*d) + (i^3*(c + d*x)^4*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(4*d)$

Rule 12

$\text{Int}[(a_*)*(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \ \&\& \ !\text{MatchQ}[u, (b_*)*(v_)] /; \text{FreeQ}[b, x]$

Rule 43

$\text{Int}[(a_*) + (b_*)*(x_)^m]*((c_*) + (d_*)*(x_))^{n_}, x_Symbol] \rightarrow \text{Int}[\text{ExpandIntegrand}[(a + b*x)^m*(c + d*x)^n, x], x] /; \text{FreeQ}\{a, b, c, d, n, x\} \ \&\& \ \text{NeQ}[b*c - a*d, 0] \ \&\& \ \text{IGtQ}[m, 0] \ \&\& \ (\ !\text{IntegerQ}[n] \ || \ (\text{EqQ}[c, 0] \ \&\& \ \text{LeQ}[7*m + 4*n + 4, 0]) \ || \ \text{LtQ}[9*m + 5*(n + 1), 0] \ || \ \text{GtQ}[m + n + 2, 0])$

Rule 2525

$\text{Int}[(a_*) + \text{Log}[(c_*)*(Rf*x_)^{p_}]]*(b_*)^{n_}*((d_*) + (e_*)*(x_))^{m_}, x_Symbol] \rightarrow \text{Simp}[(d + e*x)^{m+1}*(a + b*\text{Log}[c*Rf*x^p])^n/(e*(m+1))$


```
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rubi steps

$$\begin{aligned} \int (130c + 130dx)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) dx &= \frac{549250(c+dx)^4 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{d} - \frac{(Bn) \int \frac{28561000}{52}}{52} \\ &= \frac{549250(c+dx)^4 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{d} - \frac{(549250B(bc - ad)^3 nx)}{b^3} \\ &= \frac{549250(c+dx)^4 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{d} - \frac{(549250B(bc - ad)^2 n(c+dx)^2)}{b^2 d} \\ &= -\frac{549250B(bc - ad)^3 nx}{b^3} - \frac{274625B(bc - ad)^2 n(c+dx)^2}{b^2 d} - \frac{549250A(c+dx)^4}{d} \end{aligned}$$

Mathematica [A] time = 0.07, size = 124, normalized size = 0.79

$$\frac{i^3 \left((c+dx)^4 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right) - \frac{Bn(bc-ad)(3b^2(c+dx)^2(bc-ad)+6bdx(bc-ad)^2+6(bc-ad)^3 \log(a+bx)+2b^3(c+dx)^3)}{6b^4} \right)}{4d}$$

Antiderivative was successfully verified.

[In] Integrate[(c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]),x]

[Out] (i^3*(-1/6*(B*(b*c - a*d)*n*(6*b*d*(b*c - a*d)^2*x + 3*b^2*(b*c - a*d)*(c + d*x)^2 + 2*b^3*(c + d*x)^3 + 6*(b*c - a*d)^3*Log[a + b*x]))/b^4 + (c + d*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(4*d)

fricas [B] time = 0.65, size = 429, normalized size = 2.75

$$\frac{6Ab^4d^4i^3x^4 - 6Bb^4c^4i^3n \log(dx + c) + 6(4Bab^3c^3d - 6Ba^2b^2c^2d^2 + 4Ba^3bcd^3 - Ba^4d^4)i^3n \log(bx + a) + 2(130c + 130dx)^4(A + B \log(e \left(\frac{a+bx}{c+dx} \right)^n))}{4d}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="fricas")

[Out]
$$\frac{1}{24}*(6*A*b^4*d^4*i^3*x^4 - 6*B*b^4*c^4*i^3*n*\log(d*x + c) + 6*(4*B*a*b^3*c^3*d - 6*B*a^2*b^2*c^2*d^2 + 4*B*a^3*b*c*d^3 - B*a^4*d^4)*i^3*n*\log(b*x + a) + 2*(12*A*b^4*c*d^3*i^3 - (B*b^4*c*d^3 - B*a*b^3*d^4)*i^3*n)*x^3 + 3*(12*A*b^4*c^2*d^2*i^3 - (3*B*b^4*c^2*d^2 - 4*B*a*b^3*c*d^3 + B*a^2*b^2*d^4)*i^3*n)*x^2 + 6*(4*A*b^4*c^3*d*i^3 - (3*B*b^4*c^3*d - 6*B*a*b^3*c^2*d^2 + 4*B*a^2*b^2*c*d^3 - B*a^3*b*d^4)*i^3*n)*x + 6*(B*b^4*d^4*i^3*x^4 + 4*B*b^4*c*d^3*i^3*x^3 + 6*B*b^4*c^2*d^2*i^3*x^2 + 4*B*b^4*c^3*d*i^3*x)*\log(e) + 6*(B*b^4*d^4*i^3*n*x^4 + 4*B*b^4*c*d^3*i^3*n*x^3 + 6*B*b^4*c^2*d^2*i^3*n*x^2 + 4*B*b^4*c^3*d*i^3*n*x)*\log((b*x + a)/(d*x + c)))/(b^4*d)$$

giac [B] time = 2.45, size = 1282, normalized size = 8.22

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="giac")

[Out]
$$\begin{aligned} & -1/24*(6*(B*b^5*c^5*i^n - 5*B*a*b^4*c^4*d*i^n + 10*B*a^2*b^3*c^3*d^2*i^n - 10*B*a^3*b^2*c^2*d^3*i^n + 5*B*a^4*b*c*d^4*i^n - B*a^5*d^5*i^n)*\log((b*x + a)/(d*x + c))/(b^4*d - 4*(b*x + a)*b^3*d^2/(d*x + c) + 6*(b*x + a)^2*b^2*d^3/(d*x + c)^2 - 4*(b*x + a)^3*b*d^4/(d*x + c)^3 + (b*x + a)^4*d^5/(d*x + c)^4) - (11*B*b^8*c^5*i^n - 55*B*a*b^7*c^4*d*i^n - 26*(b*x + a)*B*b^7*c^5*d*i^n/(d*x + c) + 110*B*a^2*b^6*c^3*d^2*i^n + 130*(b*x + a)*B*a*b^6*c^4*d^2*i^n/(d*x + c) + 21*(b*x + a)^2*B*b^6*c^5*d^2*i^n/(d*x + c)^2 - 110*B*a^3*b^5*c^2*d^3*i^n - 260*(b*x + a)*B*a^2*b^5*c^3*d^3*i^n/(d*x + c) - 105*(b*x + a)^2*B*a*b^5*c^4*d^3*i^n/(d*x + c)^2 - 6*(b*x + a)^3*B*b^5*c^5*d^3*i^n/(d*x + c)^3 + 55*B*a^4*b^4*c*d^4*i^n + 260*(b*x + a)*B*a^3*b^4*c^2*d^4*i^n/(d*x + c) + 210*(b*x + a)^2*B*a^2*b^4*c^3*d^4*i^n/(d*x + c)^2 + 30*(b*x + a)^3*B*a*b^4*c^4*d^4*i^n/(d*x + c)^3 - 11*B*a^5*b^3*d^5*i^n - 130*(b*x + a)*B*a^4*b^3*c*d^5*i^n/(d*x + c) - 210*(b*x + a)^2*B*a^3*b^3*c^2*d^5*i^n/(d*x + c)^2 - 60*(b*x + a)^3*B*a^2*b^3*c^3*d^5*i^n/(d*x + c)^3 + 26*(b*x + a)*B*a^5*b^2*d^6*i^n/(d*x + c) + 105*(b*x + a)^2*B*a^4*b^2*c*d^6*i^n/(d*x + c)^2 + 60*(b*x + a)^3*B*a^3*b^2*c^2*d^6*i^n/(d*x + c)^3 - 21*(b*x + a)^2*B*a^5*b*d^7*i^n/(d*x + c)^2 - 30*(b*x + a)^3*B*a^4*b*c*d^7*i^n/(d*x + c)^3 + 6*(b*x + a)^3*B*a^5*d^8*i^n/(d*x + c)^3 - 6*A*b^8*c^5*i - 6*B*b^8*c^5*i + 30*A*a*b^7*c^4*d*i + 30*B*a*b^7*c^4*d*i - 60*A*a^2*b^6*c^3*d^2*i - 60*B*a^2*b^6*c^3*d^2*i + 60*A*a^3*b^5*c^2*d^3*i + 60*B*a^3*b^5*c^2*d^3*i - 30*A*a^4*b^4*c*d^4*i - 30*B*a^4*b^4*c*d^4*i + 6*A*a^5*b^3*d^5*i + 6*B*a^5*b^3*d^5*i)/(b^7*d - 4*(b*x + a)*b^6*d^2/(d*x + c) + 6*(b*x + a)^2*b^5*d^3/(d*x + c)^2 - 4*(b*x + a)^3*b^4*d^4/(d*x + c)^3 + (b*x + a)^4*b^3*d^5/(d*x + c)^4) + 6*(B*b^5*c^5*i^n - 5*B*a*b^4*c^4*d*i^n + 10*B*a^2*b^3*c^3*d^2*i^n - 10*B*a^3*b^2*c^2*d^3*i^n - 5*B*a^4*b*c*d^4*i^n + 5*B*a^5*d^5*i^n)*\log((b*x + a)/(d*x + c))/(b^4*d - 4*(b*x + a)*b^3*d^2/(d*x + c) + 6*(b*x + a)^2*b^2*d^3/(d*x + c)^2 - 4*(b*x + a)^3*b*d^4/(d*x + c)^3 + (b*x + a)^4*d^5/(d*x + c)^4) \end{aligned}$$

$$\frac{3i^n + 5Ba^4bcd^4i^n - Ba^5d^5i^n}{(b^4d)^3} \log(-b + (bx + a)d/(dx + c)) - \frac{6(Bb^5c^5i^n - 5Bab^4c^4d^4i^n + 10Ba^2b^3c^3d^2i^n - 10Ba^3b^2c^2d^3i^n + 5Ba^4bcd^4i^n - Ba^5d^5i^n)}{(b^4d)^3} \log\left(\frac{bx + a}{dx + c}\right) \cdot \frac{bc}{(bc - ad)^2} - \frac{ad}{(bc - ad)^2}$$

maple [F] time = 0.29, size = 0, normalized size = 0.00

$$\int (dix + ci)^3 \left(B \ln \left(e \left(\frac{bx + a}{dx + c} \right)^n \right) + A \right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)

[Out] int((d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)

maxima [B] time = 1.19, size = 479, normalized size = 3.07

$$\frac{1}{4} Bd^3i^3x^4 \log \left(e \left(\frac{bx}{dx+c} + \frac{a}{dx+c} \right)^n \right) + \frac{1}{4} Ad^3i^3x^4 + Bcd^2i^3x^3 \log \left(e \left(\frac{bx}{dx+c} + \frac{a}{dx+c} \right)^n \right) + Acd^2i^3x^3 + \frac{3}{2} Bc^2di^3x^2 + \dots$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="maxima")

[Out] $\frac{1}{4} B d^3 i^3 x^4 \log(e(bx/(dx+c) + a/(dx+c))^n) + \frac{1}{4} A d^3 i^3 x^4 + B c d^2 i^3 x^3 \log(e(bx/(dx+c) + a/(dx+c))^n) + A c d^2 i^3 x^3 + \frac{3}{2} B c^2 d i^3 x^2 \log(e(bx/(dx+c) + a/(dx+c))^n) + \frac{3}{2} A c^2 d i^3 x^2 - \frac{1}{24} B d^3 i^3 n (6a^4 \log(bx+a)/b^4 - 6c^4 \log(dx+c)/d^4 + (2(b^3cd^2 - ab^2d^3)x^3 - 3(b^3c^2d - a^2bd^3)x^2 + 6(b^3c^3 - a^3d^3)x)/(b^3d^3)) + \frac{1}{2} B c d^2 i^3 n (2a^3 \log(bx+a)/b^3 - 2c^3 \log(dx+c)/d^3 - ((b^2cd - abd^2)x^2 - 2(b^2c^2 - a^2d^2)x)/(b^2d^2)) - \frac{3}{2} B c^2 d i^3 n (a^2 \log(bx+a)/b^2 - c^2 \log(dx+c)/d^2 + (bc - ad)x/(bd)) + B c^3 i^3 n (a \log(bx+a)/b - c \log(dx+c)/d) + B c^3 i^3 x \log(e(bx/(dx+c) + a/(dx+c))^n) + A c^3 i^3 x$

mupad [B] time = 4.98, size = 588, normalized size = 3.77

$$x^3 \left(\frac{d^2 i^3 (4Aad + 16Abc + Badn - Bbcn)}{12b} - \frac{Ad^2 i^3 (4ad + 4bc)}{12b} \right) - x^2 \left(\frac{\left(\frac{d^2 i^3 (4Aad + 16Abc + Badn - Bbcn)}{4b} \right) - \dots}{8bd} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n)),x)`

[Out] $x^3 \left(\frac{d^2 i^3 (4Aa^2 d + 16Ab^2 c + B^2 a^2 d^n - B^2 b^2 c^n)}{12b} - \frac{A d^2 i^3 (4a^2 d + 4b^2 c)}{12b} \right) - x^2 \left(\frac{d^2 i^3 (4Aa^2 d + 16Ab^2 c + B^2 a^2 d^n - B^2 b^2 c^n)}{4b} - \frac{A d^2 i^3 (4a^2 d + 4b^2 c)}{4b} \right) \frac{(4a^2 d + 4b^2 c)}{8b^2 d} - \frac{c d i^3 (4Aa^2 d + 6Ab^2 c + B^2 a^2 d^n - B^2 b^2 c^n)}{2b} + \frac{A a^2 c d^2 i^3}{2b} + \log(e((a + b*x)/(c + d*x))^n) \left(\frac{B d^3 i^3 x^4}{4} + B^2 c^3 i^3 x + \frac{3 B^2 c^2 d i^3 x^2}{2} + B^2 c d^2 i^3 x^3 \right) + x \left(\frac{(4a^2 d + 4b^2 c) \left(\frac{d^2 i^3 (4Aa^2 d + 16Ab^2 c + B^2 a^2 d^n - B^2 b^2 c^n)}{4b} - \frac{A d^2 i^3 (4a^2 d + 4b^2 c)}{4b} \right) \frac{(4a^2 d + 4b^2 c)}{4b^2 d} - \frac{c d i^3 (4Aa^2 d + 6Ab^2 c + B^2 a^2 d^n - B^2 b^2 c^n)}{b} + \frac{A a^2 c d^2 i^3}{b} \right) \frac{1}{4b^2 d} + \frac{c^2 i^3 (12Aa^2 d + 8A^2 b^2 c + 3B^2 a^2 d^n - 3B^2 b^2 c^n)}{2b} - \frac{a^2 c \left(\frac{d^2 i^3 (4Aa^2 d + 16Ab^2 c + B^2 a^2 d^n - B^2 b^2 c^n)}{4b} - \frac{A d^2 i^3 (4a^2 d + 4b^2 c)}{4b} \right)}{b^2 d} - \left(\log(a + b*x) \frac{B^2 a^4 d^3 i^3 n - 4B^2 a^2 b^3 c^3 i^3 n - 4B^2 a^3 b^2 c d^2 i^3 n + 6B^2 a^2 b^2 c^2 d i^3 n}{4b^4} + \frac{A d^3 i^3 x^4}{4} - \frac{B^2 c^4 i^3 n \log(c + d*x)}{4d} \right)$

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((d*i*x+c*i)**3*(A+B*ln(e*((b*x+a)/(d*x+c))**n)),x)`

[Out] Timed out

$$3.131 \quad \int \frac{(ci+dx)^3 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{ag+bgx} dx$$

Optimal. Leaf size=373

$$\frac{di^3(a+bx)(bc-ad)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{b^4g} - \frac{i^3(bc-ad)^3 \log \left(1 - \frac{b(c+dx)}{d(a+bx)} \right) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{b^4g} + \frac{i^3(c+dx)}{b^4g}$$

[Out] $-5/6*B*d*(-a*d+b*c)^2*i^3*n*x/b^3/g-1/6*B*(-a*d+b*c)*i^3*n*(d*x+c)^2/b^2/g+d*(-a*d+b*c)^2*i^3*(b*x+a)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^4/g+1/2*(-a*d+b*c)*i^3*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^2/g+1/3*i^3*(d*x+c)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b/g-5/6*B*(-a*d+b*c)^3*i^3*n*\ln((b*x+a)/(d*x+c))/b^4/g-11/6*B*(-a*d+b*c)^3*i^3*n*\ln(d*x+c)/b^4/g-(-a*d+b*c)^3*i^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))*\ln(1-b*(d*x+c)/d/(b*x+a))/b^4/g+B*(-a*d+b*c)^3*i^3*n*polylog(2,b*(d*x+c)/d/(b*x+a))/b^4/g$

Rubi [A] time = 0.60, antiderivative size = 455, normalized size of antiderivative = 1.22, number of steps used = 22, number of rules used = 13, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.302$, Rules used = {2528, 2486, 31, 2524, 2418, 2390, 12, 2301, 2394, 2393, 2391, 2525, 43}

$$\frac{Bi^3n(bc-ad)^3 \text{PolyLog} \left(2, -\frac{d(a+bx)}{bc-ad} \right)}{b^4g} + \frac{i^3(c+dx)^2(bc-ad) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{2b^2g} + \frac{i^3(bc-ad)^3 \log(ag+bgx)}{b^4g}$$

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b*g*x), x]

[Out] $(A*d*(b*c - a*d)^2*i^3*x)/(b^3*g) - (5*B*d*(b*c - a*d)^2*i^3*n*x)/(6*b^3*g) - (B*(b*c - a*d)*i^3*n*(c + d*x)^2)/(6*b^2*g) - (5*B*(b*c - a*d)^3*i^3*n*\text{Log}[a + b*x])/(6*b^4*g) - (B*(b*c - a*d)^3*i^3*n*\text{Log}[g*(a + b*x)]^2)/(2*b^4*g) + (B*d*(b*c - a*d)^2*i^3*(a + b*x)*\text{Log}[e*((a + b*x)/(c + d*x))^n])/(b^4*g) + ((b*c - a*d)*i^3*(c + d*x)^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(2*b^2*g) + (i^3*(c + d*x)^3*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(3*b*g) - (B*(b*c - a*d)^3*i^3*n*\text{Log}[c + d*x])/(b^4*g) + ((b*c - a*d)^3*i^3*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])*\text{Log}[a*g + b*g*x])/(b^4*g) + (B*(b*c - a*d)^3*i^3*n*\text{Log}[(b*(c + d*x))/(b*c - a*d)]*\text{Log}[a*g + b*g*x])/(b^4*g) + (B*(b*c - a*d)^3*i^3*n*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))])/(b^4*g)$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 31

Int[((a_) + (b_.)*(x_))⁽⁻¹⁾, x_Symbol] := Simp[Log[RemoveContent[a + b*x, x]]/b, x] /; FreeQ[{a, b}, x]

Rule 43

Int[((a_.) + (b_.)*(x_))^{(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)ⁿ, x], x] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && (!IntegerQ[n] || (EqQ[c, 0] && LeQ[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])}

Rule 2301

Int[((a_.) + Log[(c_.)*(x_)^(n_.)])*(b_.)/(x_), x_Symbol] := Simp[(a + b*Log[c*xⁿ])²/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)])*(b_.)^{(p_.)*((f_) + (g_.)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*xⁿ])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]}

Rule 2391

Int[Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*xⁿ)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))])*(b_.)/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)])*(b_.)/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)ⁿ]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)

, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2418

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]

Rule 2486

Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]

Rule 2524

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]

Rule 2525

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]

Rule 2528

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]

Rubi steps

$$\begin{aligned}
\int \frac{(131c + 131dx)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{ag + bgx} dx &= \int \left(\frac{2248091d(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^3g} + \frac{17161d(bc - ad)}{b^3g} \right) dx \\
&= \frac{(2248091(bc - ad)^3) \int \frac{A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{ag+bgx} dx}{b^3} + \frac{(131d) \int (131c + 131dx)^3}{b^3} \\
&= \frac{2248091Ad(bc - ad)^2x}{b^3g} + \frac{2248091(bc - ad)(c + dx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{2b^2g} \\
&= \frac{2248091Ad(bc - ad)^2x}{b^3g} + \frac{2248091Bd(bc - ad)^2(a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^4g} \\
&= \frac{2248091Ad(bc - ad)^2x}{b^3g} + \frac{2248091Bd(bc - ad)^2(a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^4g} \\
&= \frac{2248091Ad(bc - ad)^2x}{b^3g} - \frac{11240455Bd(bc - ad)^2nx}{6b^3g} - \frac{2248091Ad(bc - ad)^2x}{b^3g} \\
&= \frac{2248091Ad(bc - ad)^2x}{b^3g} - \frac{11240455Bd(bc - ad)^2nx}{6b^3g} - \frac{2248091Ad(bc - ad)^2x}{b^3g} \\
&= \frac{2248091Ad(bc - ad)^2x}{b^3g} - \frac{11240455Bd(bc - ad)^2nx}{6b^3g} - \frac{2248091Ad(bc - ad)^2x}{b^3g}
\end{aligned}$$

Mathematica [A] time = 0.28, size = 368, normalized size = 0.99

$$i^3 \left(2b^3(c + dx)^3 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right) + 3b^2(c + dx)^2(bc - ad) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right) + 6(bc - ad)^3 \log(g(a + bx)) \right)$$

Antiderivative was successfully verified.

[In] Integrate[(((c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b*g*x), x]


```
[Out] (i^3*(6*A*b*d*(b*c - a*d)^2*x - 3*B*(b*c - a*d)^2*n*(b*d*x + (b*c - a*d)*Log[a + b*x]) - B*(b*c - a*d)*n*(2*b*d*(b*c - a*d)*x + b^2*(c + d*x)^2 + 2*(b*c - a*d)^2*Log[a + b*x]) + 6*B*d*(b*c - a*d)^2*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n] + 3*b^2*(b*c - a*d)*(c + d*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 2*b^3*(c + d*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 6*(b*c - a*d)^3*Log[g*(a + b*x)]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 6*B*(b*c - a*d)^3*n*Log[c + d*x] - 3*B*(b*c - a*d)^3*n*(Log[g*(a + b*x)]*(Log[g*(a + b*x)] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)])))/(6*b^4*g)
```

fricas [F] time = 0.92, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{Ad^3i^3x^3 + 3Acd^2i^3x^2 + 3Ac^2di^3x + Ac^3i^3 + (Bd^3i^3x^3 + 3Bcd^2i^3x^2 + 3Bc^2di^3x + Bc^3i^3) \log \left(e \left(\frac{bx+a}{dx+c} \right) \right)}{bgx + ag} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g), x, algorithm="fricas")
```

```
[Out] integral((A*d^3*i^3*x^3 + 3*A*c*d^2*i^3*x^2 + 3*A*c^2*d*i^3*x + A*c^3*i^3 + (B*d^3*i^3*x^3 + 3*B*c*d^2*i^3*x^2 + 3*B*c^2*d*i^3*x + B*c^3*i^3)*log(e*((b*x + a)/(d*x + c))^n))/(b*g*x + a*g), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g), x, algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.45, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci)^3 \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)}{bgx + ag} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g), x)
```

[Out] $\text{int}((d*i*x+c*i)^3*(B*\ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g), x)$

maxima [B] time = 4.61, size = 935, normalized size = 2.51

$$3Ac^2di^3\left(\frac{x}{bg} - \frac{a\log(bx+a)}{b^2g}\right) - \frac{1}{6}Ad^3i^3\left(\frac{6a^3\log(bx+a)}{b^4g} - \frac{2b^2x^3 - 3abx^2 + 6a^2x}{b^3g}\right) + \frac{3}{2}Acd^2i^3\left(\frac{2a^2\log(bx+a)}{b^3g}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{integrate}((d*i*x+c*i)^3*(A+B*\log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g), x, \text{algorithm}="maxima")$

[Out] $3*A*c^2*d*i^3*(x/(b*g) - a*\log(b*x + a)/(b^2*g)) - 1/6*A*d^3*i^3*(6*a^3*\log(b*x + a)/(b^4*g) - (2*b^2*x^3 - 3*a*b*x^2 + 6*a^2*x)/(b^3*g)) + 3/2*A*c*d^2*i^3*(2*a^2*\log(b*x + a)/(b^3*g) + (b*x^2 - 2*a*x)/(b^2*g)) + A*c^3*i^3*\log(b*g*x + a*g)/(b*g) - 1/6*(11*b^2*c^3*i^3*n - 15*a*b*c^2*d*i^3*n + 6*a^2*c*d^2*i^3*n)*B*\log(d*x + c)/(b^3*g) + (b^3*c^3*i^3*n - 3*a*b^2*c^2*d*i^3*n + 3*a^2*b*c*d^2*i^3*n - a^3*d^3*i^3*n)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + \text{dilog}(-(b*d*x + a*d)/(b*c - a*d)))*B/(b^4*g) + 1/6*(2*B*b^3*d^3*i^3*x^3*\log(e) - ((i^3*n - 9*i^3*\log(e))*b^3*c*d^2 - (i^3*n - 3*i^3*\log(e))*a*b^2*d^3)*B*x^2 - 3*(b^3*c^3*i^3*n - 3*a*b^2*c^2*d*i^3*n + 3*a^2*b*c*d^2*i^3*n - a^3*d^3*i^3*n)*B*\log(b*x + a)^2 - ((7*i^3*n - 18*i^3*\log(e))*b^3*c^2*d - 6*(2*i^3*n - 3*i^3*\log(e))*a*b^2*c*d^2 + (5*i^3*n - 6*i^3*\log(e))*a^2*b*d^3)*B*x + (6*b^3*c^3*i^3*\log(e) + 18*(i^3*n - i^3*\log(e))*a*b^2*c^2*d - 9*(3*i^3*n - 2*i^3*\log(e))*a^2*b*c*d^2 + (11*i^3*n - 6*i^3*\log(e))*a^3*d^3)*B*\log(b*x + a) + (2*B*b^3*d^3*i^3*x^3 + 3*(3*b^3*c*d^2*i^3 - a*b^2*d^3*i^3)*B*x^2 + 6*(3*b^3*c^2*d*i^3 - 3*a*b^2*c*d^2*i^3 + a^2*b*d^3*i^3)*B*x + 6*(b^3*c^3*i^3 - 3*a*b^2*c^2*d*i^3 + 3*a^2*b*c*d^2*i^3 - a^3*d^3*i^3)*B*\log(b*x + a))*\log((b*x + a)^n) - (2*B*b^3*d^3*i^3*x^3 + 3*(3*b^3*c*d^2*i^3 - a*b^2*d^3*i^3)*B*x^2 + 6*(3*b^3*c^2*d*i^3 - 3*a*b^2*c*d^2*i^3 + a^2*b*d^3*i^3)*B*x + 6*(b^3*c^3*i^3 - 3*a*b^2*c^2*d*i^3 + 3*a^2*b*c*d^2*i^3 - a^3*d^3*i^3)*B*\log(b*x + a))*\log((d*x + c)^n)/(b^4*g)$

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ci + dix)^3 \left(A + B \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{ag + bgx} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{int}(((c*i + d*i*x)^3*(A + B*\log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x), x)$

[Out] $\text{int}(((c*i + d*i*x)^3*(A + B*\log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x), x)$

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*((b*x+a)/(d*x+c))**n))/(b*g*x+a*g),x)

[Out] Timed out

$$3.132 \quad \int \frac{(ci+dx)^3 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ag+bgx)^2} dx$$

Optimal. Leaf size=390

$$\frac{2d^2i^3(a+bx)(bc-ad) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{b^4g^2} - \frac{3di^3(bc-ad)^2 \log \left(1 - \frac{b(c+dx)}{d(a+bx)} \right) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{b^4g^2} - i^3(c+ax)$$

[Out] $-1/2*B*d^2*(-a*d+b*c)*i^3*n*x/b^3/g^2 - B*(-a*d+b*c)^2*i^3*n*(d*x+c)/b^3/g^2/(b*x+a) + 2*d^2*(-a*d+b*c)*i^3*(b*x+a)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^4/g^2 - (-a*d+b*c)^2*i^3*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^3/g^2/(b*x+a) + 1/2*d*i^3*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^2/g^2 - 1/2*B*d*(-a*d+b*c)^2*i^3*n*\ln((b*x+a)/(d*x+c))/b^4/g^2 - 5/2*B*d*(-a*d+b*c)^2*i^3*n*\ln(d*x+c)/b^4/g^2 - 3*d*(-a*d+b*c)^2*i^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))*\ln(1-b*(d*x+c)/d/(b*x+a))/b^4/g^2 + 3*B*d*(-a*d+b*c)^2*i^3*n*\text{polylog}(2,b*(d*x+c)/d/(b*x+a))/b^4/g^2$

Rubi [A] time = 0.69, antiderivative size = 543, normalized size of antiderivative = 1.39, number of steps used = 21, number of rules used = 14, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.326$, Rules used = {2528, 2486, 31, 2525, 12, 72, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{3Bdi^3n(bc-ad)^2 \text{PolyLog} \left(2, -\frac{d(a+bx)}{bc-ad} \right)}{b^4g^2} - \frac{a^2Bd^3i^3n \log(a+bx)}{2b^4g^2} + \frac{d^3i^3x^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{2b^2g^2} + \frac{3di^3(bc-ad)^2 \log \left(1 - \frac{b(c+dx)}{d(a+bx)} \right) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{b^4g^2}$$

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b*g*x)^2,x]

[Out] $(A*d^2*(3*b*c - 2*a*d)*i^3*x)/(b^3*g^2) - (B*d^2*(b*c - a*d)*i^3*n*x)/(2*b^3*g^2) - (B*(b*c - a*d)^3*i^3*n)/(b^4*g^2*(a + b*x)) - (a^2*B*d^3*i^3*n*Log[a + b*x])/(2*b^4*g^2) - (B*d*(b*c - a*d)^2*i^3*n*Log[a + b*x])/(b^4*g^2) - (3*B*d*(b*c - a*d)^2*i^3*n*Log[a + b*x]^2)/(2*b^4*g^2) + (B*d^2*(3*b*c - 2*a*d)*i^3*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n])/(b^4*g^2) + (d^3*i^3*x^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(2*b^2*g^2) - ((b*c - a*d)^3*i^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(b^4*g^2*(a + b*x)) + (3*d*(b*c - a*d)^2*i^3*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(b^4*g^2) + (B*c^2*d*i^3*n*Log[c + d*x])/(2*b^2*g^2) - (B*d*(3*b*c - 2*a*d)*(b*c - a*d)*i^3*n*Log[c + d*x])/(b^4*g^2) + (B*d*(b*c - a*d)^2*i^3*n*Log[c + d*x])/(b^4*g^2) + (3*B*d*(b*c - a*d)^2*i^3*n*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(b^4*g^2)$

$$\frac{*d)}}{(b^4*g^2) + (3*B*d*(b*c - a*d)^2*i^3*n*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(b^4*g^2)}$$

Rule 12

$$\text{Int}[(a_*)*(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \ \&\& \ !\text{Match} \\ \text{Q}[u, (b_*)*(v_)] /; \text{FreeQ}[b, x]$$

Rule 31

$$\text{Int}[(a_*) + (b_*)*(x_)^{(-1)}, x_Symbol] \rightarrow \text{Simp}[\text{Log}[\text{RemoveContent}[a + b*x, \\ x]]/b, x] /; \text{FreeQ}[\{a, b\}, x]$$

Rule 44

$$\text{Int}[(a_*) + (b_*)*(x_)^{(m_*)}*((c_*) + (d_*)*(x_)^{(n_*)}), x_Symbol] \rightarrow \text{Int}[\text{ExpandIntegrand}[(a + b*x)^m*(c + d*x)^n, x], x] /; \text{FreeQ}[\{a, b, c, d\}, x] \ \&\& \\ \& \ \text{NeQ}[b*c - a*d, 0] \ \&\& \ \text{ILtQ}[m, 0] \ \&\& \ \text{IntegerQ}[n] \ \&\& \ !(\text{IGtQ}[n, 0] \ \&\& \ \text{LtQ}[m \\ + n + 2, 0])$$

Rule 72

$$\text{Int}[(e_*) + (f_*)*(x_)^{(p_*)}/((a_*) + (b_*)*(x_))*((c_*) + (d_*)*(x_)), \\ x_Symbol] \rightarrow \text{Int}[\text{ExpandIntegrand}[(e + f*x)^p/((a + b*x)*(c + d*x)), x], x] \\ /; \text{FreeQ}[\{a, b, c, d, e, f\}, x] \ \&\& \ \text{IntegerQ}[p]$$

Rule 2301

$$\text{Int}[(a_*) + \text{Log}[(c_*)*(x_)^{(n_*)}*(b_*)]/(x_), x_Symbol] \rightarrow \text{Simp}[(a + b*\text{Log} \\ [c*x^n])^2/(2*b*n), x] /; \text{FreeQ}[\{a, b, c, n\}, x]$$

Rule 2390

$$\text{Int}[(a_*) + \text{Log}[(c_*)*((d_*) + (e_*)*(x_)^{(n_*)}*(b_*)^{(p_*)}*((f_*) + (g_*) \\)*(x_)^{(q_*)}), x_Symbol] \rightarrow \text{Dist}[1/e, \text{Subst}[\text{Int}[(f*x)/d]^q*(a + b*\text{Log}[c*x^n])^p, x], x, d + e*x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g, n, p, q\}, x] \ \&\& \ \text{EqQ}[e*f - d*g, 0]$$

Rule 2391

$$\text{Int}[\text{Log}[(c_*)*((d_*) + (e_*)*(x_)^{(n_*)})]/(x_), x_Symbol] \rightarrow -\text{Simp}[\text{PolyLog}[2, \\ -(c*e*x^n)]/n, x] /; \text{FreeQ}[\{c, d, e, n\}, x] \ \&\& \ \text{EqQ}[c*d, 1]$$

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x
), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)
^(r_.)]^(s_.), x_Symbol] := Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)
^q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q]^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.))/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunci
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(132c + 132dx)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ag + bgx)^2} dx &= \int \left(\frac{2299968d^2(3bc - 2ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^3g^2} + \frac{2299968d^3}{b^2g^2} \right) dx \\
&= \frac{(2299968d^3) \int x \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) dx}{b^2g^2} + \frac{2299968d^2(3bc - 2ad)x}{b^3g^2} \\
&= \frac{2299968Ad^2(3bc - 2ad)x}{b^3g^2} + \frac{1149984d^3x^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^2g^2} \\
&= \frac{2299968Ad^2(3bc - 2ad)x}{b^3g^2} + \frac{2299968Bd^2(3bc - 2ad)(a + bx)}{b^4g^2} \\
&= \frac{2299968Ad^2(3bc - 2ad)x}{b^3g^2} + \frac{2299968Bd^2(3bc - 2ad)(a + bx)}{b^4g^2} \\
&= \frac{2299968Ad^2(3bc - 2ad)x}{b^3g^2} - \frac{1149984Bd^2(bc - ad)nx}{b^3g^2} - \frac{2299968Bd^2(bc - ad)}{b^4g^2} \\
&= \frac{2299968Ad^2(3bc - 2ad)x}{b^3g^2} - \frac{1149984Bd^2(bc - ad)nx}{b^3g^2} - \frac{2299968Bd^2(bc - ad)}{b^4g^2} \\
&= \frac{2299968Ad^2(3bc - 2ad)x}{b^3g^2} - \frac{1149984Bd^2(bc - ad)nx}{b^3g^2} - \frac{2299968Bd^2(bc - ad)}{b^4g^2}
\end{aligned}$$

Mathematica [A] time = 0.40, size = 394, normalized size = 1.01

$$i^3 \left(-a^2 B d^3 n \log(a + bx) + b^2 d^3 x^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right) + 6d(bc - ad)^2 \log(a + bx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right) - \dots \right)$$

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b*g*x)^2,x]

[Out] (i^3*(2*A*b*d^2*(3*b*c - 2*a*d)*x - b*B*d^2*(b*c - a*d)*n*x - (2*B*(b*c - a*d)^3*n)/(a + b*x) - a^2*B*d^3*n*Log[a + b*x] - 2*B*d*(b*c - a*d)^2*n*Log[a + b*x] + 2*B*d^2*(3*b*c - 2*a*d)*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n] + b^2*d^3*x^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - (2*(b*c - a*d)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a + b*x) + 6*d*(b*c - a*d)^2*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + b^2*B*c^2*d*n*Log[c + d*x] + 2*B*d*(b*c - a*d)^2*n*Log[c + d*x] - 2*B*d*(-(b*c) + a*d)*(-3*b*c + 2*a*d)*n*Log[c + d*x] - 3*B*d*(b*c - a*d)^2*n*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)])))/(2*b^4*g^2)

fricas [F] time = 0.70, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{A d^3 i^3 x^3 + 3 A c d^2 i^3 x^2 + 3 A c^2 d i^3 x + A c^3 i^3 + (B d^3 i^3 x^3 + 3 B c d^2 i^3 x^2 + 3 B c^2 d i^3 x + B c^3 i^3) \log \left(e \left(\frac{bx+a}{dx+c} \right)^n \right)}{b^2 g^2 x^2 + 2 a b g^2 x + a^2 g^2} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^2,x, algorithm="fricas")

[Out] integral((A*d^3*i^3*x^3 + 3*A*c*d^2*i^3*x^2 + 3*A*c^2*d*i^3*x + A*c^3*i^3 + (B*d^3*i^3*x^3 + 3*B*c*d^2*i^3*x^2 + 3*B*c^2*d*i^3*x + B*c^3*i^3)*log(e*((b*x + a)/(d*x + c))^n))/(b^2*g^2*x^2 + 2*a*b*g^2*x + a^2*g^2), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^2,x, algorithm="giac")

[Out] Timed out

maple [F] time = 0.45, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci)^3 \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)}{(bgx + ag)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^2,x)

[Out] int((d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^2,x)

maxima [B] time = 4.41, size = 1785, normalized size = 4.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^2,x, algorithm="maxima")

[Out]
$$\begin{aligned} & -B*c^3*i^3*n*(1/(b^2*g^2*x + a*b*g^2) + d*\log(b*x + a)/((b^2*c - a*b*d)*g^2) \\ &) - d*\log(d*x + c)/((b^2*c - a*b*d)*g^2)) - 3*A*(a^2/(b^4*g^2*x + a*b^3*g^2) \\ &) - x/(b^2*g^2) + 2*a*\log(b*x + a)/(b^3*g^2))*c*d^2*i^3 + 1/2*(2*a^3/(b^5*g \\ & ^2*x + a*b^4*g^2) + 6*a^2*\log(b*x + a)/(b^4*g^2) + (b*x^2 - 4*a*x)/(b^3*g^2 \\ &))*A*d^3*i^3 + 3*A*c^2*d*i^3*(a/(b^3*g^2*x + a*b^2*g^2) + \log(b*x + a)/(b^2 \\ & *g^2)) - B*c^3*i^3*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^2*g^2*x + a*b* \\ & g^2) - A*c^3*i^3/(b^2*g^2*x + a*b*g^2) - 1/2*(5*b^3*c^3*d*i^3*n - 3*a*b^2*c \\ & ^2*d^2*i^3*n - 2*a^2*b*c*d^3*i^3*n + 2*a^3*d^4*i^3*n)*B*\log(d*x + c)/(b^5*c \\ & *g^2 - a*b^4*d*g^2) + 1/2*((b^4*c*d^3*i^3*\log(e) - a*b^3*d^4*i^3*\log(e))*B* \\ & x^3 - ((i^3*n - 6*i^3*\log(e))*b^4*c^2*d^2 - (2*i^3*n - 9*i^3*\log(e))*a*b^3* \\ & c*d^3 + (i^3*n - 3*i^3*\log(e))*a^2*b^2*d^4)*B*x^2 - ((i^3*n - 6*i^3*\log(e)) \\ & *a*b^3*c^2*d^2 - 2*(i^3*n - 5*i^3*\log(e))*a^2*b^2*c*d^3 + (i^3*n - 4*i^3*lo \\ & g(e))*a^3*b*d^4)*B*x - 3*((b^4*c^3*d*i^3*n - 3*a*b^3*c^2*d^2*i^3*n + 3*a^2* \\ & b^2*c*d^3*i^3*n - a^3*b*d^4*i^3*n)*B*x + (a*b^3*c^3*d*i^3*n - 3*a^2*b^2*c^2 \\ & *d^2*i^3*n + 3*a^3*b*c*d^3*i^3*n - a^4*d^4*i^3*n)*B)*\log(b*x + a)^2 + 2*(3* \\ & (i^3*n + i^3*\log(e))*a*b^3*c^3*d - 6*(i^3*n + i^3*\log(e))*a^2*b^2*c^2*d^2 + \\ & 4*(i^3*n + i^3*\log(e))*a^3*b*c*d^3 - (i^3*n + i^3*\log(e))*a^4*d^4)*B + ((6 \\ & *b^4*c^3*d*i^3*\log(e) + 6*(2*i^3*n - 3*i^3*\log(e))*a*b^3*c^2*d^2 - (17*i^3* \\ & n - 18*i^3*\log(e))*a^2*b^2*c*d^3 + (7*i^3*n - 6*i^3*\log(e))*a^3*b*d^4)*B*x \\ & + (6*a*b^3*c^3*d*i^3*\log(e) + 6*(2*i^3*n - 3*i^3*\log(e))*a^2*b^2*c^2*d^2 - \\ & (17*i^3*n - 18*i^3*\log(e))*a^3*b*c*d^3 + (7*i^3*n - 6*i^3*\log(e))*a^4*d^4)* \\ & B)*\log(b*x + a) + ((b^4*c*d^3*i^3 - a*b^3*d^4*i^3)*B*x^3 + 3*(2*b^4*c^2*d^2 \\ & *i^3 - 3*a*b^3*c*d^3*i^3 + a^2*b^2*d^4*i^3)*B*x^2 + 2*(3*a*b^3*c^2*d^2*i^3 \end{aligned}$$

```

- 5*a^2*b^2*c*d^3*i^3 + 2*a^3*b*d^4*i^3)*B*x + 2*(3*a*b^3*c^3*d*i^3 - 6*a^2
*b^2*c^2*d^2*i^3 + 4*a^3*b*c*d^3*i^3 - a^4*d^4*i^3)*B + 6*((b^4*c^3*d*i^3 -
3*a*b^3*c^2*d^2*i^3 + 3*a^2*b^2*c*d^3*i^3 - a^3*b*d^4*i^3)*B*x + (a*b^3*c^
3*d*i^3 - 3*a^2*b^2*c^2*d^2*i^3 + 3*a^3*b*c*d^3*i^3 - a^4*d^4*i^3)*B)*log(b
*x + a))*log((b*x + a)^n) - ((b^4*c*d^3*i^3 - a*b^3*d^4*i^3)*B*x^3 + 3*(2*b
^4*c^2*d^2*i^3 - 3*a*b^3*c*d^3*i^3 + a^2*b^2*d^4*i^3)*B*x^2 + 2*(3*a*b^3*c^
2*d^2*i^3 - 5*a^2*b^2*c*d^3*i^3 + 2*a^3*b*d^4*i^3)*B*x + 2*(3*a*b^3*c^3*d*i
^3 - 6*a^2*b^2*c^2*d^2*i^3 + 4*a^3*b*c*d^3*i^3 - a^4*d^4*i^3)*B + 6*((b^4*c
^3*d*i^3 - 3*a*b^3*c^2*d^2*i^3 + 3*a^2*b^2*c*d^3*i^3 - a^3*b*d^4*i^3)*B*x +
(a*b^3*c^3*d*i^3 - 3*a^2*b^2*c^2*d^2*i^3 + 3*a^3*b*c*d^3*i^3 - a^4*d^4*i^3
)*B)*log(b*x + a))*log((d*x + c)^n))/(a*b^5*c*g^2 - a^2*b^4*d*g^2 + (b^6*c*
g^2 - a*b^5*d*g^2)*x) + 3*(b^2*c^2*d*i^3*n - 2*a*b*c*d^2*i^3*n + a^2*d^3*i^
3*n)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d
)/(b*c - a*d)))*B/(b^4*g^2)

```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ci + dix)^3 \left(A + B \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ag + bgx)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x)^
2,x)
```

```
[Out] int(((c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x)^
2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*((b*x+a)/(d*x+c))**n)))/(b*g*x+a*g)**2,x)
```

```
[Out] Timed out
```

$$3.133 \quad \int \frac{(ci+dx)^3 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ag+bgx)^3} dx$$

Optimal. Leaf size=361

$$\frac{d^3 i^3 (a+bx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{b^4 g^3} - \frac{3d^2 i^3 (bc-ad) \log \left(1 - \frac{b(c+dx)}{d(a+bx)} \right) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{b^4 g^3} - \frac{2di^3 (c+dx)(bc-ad)}{b^4 g^3}$$

[Out] $-2*B*d*(-a*d+b*c)*i^3*n*(d*x+c)/b^3/g^3/(b*x+a)-1/4*B*(-a*d+b*c)*i^3*n*(d*x+c)^2/b^2/g^3/(b*x+a)^2+d^3*i^3*(b*x+a)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^4/g^3-2*d*(-a*d+b*c)*i^3*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^3/g^3/(b*x+a)-1/2*(-a*d+b*c)*i^3*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^2/g^3/(b*x+a)^2-B*d^2*(-a*d+b*c)*i^3*n*\ln(d*x+c)/b^4/g^3-3*d^2*(-a*d+b*c)*i^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))*\ln(1-b*(d*x+c)/d/(b*x+a))/b^4/g^3+3*B*d^2*(-a*d+b*c)*i^3*n*\text{polylog}(2,b*(d*x+c)/d/(b*x+a))/b^4/g^3$

Rubi [A] time = 0.71, antiderivative size = 461, normalized size of antiderivative = 1.28, number of steps used = 21, number of rules used = 13, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.302$, Rules used = {2528, 2486, 31, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{3Bd^2 i^3 n (bc-ad) \text{PolyLog} \left(2, -\frac{d(a+bx)}{bc-ad} \right)}{b^4 g^3} + \frac{3d^2 i^3 (bc-ad) \log(a+bx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{b^4 g^3} - \frac{3di^3 (bc-ad)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{b^4 g^3}$$

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b*g*x)^3,x]

[Out] $(A*d^3*i^3*x)/(b^3*g^3) - (B*(b*c - a*d)^3*i^3*n)/(4*b^4*g^3*(a + b*x)^2) - (5*B*d*(b*c - a*d)^2*i^3*n)/(2*b^4*g^3*(a + b*x)) - (5*B*d^2*(b*c - a*d)*i^3*n*\text{Log}[a + b*x])/(2*b^4*g^3) - (3*B*d^2*(b*c - a*d)*i^3*n*\text{Log}[a + b*x]^2)/(2*b^4*g^3) + (B*d^3*i^3*(a + b*x)*\text{Log}[e*((a + b*x)/(c + d*x))^n])/(b^4*g^3) - ((b*c - a*d)^3*i^3*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(2*b^4*g^3*(a + b*x)^2) - (3*d*(b*c - a*d)^2*i^3*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(b^4*g^3*(a + b*x)) + (3*d^2*(b*c - a*d)*i^3*\text{Log}[a + b*x]*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(b^4*g^3) + (3*B*d^2*(b*c - a*d)*i^3*n*\text{Log}[c + d*x])/(2*b^4*g^3) + (3*B*d^2*(b*c - a*d)*i^3*n*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)])/(b^4*g^3) + (3*B*d^2*(b*c - a*d)*i^3*n*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))])/(b^4*g^3)$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 31

Int[((a_) + (b_.)*(x_))⁽⁻¹⁾, x_Symbol] := Simp[Log[RemoveContent[a + b*x, x]]/b, x] /; FreeQ[{a, b}, x]

Rule 44

Int[((a_) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)ⁿ, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])

Rule 2301

Int[((a_.) + Log[(c_.)*(x_)^(n_.)])*(b_.)/(x_), x_Symbol] := Simp[(a + b*Log[c*xⁿ])²/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.)])*(b_.))^(p_.)*((f_.) + (g_.)*(x_)^(q_.)), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*xⁿ])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*xⁿ)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))])*(b_.)/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.)])*(b_.)/((f_.) + (g_.)*(x_))), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)ⁿ]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)

, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2418

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]

Rule 2486

Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]

Rule 2524

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]

Rule 2525

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]

Rule 2528

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]

Rubi steps

$$\begin{aligned}
\int \frac{(133c + 133dx)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ag + bgx)^3} dx &= \int \left(\frac{2352637d^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^3g^3} + \frac{2352637(bc - ad)^3}{b^3g^3} \right) dx \\
&= \frac{(2352637d^3) \int \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) dx}{b^3g^3} + \frac{(7057911d^2(bc - ad)^3)}{b^3g^3} \\
&= \frac{2352637Ad^3x}{b^3g^3} - \frac{2352637(bc - ad)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{2b^4g^3(a + bx)^2} \\
&= \frac{2352637Ad^3x}{b^3g^3} + \frac{2352637Bd^3(a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^4g^3} - \frac{2352637(bc - ad)^3 A}{2b^4g^3(a + bx)^2} \\
&= \frac{2352637Ad^3x}{b^3g^3} + \frac{2352637Bd^3(a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^4g^3} - \frac{2352637(bc - ad)^3 A}{2b^4g^3(a + bx)^2} \\
&= \frac{2352637Ad^3x}{b^3g^3} - \frac{2352637B(bc - ad)^3 n}{4b^4g^3(a + bx)^2} - \frac{11763185Bd(bc - ad)^3}{2b^4g^3(a + bx)} \\
&= \frac{2352637Ad^3x}{b^3g^3} - \frac{2352637B(bc - ad)^3 n}{4b^4g^3(a + bx)^2} - \frac{11763185Bd(bc - ad)^3}{2b^4g^3(a + bx)} \\
&= \frac{2352637Ad^3x}{b^3g^3} - \frac{2352637B(bc - ad)^3 n}{4b^4g^3(a + bx)^2} - \frac{11763185Bd(bc - ad)^3}{2b^4g^3(a + bx)}
\end{aligned}$$

Mathematica [A] time = 0.49, size = 331, normalized size = 0.92

$$\frac{i^3 \left(12d^2(bc - ad) \log(a + bx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right) - \frac{12d(bc - ad)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{a+bx} - \frac{2(bc - ad)^3 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{(a+bx)^2} + 4 \right)}{b^3g^3}$$

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b*g*x)^3,x]

```
[Out] (i^3*(4*A*b*d^3*x - (B*(b*c - a*d)^3*n)/(a + b*x)^2 - (10*B*d*(b*c - a*d)^2
*n)/(a + b*x) + 10*B*d^2*(-(b*c) + a*d)*n*Log[a + b*x] + 4*B*d^3*(a + b*x)*
Log[e*((a + b*x)/(c + d*x))^n] - (2*(b*c - a*d)^3*(A + B*Log[e*((a + b*x)/(
c + d*x))^n]))/(a + b*x)^2 - (12*d*(b*c - a*d)^2*(A + B*Log[e*((a + b*x)/(c
+ d*x))^n]))/(a + b*x) + 12*d^2*(b*c - a*d)*Log[a + b*x]*(A + B*Log[e*((a
+ b*x)/(c + d*x))^n]) + 6*B*d^2*(b*c - a*d)*n*Log[c + d*x] + 6*B*d^2*(-(b*c
) + a*d)*n*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)])
- 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)])))/(4*b^4*g^3)
```

fricas [F] time = 0.70, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{Ad^3i^3x^3 + 3Acd^2i^3x^2 + 3Ac^2di^3x + Ac^3i^3 + (Bd^3i^3x^3 + 3Bcd^2i^3x^2 + 3Bc^2di^3x + Bc^3i^3) \log \left(e \left(\frac{bx+a}{dx+c} \right) \right)}{b^3g^3x^3 + 3ab^2g^3x^2 + 3a^2bg^3x + a^3g^3} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^3,x, a
lgorithm="fricas")
```

```
[Out] integral((A*d^3*i^3*x^3 + 3*A*c*d^2*i^3*x^2 + 3*A*c^2*d*i^3*x + A*c^3*i^3 +
(B*d^3*i^3*x^3 + 3*B*c*d^2*i^3*x^2 + 3*B*c^2*d*i^3*x + B*c^3*i^3)*log(e*((
b*x + a)/(d*x + c))^n))/(b^3*g^3*x^3 + 3*a*b^2*g^3*x^2 + 3*a^2*b*g^3*x + a^
3*g^3), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^3,x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.46, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci)^3 \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)}{(bgx + ag)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^3,x)
```

[Out] $\int ((d*i*x+c*i)^3*(B*\ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^3, x)$

maxima [B] time = 5.10, size = 2746, normalized size = 7.61

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^3,x, algorithm="maxima")`

[Out]
$$-3/4*B*c^2*d*i^3*n*((3*a*b*c - a^2*d + 2*(2*b^2*c - a*b*d)*x)/((b^5*c - a*b^4*d)*g^3*x^2 + 2*(a*b^4*c - a^2*b^3*d)*g^3*x + (a^2*b^3*c - a^3*b^2*d)*g^3) + 2*(2*b*c*d - a*d^2)*\log(b*x + a)/((b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)*g^3) - 2*(2*b*c*d - a*d^2)*\log(d*x + c)/((b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)*g^3) + 1/4*B*c^3*i^3*n*((2*b*d*x - b*c + 3*a*d)/((b^4*c - a*b^3*d)*g^3*x^2 + 2*(a*b^3*c - a^2*b^2*d)*g^3*x + (a^2*b^2*c - a^3*b*d)*g^3) + 2*d^2*\log(b*x + a)/((b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*g^3) - 2*d^2*\log(d*x + c)/((b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*g^3) - 1/2*A*d^3*i^3*((6*a^2*b*x + 5*a^3)/(b^6*g^3*x^2 + 2*a*b^5*g^3*x + a^2*b^4*g^3) - 2*x/(b^3*g^3) + 6*a*\log(b*x + a)/(b^4*g^3) + 3/2*A*c*d^2*i^3*((4*a*b*x + 3*a^2)/(b^5*g^3*x^2 + 2*a*b^4*g^3*x + a^2*b^3*g^3) + 2*\log(b*x + a)/(b^3*g^3)) - 3/2*(2*b*x + a)*B*c^2*d*i^3*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^4*g^3*x^2 + 2*a*b^3*g^3*x + a^2*b^2*g^3) - 3/2*(2*b*x + a)*A*c^2*d*i^3/(b^4*g^3*x^2 + 2*a*b^3*g^3*x + a^2*b^2*g^3) - 1/2*B*c^3*i^3*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^3*g^3*x^2 + 2*a*b^2*g^3*x + a^2*b*g^3) - 1/2*A*c^3*i^3/(b^3*g^3*x^2 + 2*a*b^2*g^3*x + a^2*b*g^3) - 1/2*(2*b^3*c^3*d^2*i^3*n + 8*a*b^2*c^2*d^3*i^3*n - 13*a^2*b*c*d^4*i^3*n + 5*a^3*d^5*i^3*n)*B*\log(d*x + c)/(b^6*c^2*g^3 - 2*a*b^5*c*d*g^3 + a^2*b^4*d^2*g^3) + 1/4*(4*(b^5*c^2*d^3*i^3*\log(e) - 2*a*b^4*c*d^4*i^3*\log(e) + a^2*b^3*d^5*i^3*\log(e))*B*x^3 + 8*(a*b^4*c^2*d^3*i^3*\log(e) - 2*a^2*b^3*c*d^4*i^3*\log(e) + a^3*b^2*d^5*i^3*\log(e))*B*x^2 + 2*(12*(i^3*n + i^3*\log(e))*a*b^4*c^3*d^2 - (27*i^3*n + 28*i^3*\log(e))*a^2*b^3*c^2*d^3 + 20*(i^3*n + i^3*\log(e))*a^3*b^2*c*d^4 - (5*i^3*n + 4*i^3*\log(e))*a^4*b*d^5)*B*x - 6*((b^5*c^3*d^2*i^3*n - 3*a*b^4*c^2*d^3*i^3*n + 3*a^2*b^3*c*d^4*i^3*n - a^3*b^2*d^5*i^3*n)*B*x^2 + 2*(a*b^4*c^3*d^2*i^3*n - 3*a^2*b^3*c^2*d^3*i^3*n + 3*a^3*b^2*c*d^4*i^3*n - a^4*b*d^5*i^3*n)*B*x + (a^2*b^3*c^3*d^2*i^3*n - 3*a^3*b^2*c^2*d^3*i^3*n + 3*a^4*b*c*d^4*i^3*n - a^5*d^5*i^3*n)*B)*\log(b*x + a)^2 + (3*(7*i^3*n + 6*i^3*\log(e))*a^2*b^3*c^3*d^2 - (47*i^3*n + 46*i^3*\log(e))*a^3*b^2*c^2*d^3 + (35*i^3*n + 38*i^3*\log(e))*a^4*b*c*d^4 - (9*i^3*n + 10*i^3*\log(e))*a^5*d^5)*B + 2*((6*b^5*c^3*d^2*i^3*\log(e) + 2*(7*i^3*n - 9*i^3*\log(e))*a*b^4*c^2*d^3 - (19*i^3*n - 18*i^3*\log(e))*a^2*b^3*c*d^4 + (7*i^3*n - 6*i^3*\log(e))*a^3*b^2*d^5)*B*x^2 + 2*(6*a*b^4*c^3*d^2*i^3*\log(e) + 2*(7*i^3*n - 9*i^3*\log(e))*a^2*b^3*c^2*d^3 - (19*i^3*n - 18*i^3*\log(e))*a^3*b^2*c*d^4 + (7*i^3*n - 6*i^3*\log(e))*a^4*b*d^5)*B*x + (6*a^2*b^3*c^3*d^2*i^3*\log(e) + 2*(7*i^3*n - 9*i^3*\log(e))*a^3*b^2*c^2*d^3 - (19*i^3*n - 18*i^3*\log(e))*a^4*b*c*d^4 + (7*i^3*n - 6*i^3*\log(e))*a^5*d^5)*B)*\log(b*x +$$

a) + 2*(2*(b^5*c^2*d^3*i^3 - 2*a*b^4*c*d^4*i^3 + a^2*b^3*d^5*i^3)*B*x^3 + 4*(a*b^4*c^2*d^3*i^3 - 2*a^2*b^3*c*d^4*i^3 + a^3*b^2*d^5*i^3)*B*x^2 + 4*(3*a*b^4*c^3*d^2*i^3 - 7*a^2*b^3*c^2*d^3*i^3 + 5*a^3*b^2*c*d^4*i^3 - a^4*b*d^5*i^3)*B*x + (9*a^2*b^3*c^3*d^2*i^3 - 23*a^3*b^2*c^2*d^3*i^3 + 19*a^4*b*c*d^4*i^3 - 5*a^5*d^5*i^3)*B + 6*((b^5*c^3*d^2*i^3 - 3*a*b^4*c^2*d^3*i^3 + 3*a^2*b^3*c*d^4*i^3 - a^3*b^2*d^5*i^3)*B*x^2 + 2*(a*b^4*c^3*d^2*i^3 - 3*a^2*b^3*c^2*d^3*i^3 + 3*a^3*b^2*c*d^4*i^3 - a^4*b*d^5*i^3)*B*x + (a^2*b^3*c^3*d^2*i^3 - 3*a^3*b^2*c^2*d^3*i^3 + 3*a^4*b*c*d^4*i^3 - a^5*d^5*i^3)*B)*log(b*x + a))*log((b*x + a)^n) - 2*(2*(b^5*c^2*d^3*i^3 - 2*a*b^4*c*d^4*i^3 + a^2*b^3*d^5*i^3)*B*x^3 + 4*(a*b^4*c^2*d^3*i^3 - 2*a^2*b^3*c*d^4*i^3 + a^3*b^2*d^5*i^3)*B*x^2 + 4*(3*a*b^4*c^3*d^2*i^3 - 7*a^2*b^3*c^2*d^3*i^3 + 5*a^3*b^2*c*d^4*i^3 - a^4*b*d^5*i^3)*B*x + (9*a^2*b^3*c^3*d^2*i^3 - 23*a^3*b^2*c^2*d^3*i^3 + 19*a^4*b*c*d^4*i^3 - 5*a^5*d^5*i^3)*B + 6*((b^5*c^3*d^2*i^3 - 3*a*b^4*c^2*d^3*i^3 + 3*a^2*b^3*c*d^4*i^3 - a^3*b^2*d^5*i^3)*B*x^2 + 2*(a*b^4*c^3*d^2*i^3 - 3*a^2*b^3*c^2*d^3*i^3 + 3*a^3*b^2*c*d^4*i^3 - a^4*b*d^5*i^3)*B*x + (a^2*b^3*c^3*d^2*i^3 - 3*a^3*b^2*c^2*d^3*i^3 + 3*a^4*b*c*d^4*i^3 - a^5*d^5*i^3)*B)*log(b*x + a))*log((d*x + c)^n))/(a^2*b^6*c^2*g^3 - 2*a^3*b^5*c*d*g^3 + a^4*b^4*d^2*g^3 + (b^8*c^2*g^3 - 2*a*b^7*c*d*g^3 + a^2*b^6*d^2*g^3)*x^2 + 2*(a*b^7*c^2*g^3 - 2*a^2*b^6*c*d*g^3 + a^3*b^5*d^2*g^3)*x) + 3*(b*c*d^2*i^3*n - a*d^3*i^3*n)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d)))*B/(b^4*g^3)

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ci + dix)^3 \left(A + B \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ag + bgx)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x)^3, x)

[Out] int(((c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x)^3, x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*((b*x+a)/(d*x+c)**n)))/(b*g*x+a*g)**3, x)

[Out] Timed out

$$3.134 \quad \int \frac{(ci+dx)^3 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ag+bgx)^4} dx$$

Optimal. Leaf size=326

$$\frac{d^3 i^3 \log \left(1 - \frac{b(c+dx)}{d(a+bx)} \right) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{b^4 g^4} - \frac{d^2 i^3 (c+dx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{b^3 g^4 (a+bx)} - \frac{d i^3 (c+dx)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{2b^2 g^4 (a+bx)^2}$$

[Out] $-B*d^2*i^3*n*(d*x+c)/b^3/g^4/(b*x+a)-1/4*B*d*i^3*n*(d*x+c)^2/b^2/g^4/(b*x+a)^2-1/9*B*i^3*n*(d*x+c)^3/b/g^4/(b*x+a)^3-d^2*i^3*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^3/g^4/(b*x+a)-1/2*d*i^3*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^2/g^4/(b*x+a)^2-1/3*i^3*(d*x+c)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b/g^4/(b*x+a)^3-d^3*i^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))*\ln(1-b*(d*x+c)/d/(b*x+a))/b^4/g^4+B*d^3*i^3*n*polylog(2,b*(d*x+c)/d/(b*x+a))/b^4/g^4$

Rubi [A] time = 0.79, antiderivative size = 444, normalized size of antiderivative = 1.36, number of steps used = 22, number of rules used = 11, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.256$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{Bd^3 i^3 n \text{PolyLog} \left(2, -\frac{d(a+bx)}{bc-ad} \right)}{b^4 g^4} + \frac{d^3 i^3 \log(a+bx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{b^4 g^4} - \frac{3d^2 i^3 (bc-ad) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{b^4 g^4 (a+bx)}$$

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b*g*x)^4,x]

[Out] $-(B*(b*c - a*d)^3*i^3*n)/(9*b^4*g^4*(a + b*x)^3) - (7*B*d*(b*c - a*d)^2*i^3*n)/(12*b^4*g^4*(a + b*x)^2) - (11*B*d^2*(b*c - a*d)*i^3*n)/(6*b^4*g^4*(a + b*x)) - (11*B*d^3*i^3*n*Log[a + b*x])/(6*b^4*g^4) - (B*d^3*i^3*n*Log[a + b*x]^2)/(2*b^4*g^4) - ((b*c - a*d)^3*i^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(3*b^4*g^4*(a + b*x)^3) - (3*d*(b*c - a*d)^2*i^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(2*b^4*g^4*(a + b*x)^2) - (3*d^2*(b*c - a*d)*i^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(b^4*g^4*(a + b*x)) + (d^3*i^3*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(b^4*g^4) + (11*B*d^3*i^3*n*Log[c + d*x])/(6*b^4*g^4) + (B*d^3*i^3*n*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(b^4*g^4) + (B*d^3*i^3*n*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(b^4*g^4)$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_) /; FreeQ[b, x]]

Rule 44

Int[((a_) + (b_)*(x_))^(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])

Rule 2301

Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2390

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)])*(b_)^(p_)*((f_) + (g_)*(x_))^(q_), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_)*((d_) + (e_)*(x_))^(n_)]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))])*(b_)/((f_) + (g_)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)])*(b_)/((f_) + (g_)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e^n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2418

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)])*(b_)^(p_)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},

```
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFX, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFX^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFX^p])^(n - 1)*D[RFX, x])/RFX, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFX, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFX^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFX^p])^(n - 1)*D[RFX, x])/RFX, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFX, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFX^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFX, x] && RationalFunci
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(134c + 134dx)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ag + bgx)^4} dx &= \int \left(\frac{2406104(bc - ad)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^3 g^4 (a + bx)^4} + \frac{7218312d(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^3 g^4 (a + bx)^4} \right) dx \\
&= \frac{(2406104d^3) \int \frac{A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{a+bx} dx}{b^3 g^4} + \frac{(7218312d^2(bc - ad)) \int \frac{A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{a+bx} dx}{b^3 g^4} \\
&= -\frac{2406104(bc - ad)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{3b^4 g^4 (a + bx)^3} - \frac{3609156d(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{3b^4 g^4 (a + bx)^3} \\
&= -\frac{2406104(bc - ad)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{3b^4 g^4 (a + bx)^3} - \frac{3609156d(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{3b^4 g^4 (a + bx)^3} \\
&= -\frac{2406104(bc - ad)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{3b^4 g^4 (a + bx)^3} - \frac{3609156d(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{3b^4 g^4 (a + bx)^3} \\
&= -\frac{2406104B(bc - ad)^3 n}{9b^4 g^4 (a + bx)^3} - \frac{4210682Bd(bc - ad)^2 n}{3b^4 g^4 (a + bx)^2} - \frac{13233572B}{3b^4 g^4} \\
&= -\frac{2406104B(bc - ad)^3 n}{9b^4 g^4 (a + bx)^3} - \frac{4210682Bd(bc - ad)^2 n}{3b^4 g^4 (a + bx)^2} - \frac{13233572B}{3b^4 g^4} \\
&= -\frac{2406104B(bc - ad)^3 n}{9b^4 g^4 (a + bx)^3} - \frac{4210682Bd(bc - ad)^2 n}{3b^4 g^4 (a + bx)^2} - \frac{13233572B}{3b^4 g^4}
\end{aligned}$$

Mathematica [A] time = 0.46, size = 326, normalized size = 1.00

$$i^3 \left(36d^3 \log(a + bx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right) + \frac{108d^2(ad-bc) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{a+bx} - \frac{54d(bc-ad)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{(a+bx)^2} - \frac{12(bc-ad)^2 B}{3b^4 g^4} \right)$$

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b*g*x)^4, x]

[Out] $(i^3 * ((-4 * B * (b * c - a * d)^3 * n) / (a + b * x)^3 - (21 * B * d * (b * c - a * d)^2 * n) / (a + b * x)^2 + (66 * B * d^2 * (-b * c) + a * d) * n) / (a + b * x) - 66 * B * d^3 * n * \text{Log}[a + b * x] - (12 * (b * c - a * d)^3 * (A + B * \text{Log}[e * ((a + b * x) / (c + d * x))^n])) / (a + b * x)^3 - (54 * d * (b * c - a * d)^2 * (A + B * \text{Log}[e * ((a + b * x) / (c + d * x))^n])) / (a + b * x)^2 + (108 * d^2 * (-b * c) + a * d) * (A + B * \text{Log}[e * ((a + b * x) / (c + d * x))^n])) / (a + b * x) + 36 * d^3 * \text{Log}[a + b * x] * (A + B * \text{Log}[e * ((a + b * x) / (c + d * x))^n]) + 66 * B * d^3 * n * \text{Log}[c + d * x] - 18 * B * d^3 * n * (\text{Log}[a + b * x] * (\text{Log}[a + b * x] - 2 * \text{Log}[(b * (c + d * x)) / (b * c - a * d)])) - 2 * \text{PolyLog}[2, (d * (a + b * x)) / (-b * c) + a * d])) / (36 * b^4 * g^4)$

fricas [F] time = 0.82, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{Ad^3 i^3 x^3 + 3 Acd^2 i^3 x^2 + 3 Ac^2 di^3 x + Ac^3 i^3 + (Bd^3 i^3 x^3 + 3 Bcd^2 i^3 x^2 + 3 Bc^2 di^3 x + Bc^3 i^3) \log \left(e \left(\frac{bx+a}{dx+c} \right)^n \right)}{b^4 g^4 x^4 + 4 ab^3 g^4 x^3 + 6 a^2 b^2 g^4 x^2 + 4 a^3 b g^4 x + a^4 g^4} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^4,x, algorithm="fricas")`

[Out] `integral((A*d^3*i^3*x^3 + 3*A*c*d^2*i^3*x^2 + 3*A*c^2*d*i^3*x + A*c^3*i^3 + (B*d^3*i^3*x^3 + 3*B*c*d^2*i^3*x^2 + 3*B*c^2*d*i^3*x + B*c^3*i^3)*log(e*((b*x + a)/(d*x + c))^n))/(b^4*g^4*x^4 + 4*a*b^3*g^4*x^3 + 6*a^2*b^2*g^4*x^2 + 4*a^3*b*g^4*x + a^4*g^4), x)`

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^4,x, algorithm="giac")`

[Out] Timed out

maple [F] time = 0.45, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci)^3 \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)}{(bgx + ag)^4} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^4,x)`

[Out] $\int ((d*i*x+c*i)^3*(B*\ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^4, x)$

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{integrate}((d*i*x+c*i)^3*(A+B*\log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^4, x, \text{algorithm}="maxima")$

[Out]
$$\begin{aligned} & -1/6*B*c*d^2*i^3*n*((11*a^2*b^2*c^2 - 7*a^3*b*c*d + 2*a^4*d^2 + 6*(3*b^4*c^2 - 3*a*b^3*c*d + a^2*b^2*d^2)*x^2 + 3*(9*a*b^3*c^2 - 7*a^2*b^2*c*d + 2*a^3*b*d^2)*x)/((b^8*c^2 - 2*a*b^7*c*d + a^2*b^6*d^2)*g^4*x^3 + 3*(a*b^7*c^2 - 2*a^2*b^6*c*d + a^3*b^5*d^2)*g^4*x^2 + 3*(a^2*b^6*c^2 - 2*a^3*b^5*c*d + a^4*b^4*d^2)*g^4*x + (a^3*b^5*c^2 - 2*a^4*b^4*c*d + a^5*b^3*d^2)*g^4) + 6*(3*b^2*c^2*d - 3*a*b*c*d^2 + a^2*d^3)*\log(b*x + a)/((b^6*c^3 - 3*a*b^5*c^2*d + 3*a^2*b^4*c*d^2 - a^3*b^3*d^3)*g^4) - 6*(3*b^2*c^2*d - 3*a*b*c*d^2 + a^2*d^3)*\log(d*x + c)/((b^6*c^3 - 3*a*b^5*c^2*d + 3*a^2*b^4*c*d^2 - a^3*b^3*d^3)*g^4) - 1/18*B*c^3*i^3*n*((6*b^2*d^2*x^2 + 2*b^2*c^2 - 7*a*b*c*d + 11*a^2*d^2 - 3*(b^2*c*d - 5*a*b*d^2)*x)/((b^6*c^2 - 2*a*b^5*c*d + a^2*b^4*d^2)*g^4*x^3 + 3*(a*b^5*c^2 - 2*a^2*b^4*c*d + a^3*b^3*d^2)*g^4*x^2 + 3*(a^2*b^4*c^2 - 2*a^3*b^3*c*d + a^4*b^2*d^2)*g^4*x + (a^3*b^3*c^2 - 2*a^4*b^2*c*d + a^5*b*d^2)*g^4) + 6*d^3*\log(b*x + a)/((b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^3)*g^4) - 6*d^3*\log(d*x + c)/((b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^3)*g^4) - 1/12*B*c^2*d*i^3*n*((5*a*b^2*c^2 - 22*a^2*b*c*d + 5*a^3*d^2 - 6*(3*b^3*c*d - a*b^2*d^2)*x^2 + 3*(3*b^3*c^2 - 16*a*b^2*c*d + 5*a^2*b*d^2)*x)/((b^7*c^2 - 2*a*b^6*c*d + a^2*b^5*d^2)*g^4*x^3 + 3*(a*b^6*c^2 - 2*a^2*b^5*c*d + a^3*b^4*d^2)*g^4*x^2 + 3*(a^2*b^5*c^2 - 2*a^3*b^4*c*d + a^4*b^3*d^2)*g^4*x + (a^3*b^4*c^2 - 2*a^4*b^3*c*d + a^5*b^2*d^2)*g^4) - 6*(3*b*c*d^2 - a*d^3)*\log(b*x + a)/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*g^4) + 6*(3*b*c*d^2 - a*d^3)*\log(d*x + c)/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*g^4) + 1/6*A*d^3*i^3*((18*a*b^2*x^2 + 27*a^2*b*x + 11*a^3)/(b^7*g^4*x^3 + 3*a*b^6*g^4*x^2 + 3*a^2*b^5*g^4*x + a^3*b^4*g^4) + 6*\log(b*x + a)/(b^4*g^4)) + 1/6*B*d^3*i^3*((18*a*b^2*x^2 + 27*a^2*b*x + 11*a^3 + 6*(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3)*\log(b*x + a))*\log((b*x + a)^n) - (18*a*b^2*x^2 + 27*a^2*b*x + 11*a^3 + 6*(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3)*\log(b*x + a))*\log((d*x + c)^n))/(b^7*g^4*x^3 + 3*a*b^6*g^4*x^2 + 3*a^2*b^5*g^4*x + a^3*b^4*g^4) + 6*\integrate(1/6*(6*b^4*d*x^4*\log(e) + 6*b^4*c*x^3*\log(e) - 11*a^3*b*c*n + 11*a^4*d*n - 18*(a*b^3*c*n - a^2*b^2*d*n)*x^2 - 27*(a^2*b^2*c*n - a^3*b*d*n)*x - 6*(a^3*b*c*n - a^4*d*n + (b^4*c*n - a*b^3*d*n)*x^3 + 3*(a*b^3*c*n - a^2*b^2*d*n)*x^2 + 3*(a^2*b^2*c*n - a^3*b*d*n)*x)*\log(b*x + a)/(b^8*d*g^4*x^5 + a^4*b^4*c*g^4 + (b^8*c*g^4 + 4*a*b^7*d*g^4)*x^4 + 2*(2*a*b^7*c*g^4 + 3*a^2*b^6*d*g^4)*x^3 + 2*(3*a^2*b^6*c*g^4 + 2*a^3*b^5*d*g^4)*x^2 + (4*a^3*b^5*c*g^4 + a^4*b^4*d*g^4)*x), x) - 1/2*(3*b*x + a)*B*c^2*d*i^3*\log(e*(b*x/(d*x + c) + a/$$

$$\begin{aligned} & (d*x + c))^n)/(b^5*g^4*x^3 + 3*a*b^4*g^4*x^2 + 3*a^2*b^3*g^4*x + a^3*b^2*g^4 \\ & 4) - (3*b^2*x^2 + 3*a*b*x + a^2)*B*c*d^2*i^3*\log(e*(b*x/(d*x + c) + a/(d*x \\ & + c))^n)/(b^6*g^4*x^3 + 3*a*b^5*g^4*x^2 + 3*a^2*b^4*g^4*x + a^3*b^3*g^4) - \\ & 1/2*(3*b*x + a)*A*c^2*d*i^3/(b^5*g^4*x^3 + 3*a*b^4*g^4*x^2 + 3*a^2*b^3*g^4*x \\ & + a^3*b^2*g^4) - (3*b^2*x^2 + 3*a*b*x + a^2)*A*c*d^2*i^3/(b^6*g^4*x^3 + 3 \\ & *a*b^5*g^4*x^2 + 3*a^2*b^4*g^4*x + a^3*b^3*g^4) - 1/3*B*c^3*i^3*\log(e*(b*x/ \\ & (d*x + c) + a/(d*x + c))^n)/(b^4*g^4*x^3 + 3*a*b^3*g^4*x^2 + 3*a^2*b^2*g^4* \\ & x + a^3*b*g^4) - 1/3*A*c^3*i^3/(b^4*g^4*x^3 + 3*a*b^3*g^4*x^2 + 3*a^2*b^2*g^4 \\ & ^4*x + a^3*b*g^4) \end{aligned}$$

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ci + dix)^3 \left(A + B \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ag + bgx)^4} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x)^4, x)

[Out] int(((c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x)^4, x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*((b*x+a)/(d*x+c))**n)))/(b*g*x+a*g)**4, x)

[Out] Timed out

$$3.135 \quad \int \frac{(ag+bgx)^3 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{ci+dix} dx$$

Optimal. Leaf size=269

$$\frac{g^3(bc-ad)^3 \log\left(\frac{bc-ad}{b(c+dx)}\right) \left(6B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + 6A + 11Bn\right)}{6d^4i} + \frac{g^3(a+bx)(bc-ad)^2 \left(6B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + 6A + 11Bn\right)}{6d^3i}$$

[Out] $1/3*g^3*(b*x+a)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/d/i-1/6*(-a*d+b*c)*g^3*(b*x+a)^2*(3*A+B*n+3*B*\ln(e*((b*x+a)/(d*x+c))^n))/d^2/i+1/6*(-a*d+b*c)^2*g^3*(b*x+a)*(6*A+5*B*n+6*B*\ln(e*((b*x+a)/(d*x+c))^n))/d^3/i+1/6*(-a*d+b*c)^3*g^3*(6*A+11*B*n+6*B*\ln(e*((b*x+a)/(d*x+c))^n))*\ln((-a*d+b*c)/b/(d*x+c))/d^4/i+B*(-a*d+b*c)^3*g^3*n*\text{polylog}(2,d*(b*x+a)/b/(d*x+c))/d^4/i$

Rubi [A] time = 0.65, antiderivative size = 426, normalized size of antiderivative = 1.58, number of steps used = 22, number of rules used = 13, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.302$, Rules used = {2528, 2486, 31, 2525, 12, 43, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$\frac{Bg^3n(bc-ad)^3 \text{PolyLog}\left(2, \frac{b(c+dx)}{bc-ad}\right)}{d^4i} - \frac{g^3(a+bx)^2(bc-ad) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A\right)}{2d^2i} - \frac{g^3(bc-ad)^3 \log(ci+dix)}{d^4i}$$

Antiderivative was successfully verified.

[In] $\text{Int}[(a*g + b*g*x)^3*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])]/(c*i + d*i*x), x]$

[Out] $(A*b*(b*c - a*d)^2*g^3*x)/(d^3*i) + (5*b*B*(b*c - a*d)^2*g^3*n*x)/(6*d^3*i) - (B*(b*c - a*d)*g^3*n*(a + b*x)^2)/(6*d^2*i) + (B*(b*c - a*d)^2*g^3*(a + b*x)*\text{Log}[e*((a + b*x)/(c + d*x))^n])/d^3*i - ((b*c - a*d)*g^3*(a + b*x)^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(2*d^2*i) + (g^3*(a + b*x)^3*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(3*d*i) - (11*B*(b*c - a*d)^3*g^3*n*\text{Log}[c + d*x])/d^4*i - (B*(b*c - a*d)^3*g^3*n*\text{Log}[i*(c + d*x)]^2)/(2*d^4*i) + (B*(b*c - a*d)^3*g^3*n*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c*i + d*i*x])/d^4*i - ((b*c - a*d)^3*g^3*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])*\text{Log}[c*i + d*i*x])/d^4*i + (B*(b*c - a*d)^3*g^3*n*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/d^4*i$

Rule 12

$\text{Int}[(a_*)*(u_), x_Symbol] := \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \ \&\& \ !\text{Match}[Q[u, (b_)*(v_)] /; \text{FreeQ}[b, x]]$

Rule 31

Int[((a_) + (b_)*(x_))⁽⁻¹⁾, x_Symbol] := Simp[Log[RemoveContent[a + b*x, x]]/b, x] /; FreeQ[{a, b}, x]

Rule 43

Int[((a_) + (b_)*(x_))^(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)ⁿ, x], x] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && (!IntegerQ[n] || (EqQ[c, 0] && LeQ[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])

Rule 2301

Int[((a_) + Log[(c_)*(x_)^(n_)]*(b_))/(x_), x_Symbol] := Simp[(a + b*Log[c*xⁿ])²/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2390

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)]*(b_))^(p_)*((f_) + (g_)*(x_))^(q_), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*xⁿ])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_)*((d_) + (e_)*(x_))^(n_)]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*xⁿ)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))]*(b_))/((f_) + (g_)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)]*(b_))/((f_) + (g_)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)ⁿ])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol]
:> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n]^p, RFx, x]},
Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol]
:> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b,
Int[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s},
x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol]
:> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e,
Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.),
x_Symbol]
:> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)),
Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /;
FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol]
:> With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /;
FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(ag + bgx)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{135c + 135dx} dx &= \int \left(\frac{b(bc - ad)^2 g^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{135d^3} + \frac{(-bc + ad)^3 g^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{d^3(135c + 135dx)} \right) dx \\
&= \frac{(bg) \int (ag + bgx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) dx}{135d} - \frac{(b(bc - ad)g^2) \int (ag + bgx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) dx}{135d} \\
&= \frac{Ab(bc - ad)^2 g^3 x}{135d^3} - \frac{(bc - ad)g^3 (a + bx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{270d^2} + \frac{B(bc - ad)^2 g^3 (a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{135d^3} - \frac{(bc - ad)^3 g^3 \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{135d^3} \\
&= \frac{Ab(bc - ad)^2 g^3 x}{135d^3} + \frac{B(bc - ad)^2 g^3 (a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{135d^3} - \frac{(bc - ad)^3 g^3 \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{135d^3} \\
&= \frac{Ab(bc - ad)^2 g^3 x}{135d^3} + \frac{bB(bc - ad)^2 g^3 nx}{162d^3} - \frac{B(bc - ad)g^3 n(a + bx)^2}{810d^2} + \frac{B(bc - ad)^3 g^3 \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{135d^3} \\
&= \frac{Ab(bc - ad)^2 g^3 x}{135d^3} + \frac{bB(bc - ad)^2 g^3 nx}{162d^3} - \frac{B(bc - ad)g^3 n(a + bx)^2}{810d^2} + \frac{B(bc - ad)^3 g^3 \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{135d^3} \\
&= \frac{Ab(bc - ad)^2 g^3 x}{135d^3} + \frac{bB(bc - ad)^2 g^3 nx}{162d^3} - \frac{B(bc - ad)g^3 n(a + bx)^2}{810d^2} + \frac{B(bc - ad)^3 g^3 \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{135d^3}
\end{aligned}$$

Mathematica [A] time = 0.30, size = 370, normalized size = 1.38

$$g^3 \left(2d^3 (a + bx)^3 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right) + 3d^2 (a + bx)^2 (ad - bc) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right) - 6(bc - ad)^3 \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)$$

Antiderivative was successfully verified.

[In] Integrate[((a*g + b*g*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c*i + d*i*x),x]

[Out] (g^3*(6*A*b*d*(b*c - a*d)^2*x + 6*B*d*(b*c - a*d)^2*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n] + 3*d^2*(-(b*c) + a*d)*(a + b*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 6*(b*c - a*d)^3*Log[e*((a + b*x)/(c + d*x))^n])/d^3

$$\begin{aligned} &)/(c + d*x))^n]) + 2*d^3*(a + b*x)^3*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]) \\ & - 6*B*(b*c - a*d)^3*n*\text{Log}[c + d*x] + B*(b*c - a*d)*n*(2*b*d*(b*c - a*d)*x \\ & - d^2*(a + b*x)^2 - 2*(b*c - a*d)^2*\text{Log}[c + d*x]) + 3*B*(b*c - a*d)^2*n*(b* \\ & d*x + (-(b*c) + a*d)*\text{Log}[c + d*x]) - 6*(b*c - a*d)^3*(A + B*\text{Log}[e*((a + b*x) \\ &)/(c + d*x))^n])*\text{Log}[i*(c + d*x)] + 3*B*(b*c - a*d)^3*n*((2*\text{Log}[(d*(a + b*x) \\ &))/(-(b*c) + a*d)] - \text{Log}[i*(c + d*x)])*\text{Log}[i*(c + d*x)] + 2*\text{PolyLog}[2, (b*(\\ & c + d*x))/(b*c - a*d)])/(6*d^4*i) \end{aligned}$$

fricas [F] time = 0.86, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{Ab^3g^3x^3 + 3Aab^2g^3x^2 + 3Aa^2bg^3x + Aa^3g^3 + (Bb^3g^3x^3 + 3Bab^2g^3x^2 + 3Ba^2bg^3x + Ba^3g^3) \log \left(e \left(\frac{bx+a}{dx+c} \right)^n \right)}{dix + ci} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i), x, algorithm="fricas")

[Out] integral((A*b^3*g^3*x^3 + 3*A*a*b^2*g^3*x^2 + 3*A*a^2*b*g^3*x + A*a^3*g^3 + (B*b^3*g^3*x^3 + 3*B*a*b^2*g^3*x^2 + 3*B*a^2*b*g^3*x + B*a^3*g^3)*log(e((b*x + a)/(d*x + c))^n))/(d*i*x + c*i), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i), x, algorithm="giac")

[Out] Timed out

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{(bgx + ag)^3 \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)}{dix + ci} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(d*i*x+c*i), x)

[Out] int((b*g*x+a*g)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(d*i*x+c*i), x)

maxima [B] time = 4.29, size = 1003, normalized size = 3.73

$$3 A a^2 b g^3 \left(\frac{x}{d i} - \frac{c \log(dx + c)}{d^2 i} \right) - \frac{1}{6} A b^3 g^3 \left(\frac{6 c^3 \log(dx + c)}{d^4 i} - \frac{2 d^2 x^3 - 3 c d x^2 + 6 c^2 x}{d^3 i} \right) + \frac{3}{2} A a b^2 g^3 \left(\frac{2 c^2 \log(dx + c)}{d^3 i} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i),x, alg orithm="maxima")

[Out] 3*A*a^2*b*g^3*(x/(d*i) - c*log(d*x + c)/(d^2*i)) - 1/6*A*b^3*g^3*(6*c^3*log(d*x + c)/(d^4*i) - (2*d^2*x^3 - 3*c*d*x^2 + 6*c^2*x)/(d^3*i)) + 3/2*A*a*b^2*g^3*(2*c^2*log(d*x + c)/(d^3*i) + (d*x^2 - 2*c*x)/(d^2*i)) + A*a^3*g^3*log(d*i*x + c*i)/(d*i) - (b^3*c^3*g^3*n - 3*a*b^2*c^2*d*g^3*n + 3*a^2*b*c*d^2*g^3*n - a^3*d^3*g^3*n)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d)))*B/(d^4*i) + 1/6*(6*a^3*d^3*g^3*log(e) - (11*g^3*n + 6*g^3*log(e))*b^3*c^3 + 9*(3*g^3*n + 2*g^3*log(e))*a*b^2*c^2*d - 18*(g^3*n + g^3*log(e))*a^2*b*c*d^2)*B*log(d*x + c)/(d^4*i) + 1/6*(2*B*b^3*d^3*g^3*x^3*log(e) - ((g^3*n + 3*g^3*log(e))*b^3*c*d^2 - (g^3*n + 9*g^3*log(e))*a*b^2*d^3)*B*x^2 + 6*(b^3*c^3*g^3*n - 3*a*b^2*c^2*d*g^3*n + 3*a^2*b*c*d^2*g^3*n - a^3*d^3*g^3*n)*B*log(b*x + a)*log(d*x + c) - 3*(b^3*c^3*g^3*n - 3*a*b^2*c^2*d*g^3*n + 3*a^2*b*c*d^2*g^3*n - a^3*d^3*g^3*n)*B*log(d*x + c)^2 + ((5*g^3*n + 6*g^3*log(e))*b^3*c^2*d - 6*(2*g^3*n + 3*g^3*log(e))*a*b^2*c*d^2 + (7*g^3*n + 18*g^3*log(e))*a^2*b*d^3)*B*x + (6*a*b^2*c^2*d*g^3*n - 15*a^2*b*c*d^2*g^3*n + 11*a^3*d^3*g^3*n)*B*log(b*x + a) + (2*B*b^3*d^3*g^3*x^3 - 3*(b^3*c*d^2*g^3 - 3*a*b^2*d^3*g^3)*B*x^2 + 6*(b^3*c^2*d*g^3 - 3*a*b^2*c*d^2*g^3 + 3*a^2*b*d^3*g^3)*B*x - 6*(b^3*c^3*g^3 - 3*a*b^2*c^2*d*g^3 + 3*a^2*b*c*d^2*g^3 - a^3*d^3*g^3)*B*log(d*x + c))*log((b*x + a)^n) - (2*B*b^3*d^3*g^3*x^3 - 3*(b^3*c*d^2*g^3 - 3*a*b^2*d^3*g^3)*B*x^2 + 6*(b^3*c^2*d*g^3 - 3*a*b^2*c*d^2*g^3 + 3*a^2*b*d^3*g^3)*B*x - 6*(b^3*c^3*g^3 - 3*a*b^2*c^2*d*g^3 + 3*a^2*b*c*d^2*g^3 - a^3*d^3*g^3)*B*log(d*x + c))*log((d*x + c)^n))/(d^4*i)

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a g + b g x)^3 \left(A + B \ln \left(e \left(\frac{a + b x}{c + d x} \right)^n \right) \right)}{c i + d i x} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((a*g + b*g*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(c*i + d*i*x), x)

[Out] int(((a*g + b*g*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(c*i + d*i*x), x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)**3*(A+B*ln(e*((b*x+a)/(d*x+c)**n)))/(d*i*x+c*i),x)

[Out] Timed out

$$3.136 \quad \int \frac{(ag+bgx)^2 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{ci+dix} dx$$

Optimal. Leaf size=211

$$\frac{g^2(bc-ad)^2 \log \left(\frac{bc-ad}{b(c+dx)} \right) \left(2B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + 2A + 3Bn \right)}{2d^3i} - \frac{g^2(a+bx)(bc-ad) \left(2B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + 2A + Bn \right)}{2d^2i}$$

[Out] $1/2*g^2*(b*x+a)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/d/i-1/2*(-a*d+b*c)*g^2*(b*x+a)*(2*A+B*n+2*B*\ln(e*((b*x+a)/(d*x+c))^n))/d^2/i-1/2*(-a*d+b*c)^2*g^2*(2*A+3*B*n+2*B*\ln(e*((b*x+a)/(d*x+c))^n))*\ln((-a*d+b*c)/b/(d*x+c))/d^3/i-B*(-a*d+b*c)^2*g^2*n*\text{polylog}(2,d*(b*x+a)/b/(d*x+c))/d^3/i$

Rubi [A] time = 0.49, antiderivative size = 343, normalized size of antiderivative = 1.63, number of steps used = 18, number of rules used = 13, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.302$, Rules used = {2528, 2486, 31, 2525, 12, 43, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$-\frac{Bg^2n(bc-ad)^2 \text{PolyLog} \left(2, \frac{b(c+dx)}{bc-ad} \right)}{d^3i} + \frac{g^2(bc-ad)^2 \log(ci+dix) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{d^3i} + \frac{g^2(a+bx)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{2di}$$

Antiderivative was successfully verified.

[In] Int[((a*g + b*g*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c*i + d*i*x), x]

[Out] $-((A*b*(b*c - a*d)*g^2*x)/(d^2*i)) - (b*B*(b*c - a*d)*g^2*n*x)/(2*d^2*i) - (B*(b*c - a*d)*g^2*(a + b*x)*\text{Log}[e*((a + b*x)/(c + d*x))^n])/d^2*i + (g^2*(a + b*x)^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(2*d*i) + (3*B*(b*c - a*d)^2*g^2*n*\text{Log}[c + d*x])/(2*d^3*i) + (B*(b*c - a*d)^2*g^2*n*\text{Log}[i*(c + d*x)]^2)/(2*d^3*i) - (B*(b*c - a*d)^2*g^2*n*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c*i + d*i*x])/d^3*i + ((b*c - a*d)^2*g^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])*\text{Log}[c*i + d*i*x])/d^3*i - (B*(b*c - a*d)^2*g^2*n*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/d^3*i$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 31

$\text{Int}[\frac{(a + b x)^{-1}}{b}, x] \text{ ; FreeQ}\{a, b\}, x] \text{ :> Simp}[\text{Log}[\text{RemoveContent}[a + b x, x]]/b, x] \text{ ; FreeQ}\{a, b\}, x]$

Rule 43

$\text{Int}[\frac{(a + b x)^m (c + d x)^n}{x}, x] \text{ ; FreeQ}\{a, b, c, d, n\}, x] \text{ \&\& NeQ}[b c - a d, 0] \text{ \&\& IGtQ}[m, 0] \text{ \&\& (!IntegerQ}[n] \text{ || (EqQ}[c, 0] \text{ \&\& LeQ}[7 m + 4 n + 4, 0]) \text{ || LtQ}[9 m + 5(n + 1), 0] \text{ || GtQ}[m + n + 2, 0])]$

Rule 2301

$\text{Int}[\frac{(a + b \text{Log}[c x^n])^2}{2 b n}, x] \text{ ; FreeQ}\{a, b, c, n\}, x]$

Rule 2390

$\text{Int}[\frac{(a + b \text{Log}[c x^n])^p}{d + e x}, x] \text{ ; FreeQ}\{a, b, c, d, e, f, g, n, p, q\}, x] \text{ \&\& EqQ}[e f - d g, 0]$

Rule 2391

$\text{Int}[\frac{\text{Log}[c(d + e x)^n]}{x}, x] \text{ ; FreeQ}\{c, d, e, n\}, x] \text{ \&\& EqQ}[c d, 1]$

Rule 2393

$\text{Int}[\frac{(a + b \text{Log}[c(d + e x)])}{f + g x}, x] \text{ ; FreeQ}\{a, b, c, d, e, f, g\}, x] \text{ \&\& NeQ}[e f - d g, 0] \text{ \&\& EqQ}[g + c(e f - d g), 0]$

Rule 2394

$\text{Int}[\frac{(a + b \text{Log}[c(d + e x)])}{g}, x] - \text{Dist}[\frac{b e^n}{g}, \text{Int}[\frac{\text{Log}[e(f + g x)]}{e f - d g}, x], x] \text{ ; FreeQ}\{a, b, c, d, e, f, g, n\}, x] \text{ \&\& NeQ}[e f - d g, 0]$

Rule 2418

$\text{Int}[\frac{(a + b \text{Log}[c(d + e x)^n])^p}{x}, x] \text{ ; FreeQ}\{a, b, c, d, e, n\}, x] \text{ \&\& EqQ}[c d, 1]$

```
Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFX, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] := Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q]^r]^s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFX^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFX^p])^(n - 1)*D[RFX, x])/RFX, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFX, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFX^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFX^p])^(n - 1)*D[RFX, x])/RFX, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFX, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*RFX^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFX, x] && RationalFunci
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(ag + bgx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{136c + 136dx} dx &= \int \left(-\frac{b(bc - ad)g^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{136d^2} + \frac{(bc - ad)^2 g^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{d^2(136c + 136dx)} \right) dx \\
&= \frac{(bg) \int (ag + bgx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) dx}{136d} - \frac{(b(bc - ad)g^2) \int \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) dx}{136d} \\
&= -\frac{Ab(bc - ad)g^2 x}{136d^2} + \frac{g^2(a + bx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{272d} + \frac{(bc - ad)^2 g^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{136d} \\
&= -\frac{Ab(bc - ad)g^2 x}{136d^2} - \frac{B(bc - ad)g^2(a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{136d^2} + \frac{g^2(a + bx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{136d} \\
&= -\frac{Ab(bc - ad)g^2 x}{136d^2} - \frac{B(bc - ad)g^2(a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{136d^2} + \frac{g^2(a + bx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{136d} \\
&= -\frac{Ab(bc - ad)g^2 x}{136d^2} - \frac{bB(bc - ad)g^2 nx}{272d^2} - \frac{B(bc - ad)g^2(a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{136d^2} + \frac{g^2(a + bx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{136d} \\
&= -\frac{Ab(bc - ad)g^2 x}{136d^2} - \frac{bB(bc - ad)g^2 nx}{272d^2} - \frac{B(bc - ad)g^2(a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{136d^2} + \frac{g^2(a + bx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{136d} \\
&= -\frac{Ab(bc - ad)g^2 x}{136d^2} - \frac{bB(bc - ad)g^2 nx}{272d^2} - \frac{B(bc - ad)g^2(a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{136d^2} + \frac{g^2(a + bx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{136d}
\end{aligned}$$

Mathematica [A] time = 0.19, size = 266, normalized size = 1.26

$$\frac{g^2 \left(d^2(a + bx)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right) + 2(bc - ad)^2 \log(i(c + dx)) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right) - 2Abdx(bc - ad) \right)}{136d^2}$$

Antiderivative was successfully verified.

[In] Integrate[((a*g + b*g*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c*i + d*i*x), x]

[Out] (g^2*(-2*A*b*d*(b*c - a*d)*x + 2*B*d*(-(b*c) + a*d)*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n] + d^2*(a + b*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/136d^2

+ 2*B*(b*c - a*d)^2*n*Log[c + d*x] - B*(b*c - a*d)*n*(b*d*x + (-(b*c) + a*d)*Log[c + d*x]) + 2*(b*c - a*d)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[i*(c + d*x)] - B*(b*c - a*d)^2*n*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[i*(c + d*x)])*Log[i*(c + d*x)] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(2*d^3*i)

fricas [F] time = 1.03, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{Ab^2g^2x^2 + 2Aabg^2x + Aa^2g^2 + (Bb^2g^2x^2 + 2Babg^2x + Ba^2g^2) \log \left(e \left(\frac{bx+a}{dx+c} \right)^n \right)}{dix + ci}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i), x, algorithm="fricas")

[Out] integral((A*b^2*g^2*x^2 + 2*A*a*b*g^2*x + A*a^2*g^2 + (B*b^2*g^2*x^2 + 2*B*a*b*g^2*x + B*a^2*g^2)*log(e*((b*x + a)/(d*x + c))^n))/(d*i*x + c*i), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i), x, algorithm="giac")

[Out] Timed out

maple [F] time = 0.46, size = 0, normalized size = 0.00

$$\int \frac{(bgx + ag)^2 \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)}{dix + ci} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(d*i*x+c*i), x)

[Out] int((b*g*x+a*g)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(d*i*x+c*i), x)

maxima [B] time = 4.69, size = 627, normalized size = 2.97

$$2Aabg^2 \left(\frac{x}{di} - \frac{c \log(dx+c)}{d^2i} \right) + \frac{1}{2} Ab^2g^2 \left(\frac{2c^2 \log(dx+c)}{d^3i} + \frac{dx^2 - 2cx}{d^2i} \right) + \frac{Aa^2g^2 \log(dix+ci)}{di} + \frac{(b^2c^2g^2n - 2abcd)}{d^3i}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i),x, algorithm="maxima")
```

```
[Out] 2*A*a*b*g^2*(x/(d*i) - c*log(d*x + c)/(d^2*i)) + 1/2*A*b^2*g^2*(2*c^2*log(d*x + c)/(d^3*i) + (d*x^2 - 2*c*x)/(d^2*i)) + A*a^2*g^2*log(d*i*x + c*i)/(d*i) + (b^2*c^2*g^2*n - 2*a*b*c*d*g^2*n + a^2*d^2*g^2*n)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d)))*B/(d^3*i) + 1/2*(2*a^2*d^2*g^2*log(e) + (3*g^2*n + 2*g^2*log(e))*b^2*c^2 - 4*(g^2*n + g^2*log(e))*a*b*c*d)*B*log(d*x + c)/(d^3*i) + 1/2*(B*b^2*d^2*g^2*x^2*log(e) - 2*(b^2*c^2*g^2*n - 2*a*b*c*d*g^2*n + a^2*d^2*g^2*n)*B*log(b*x + a)*log(d*x + c) + (b^2*c^2*g^2*n - 2*a*b*c*d*g^2*n + a^2*d^2*g^2*n)*B*log(d*x + c)^2 - ((g^2*n + 2*g^2*log(e))*b^2*c*d - (g^2*n + 4*g^2*log(e))*a*b*d^2)*B*x - (2*a*b*c*d*g^2*n - 3*a^2*d^2*g^2*n)*B*log(b*x + a) + (B*b^2*d^2*g^2*x^2 - 2*(b^2*c*d*g^2 - 2*a*b*d^2*g^2)*B*x + 2*(b^2*c^2*g^2 - 2*a*b*c*d*g^2 + a^2*d^2*g^2)*B*log(d*x + c))*log((b*x + a)^n) - (B*b^2*d^2*g^2*x^2 - 2*(b^2*c*d*g^2 - 2*a*b*d^2*g^2)*B*x + 2*(b^2*c^2*g^2 - 2*a*b*c*d*g^2 + a^2*d^2*g^2)*B*log(d*x + c))*log((d*x + c)^n))/(d^3*i)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ag + bgx)^2 \left(A + B \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{ci + dix} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(c*i + d*i*x), x)
```

```
[Out] int(((a*g + b*g*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(c*i + d*i*x), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**2*(A+B*ln(e*((b*x+a)/(d*x+c)**n)))/(d*i*x+c*i),x)
```

```
[Out] Timed out
```

$$3.137 \quad \int \frac{(ag+bgx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{ci+dix} dx$$

Optimal. Leaf size=134

$$\frac{g(bc-ad)\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A+Bn\right)}{d^2i} + \frac{g(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{di} + \frac{Bgn(bc-ad)\text{Li}_2\left(\frac{d(a+bx)}{b(c+dx)}\right)}{d^2i}$$

[Out] g*(b*x+a)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/d/i+(-a*d+b*c)*g*(A+B*n+B*ln(e*((b*x+a)/(d*x+c))^n))*ln((-a*d+b*c)/b/(d*x+c))/d^2/i+B*(-a*d+b*c)*g*n*polylog(2,d*(b*x+a)/b/(d*x+c))/d^2/i

Rubi [A] time = 0.39, antiderivative size = 223, normalized size of antiderivative = 1.66, number of steps used = 13, number of rules used = 10, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}} = 0.244$, Rules used = {2528, 2486, 31, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$\frac{Bgn(bc-ad)\text{PolyLog}\left(2, \frac{b(c+dx)}{bc-ad}\right)}{d^2i} + \frac{g(bc-ad)\log(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{d^2i} + \frac{Bgn(bc-ad)\log^2(c+dx)}{2d^2i}$$

Antiderivative was successfully verified.

[In] Int[((a*g + b*g*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c*i + d*i*x),x]

[Out] (A*b*g*x)/(d*i) + (B*g*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n])/d*i - (B*(b*c - a*d)*g*n*Log[c + d*x])/d^2*i + (B*(b*c - a*d)*g*n*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/d^2*i - ((b*c - a*d)*g*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x])/d^2*i - (B*(b*c - a*d)*g*n*Log[c + d*x]^2)/(2*d^2*i) + (B*(b*c - a*d)*g*n*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/d^2*i

Rule 31

Int[((a_) + (b_.)*(x_))^(n_), x_Symbol] := Simp[Log[RemoveContent[a + b*x, x]]/b, x] /; FreeQ[{a, b}, x]

Rule 2301

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))])*(b_.)/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2418

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]

Rule 2486

Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]^(s_.), x_Symbol] := Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]

Rule 2524

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;

FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]

Rule 2528

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
 [{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunc
 tionQ[RGx, x] && IGtQ[n, 0]

Rubi steps

$$\begin{aligned}
 \int \frac{(ag + bgx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{137c + 137dx} dx &= \int \left(\frac{bg \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{137d} + \frac{(-bc + ad)g \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{137d(c + dx)} \right) dx \\
 &= \frac{(bg) \int \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) dx}{137d} - \frac{((bc - ad)g) \int \frac{A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) dx}{c+dx}}{137d} \\
 &= \frac{Abgx}{137d} - \frac{(bc - ad)g \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) \log(c + dx)}{137d^2} + \frac{(bBg) \int \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) dx}{137d^2} \\
 &= \frac{Abgx}{137d} + \frac{Bg(a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{137d} - \frac{(bc - ad)g \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{137d^2} \\
 &= \frac{Abgx}{137d} + \frac{Bg(a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{137d} - \frac{B(bc - ad)gn \log(c + dx)}{137d^2} - \frac{(bBg) \int \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) dx}{137d^2} \\
 &= \frac{Abgx}{137d} + \frac{Bg(a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{137d} - \frac{B(bc - ad)gn \log(c + dx)}{137d^2} + \frac{B(bBg) \int \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) dx}{137d^2} \\
 &= \frac{Abgx}{137d} + \frac{Bg(a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{137d} - \frac{B(bc - ad)gn \log(c + dx)}{137d^2} + \frac{B(bBg) \int \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) dx}{137d^2}
 \end{aligned}$$

Mathematica [A] time = 0.12, size = 170, normalized size = 1.27

$$\frac{g \left(-2(bc - ad) \log(c + dx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right) + 2Bd(a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + Bn(bc - ad) \left(2\text{Li}_2 \left(\frac{b(c+dx)}{bc-ad} \right) \right) \right)}{2d^2i}$$

Antiderivative was successfully verified.

[In] Integrate[((a*g + b*g*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c*i + d*i*x), x]

[Out] (g*(2*A*b*d*x + 2*B*d*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n] - 2*B*(b*c - a*d)*n*Log[c + d*x] - 2*(b*c - a*d)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) *Log[c + d*x] + B*(b*c - a*d)*n*((2*Log[(d*(a + b*x))/(-b*c) + a*d]) - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(2*d^2*i)

fricas [F] time = 0.59, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{Abgx + Aag + (Bbgx + Bag) \log \left(e \left(\frac{bx+a}{dx+c} \right)^n \right)}{dix + ci}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i), x, algorithm="fricas")

[Out] integral((A*b*g*x + A*a*g + (B*b*g*x + B*a*g)*log(e*((b*x + a)/(d*x + c))^n))/(d*i*x + c*i), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i), x, algorithm="giac")

[Out] Timed out

maple [F] time = 0.39, size = 0, normalized size = 0.00

$$\int \frac{(bgx + ag) \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)}{dix + ci} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((b*g*x+a*g)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(d*i*x+c*i),x)`

[Out] `int((b*g*x+a*g)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(d*i*x+c*i),x)`

maxima [B] time = 4.05, size = 306, normalized size = 2.28

$$A b g \left(\frac{x}{d i} - \frac{c \log(dx + c)}{d^2 i} \right) + \frac{A a g \log(dx + c i)}{d i} - \frac{(b c g n - a d g n) \left(\log(bx + a) \log\left(\frac{bdx + ad}{bc - ad} + 1\right) + \text{Li}_2\left(-\frac{bdx + ad}{bc - ad}\right) \right) B}{d^2 i} + \dots$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((b*g*x+a*g)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i),x, algorithm="maxima")`

[Out] `A*b*g*(x/(d*i) - c*log(d*x + c)/(d^2*i)) + A*a*g*log(d*i*x + c*i)/(d*i) - (b*c*g*n - a*d*g*n)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d)))*B/(d^2*i) + (a*d*g*log(e) - (g*n + g*log(e))*b*c)*B*log(d*x + c)/(d^2*i) + 1/2*(2*B*a*d*g*n*log(b*x + a) + 2*B*b*d*g*x*log(e) + 2*(b*c*g*n - a*d*g*n)*B*log(b*x + a)*log(d*x + c) - (b*c*g*n - a*d*g*n)*B*log(d*x + c)^2 + 2*(B*b*d*g*x - (b*c*g - a*d*g)*B*log(d*x + c))*log((b*x + a)^n) - 2*(B*b*d*g*x - (b*c*g - a*d*g)*B*log(d*x + c))*log((d*x + c)^n))/(d^2*i)`

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(a g + b g x) \left(A + B \ln \left(e \left(\frac{a + b x}{c + d x} \right)^n \right) \right)}{c i + d i x} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int(((a*g + b*g*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(c*i + d*i*x),x)`

[Out] `int(((a*g + b*g*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(c*i + d*i*x),x)`

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{g \left(\int \frac{A a}{c + d x} dx + \int \frac{A b x}{c + d x} dx + \int \frac{B a \log \left(e \left(\frac{a}{c + d x} + \frac{b x}{c + d x} \right)^n \right)}{c + d x} dx + \int \frac{B b x \log \left(e \left(\frac{a}{c + d x} + \frac{b x}{c + d x} \right)^n \right)}{c + d x} dx \right)}{i}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*ln(e*((b*x+a)/(d*x+c)**n)))/(d*i*x+c*i),x)
```

```
[Out] g*(Integral(A*a/(c + d*x), x) + Integral(A*b*x/(c + d*x), x) + Integral(B*a  
*log(e*(a/(c + d*x) + b*x/(c + d*x))**n)/(c + d*x), x) + Integral(B*b*x*log  
(e*(a/(c + d*x) + b*x/(c + d*x))**n)/(c + d*x), x))/i
```

$$3.138 \quad \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{ci+dix} dx$$

Optimal. Leaf size=80

$$\frac{\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A\right)}{di} - \frac{Bn \operatorname{Li}_2\left(\frac{d(a+bx)}{b(c+dx)}\right)}{di}$$

[Out] $-(A+B*\ln(e*((b*x+a)/(d*x+c))^n))*\ln((-a*d+b*c)/b/(d*x+c))/d/i-B*n*\operatorname{polylog}(2, d*(b*x+a)/b/(d*x+c))/d/i$

Rubi [A] time = 0.20, antiderivative size = 128, normalized size of antiderivative = 1.60, number of steps used = 9, number of rules used = 8, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.242$, Rules used = {2524, 2418, 2394, 2393, 2391, 2390, 12, 2301}

$$\frac{Bn \operatorname{PolyLog}\left(2, \frac{b(c+dx)}{bc-ad}\right)}{di} + \frac{\log(ci + dix)\left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A\right)}{di} - \frac{Bn \log(ci + dix) \log\left(-\frac{d(a+bx)}{bc-ad}\right)}{di} + \frac{Bn \log^2(i(c + dx))}{2di}$$

Antiderivative was successfully verified.

[In] $\operatorname{Int}[(A + B*\operatorname{Log}[e*((a + b*x)/(c + d*x))^n])/(c*i + d*i*x), x]$

[Out] $(B*n*\operatorname{Log}[i*(c + d*x)]^2)/(2*d*i) - (B*n*\operatorname{Log}[-((d*(a + b*x))/(b*c - a*d))]*\operatorname{Log}[c*i + d*i*x])/(d*i) + ((A + B*\operatorname{Log}[e*((a + b*x)/(c + d*x))^n])* \operatorname{Log}[c*i + d*i*x])/(d*i) - (B*n*\operatorname{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/(d*i)$

Rule 12

$\operatorname{Int}[(a_*)(u_), x_Symbol] \rightarrow \operatorname{Dist}[a, \operatorname{Int}[u, x], x] /;$ FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 2301

$\operatorname{Int}[(a_*) + \operatorname{Log}[(c_*)(x_)^(n_)]*(b_)]/(x_), x_Symbol] \rightarrow \operatorname{Simp}[(a + b*\operatorname{Log}[c*x^n])^2/(2*b*n), x] /;$ FreeQ[{a, b, c, n}, x]

Rule 2390

$\operatorname{Int}[(a_*) + \operatorname{Log}[(c_*)((d_*) + (e_*)(x_)^(n_))*(b_)]^(p_)]*((f_*) + (g_*)(x_)^(q_)), x_Symbol] \rightarrow \operatorname{Dist}[1/e, \operatorname{Subst}[\operatorname{Int}[(f*x)/d]^q*(a + b*\operatorname{Log}[c*x^n])^p, x], x, d + e*x], x] /;$ FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))])*(b_.)/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))])*(b_.)/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))])*(b_.)^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)])*(b_.)^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{138c + 138dx} dx &= \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right) \log(138c + 138dx)}{138d} - \frac{(Bn) \int \frac{(c+dx)\left(-\frac{d(a+bx)}{(c+dx)^2} + \frac{b}{c+dx}\right) \log(138c+138dx)}{a+bx}}{138d} \\
&= \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right) \log(138c + 138dx)}{138d} - \frac{(Bn) \int \left(\frac{b \log(138c+138dx)}{a+bx} - \frac{d \log(138c+138dx)}{c+dx}\right)}{138d} \\
&= \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right) \log(138c + 138dx)}{138d} + \frac{1}{138} (Bn) \int \frac{\log(138c + 138dx)}{c + dx} dx - \\
&= -\frac{Bn \log\left(-\frac{d(a+bx)}{bc-ad}\right) \log(138c + 138dx)}{138d} + \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right) \log(138c + 138dx)}{138d} \\
&= -\frac{Bn \log\left(-\frac{d(a+bx)}{bc-ad}\right) \log(138c + 138dx)}{138d} + \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right) \log(138c + 138dx)}{138d} \\
&= \frac{Bn \log^2(138(c + dx))}{276d} - \frac{Bn \log\left(-\frac{d(a+bx)}{bc-ad}\right) \log(138c + 138dx)}{138d} + \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right) \log(138c + 138dx)}{138d}
\end{aligned}$$

Mathematica [A] time = 0.03, size = 101, normalized size = 1.26

$$\frac{\log(i(c + dx)) \left(2B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) - 2Bn \log\left(\frac{d(a+bx)}{ad-bc}\right) + 2A + Bn \log(i(c + dx)) \right) - 2Bn \operatorname{Li}_2\left(\frac{b(c+dx)}{bc-ad}\right)}{2di}$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/(c*i + d*i*x),x]

[Out] (Log[i*(c + d*x)]*(2*A - 2*B*n*Log[(d*(a + b*x))/(-b*c) + a*d]) + 2*B*Log[e*((a + b*x)/(c + d*x))^n] + B*n*Log[i*(c + d*x)]) - 2*B*n*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]/(2*d*i)

fricas [F] time = 0.73, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{B \log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right) + A}{dix + ci}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i),x, algorithm="fricas")

[Out] integral((B*log(e*((b*x + a)/(d*x + c))^n) + A)/(d*i*x + c*i), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i),x, algorithm="giac")

[Out] Timed out

maple [F] time = 0.37, size = 0, normalized size = 0.00

$$\int \frac{B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A}{dix + ci} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(d*i*x+c*i),x)

[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(d*i*x+c*i),x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2} B \left(\frac{2n \log(bx + a) \log(dx + c) - n \log(dx + c)^2 - 2 \log(dx + c) \log((bx + a)^n) + 2 \log(dx + c) \log((dx + c)^n)}{di} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i),x, algorithm="maxima")

[Out] -1/2*B*((2*n*log(b*x + a)*log(d*x + c) - n*log(d*x + c)^2 - 2*log(d*x + c)*log((b*x + a)^n) + 2*log(d*x + c)*log((d*x + c)^n))/(d*i) - 2*integrate((n*log(b*x + a) + log(e))/(d*i*x + c*i), x) + A*log(d*i*x + c*i)/(d*i)

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A + B \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{ci + dix} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((A + B*log(e*((a + b*x)/(c + d*x))^n))/(c*i + d*i*x), x)`

[Out] `int((A + B*log(e*((a + b*x)/(c + d*x))^n))/(c*i + d*i*x), x)`

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{A}{c+dx} dx + \int \frac{B \log\left(e\left(\frac{a}{c+dx} + \frac{bx}{c+dx}\right)^n\right)}{c+dx} dx}{i}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((A+B*ln(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i), x)`

[Out] `(Integral(A/(c + d*x), x) + Integral(B*log(e*(a/(c + d*x) + b*x/(c + d*x))^n)/(c + d*x), x))/i`

$$3.139 \quad \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(ag+bgx)(ci+dix)} dx$$

Optimal. Leaf size=50

$$\frac{\left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A\right)^2}{2Bgin(bc - ad)}$$

[Out] $1/2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/B/(-a*d+b*c)/g/i/n$

Rubi [C] time = 0.56, antiderivative size = 316, normalized size of antiderivative = 6.32, number of steps used = 18, number of rules used = 8, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.186$, Rules used = {2528, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{BnPolyLog\left(2, -\frac{d(a+bx)}{bc-ad}\right)}{gi(bc - ad)} + \frac{BnPolyLog\left(2, \frac{b(c+dx)}{bc-ad}\right)}{gi(bc - ad)} + \frac{\log(a + bx) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A\right)}{gi(bc - ad)} - \frac{\log(c + dx) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A\right)}{gi(bc - ad)}$$

Antiderivative was successfully verified.

[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)*(c*i + d*i*x)), x]

[Out] $-(B*n*Log[a + b*x]^2)/(2*(b*c - a*d)*g*i) + (Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)*g*i) + (B*n*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/((b*c - a*d)*g*i) - ((A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x])/((b*c - a*d)*g*i) - (B*n*Log[c + d*x]^2)/(2*(b*c - a*d)*g*i) + (B*n*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)*g*i) + (B*n*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)*g*i) + (B*n*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)*g*i)$

Rule 2301

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_.) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_.)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(139c + 139dx)(ag + bgx)} dx &= \int \left(\frac{b\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{139(bc - ad)g(a + bx)} - \frac{d\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{139(bc - ad)g(c + dx)} \right) dx \\
&= \frac{b \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{a+bx} dx}{139(bc - ad)g} - \frac{d \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{c+dx} dx}{139(bc - ad)g} \\
&= \frac{\log(a + bx)\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{139(bc - ad)g} - \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)\log(c + dx)}{139(bc - ad)g} \\
&= \frac{\log(a + bx)\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{139(bc - ad)g} - \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)\log(c + dx)}{139(bc - ad)g} \\
&= \frac{\log(a + bx)\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{139(bc - ad)g} - \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)\log(c + dx)}{139(bc - ad)g} \\
&= \frac{\log(a + bx)\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{139(bc - ad)g} - \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)\log(c + dx)}{139(bc - ad)g} \\
&= \frac{\log(a + bx)\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{139(bc - ad)g} + \frac{Bn \log\left(-\frac{d(a+bx)}{bc-ad}\right)\log(c + dx)}{139(bc - ad)g} - \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)\log(c + dx)}{139(bc - ad)g} \\
&= -\frac{Bn \log^2(a + bx)}{278(bc - ad)g} + \frac{\log(a + bx)\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{139(bc - ad)g} + \frac{Bn \log\left(-\frac{d(a+bx)}{bc-ad}\right)\log(c + dx)}{139(bc - ad)g} \\
&= -\frac{Bn \log^2(a + bx)}{278(bc - ad)g} + \frac{\log(a + bx)\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{139(bc - ad)g} + \frac{Bn \log\left(-\frac{d(a+bx)}{bc-ad}\right)\log(c + dx)}{139(bc - ad)g}
\end{aligned}$$

Mathematica [C] time = 0.11, size = 219, normalized size = 4.38

$$2A \log(a + bx) + 2B \log(a + bx) \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) - 2B \log(c + dx) \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + 2Bn \operatorname{Li}_2\left(\frac{d(a+bx)}{ad-bc}\right) + 2Bn \operatorname{Li}_2\left(\frac{d(a+bx)}{bc-ad}\right)$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)*(c*i + d*i*x)), x]

[Out] $(2A \operatorname{Log}[a + b*x] - B*n \operatorname{Log}[a + b*x]^2 + 2B \operatorname{Log}[a + b*x] \operatorname{Log}[e*((a + b*x)/(c + d*x))^n] - 2A \operatorname{Log}[c + d*x] + 2B*n \operatorname{Log}[(d*(a + b*x))/(-(b*c) + a*d)] * \operatorname{Log}[c + d*x] - 2B \operatorname{Log}[e*((a + b*x)/(c + d*x))^n] \operatorname{Log}[c + d*x] - B*n \operatorname{Log}[c + d*x]^2 + 2B*n \operatorname{Log}[a + b*x] \operatorname{Log}[(b*(c + d*x))/(b*c - a*d)] + 2B*n \operatorname{PolyLog}[2, (d*(a + b*x))/(-(b*c) + a*d)] + 2B*n \operatorname{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]) / (2*(b*c - a*d)*g*i)$

fricas [A] time = 0.93, size = 74, normalized size = 1.48

$$\frac{Bn \log\left(\frac{bx+a}{dx+c}\right)^2 + 2B \log(e) \log\left(\frac{bx+a}{dx+c}\right) + 2A \log\left(\frac{bx+a}{dx+c}\right)}{2(bc-ad)gi}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)/(d*i*x+c*i),x, algorithm="fricas")`

[Out] $1/2*(B*n \log((b*x + a)/(d*x + c))^2 + 2B \log(e) \log((b*x + a)/(d*x + c)) + 2A \log((b*x + a)/(d*x + c))) / ((b*c - a*d)*g*i)$

giac [A] time = 1.22, size = 90, normalized size = 1.80

$$\frac{\left(Bin \log\left(\frac{bx+a}{dx+c}\right)^2 + 2Ai \log\left(\frac{bx+a}{dx+c}\right) + 2Bi \log\left(\frac{bx+a}{dx+c}\right) \right) \left(\frac{bc}{(bc-ad)^2} - \frac{ad}{(bc-ad)^2} \right)}{2g}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)/(d*i*x+c*i),x, algorithm="giac")`

[Out] $-1/2*(B*i*n \log((b*x + a)/(d*x + c))^2 + 2A*i \log((b*x + a)/(d*x + c)) + 2*B*i \log((b*x + a)/(d*x + c)) * (b*c/(b*c - a*d)^2 - a*d/(b*c - a*d)^2) / g$

maple [F] time = 0.48, size = 0, normalized size = 0.00

$$\int \frac{B \ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right) + A}{(bgx + ag)(dix + ci)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)/(d*i*x+c*i),x)`

[Out] `int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)/(d*i*x+c*i),x)`

maxima [B] time = 1.22, size = 175, normalized size = 3.50

$$B \left(\frac{\log(bx+a)}{(bc-ad)gi} - \frac{\log(dx+c)}{(bc-ad)gi} \right) \log \left(e \left(\frac{bx}{dx+c} + \frac{a}{dx+c} \right)^n \right) - \frac{(\log(bx+a))^2 - 2 \log(bx+a) \log(dx+c) + \log(dx+c)^2}{2(bcgi - adgi)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)/(d*i*x+c*i),x, algorithm="maxima")

[Out] B*(log(b*x + a)/((b*c - a*d)*g*i) - log(d*x + c)/((b*c - a*d)*g*i))*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) - 1/2*(log(b*x + a)^2 - 2*log(b*x + a)*log(d*x + c) + log(d*x + c)^2)*B*n/(b*c*g*i - a*d*g*i) + A*(log(b*x + a)/((b*c - a*d)*g*i) - log(d*x + c)/((b*c - a*d)*g*i))

mupad [B] time = 5.72, size = 76, normalized size = 1.52

$$\frac{B \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)^2 - A n \operatorname{atan} \left(\frac{bc^2i+bdx^2i}{ad-bc} + 1i \right) 4i}{2gin(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))/((a*g + b*g*x)*(c*i + d*i*x)),x)

[Out] -(B*log(e*((a + b*x)/(c + d*x))^n)^2 - A*n*atan((b*c*2i + b*d*x*2i)/(a*d - b*c) + 1i)*4i)/(2*g*i*n*(a*d - b*c))

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{A}{ac+adx+bcx+bdx^2} dx + \int \frac{B \log \left(e \left(\frac{a}{c+dx} + \frac{bx}{c+dx} \right)^n \right)}{ac+adx+bcx+bdx^2} dx}{gi}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)/(d*i*x+c*i),x)

[Out] (Integral(A/(a*c + a*d*x + b*c*x + b*d*x**2), x) + Integral(B*log(e*(a/(c + d*x) + b*x/(c + d*x))^n)/(a*c + a*d*x + b*c*x + b*d*x**2), x))/(g*i)

$$3.140 \quad \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(ag+bgx)^2(ci+dx)} dx$$

Optimal. Leaf size=181

$$\frac{d \log\left(\frac{a+bx}{c+dx}\right) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A\right)}{g^2 i(bc-ad)^2} - \frac{b(c+dx) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A\right)}{g^2 i(a+bx)(bc-ad)^2} - \frac{bBn(c+dx)}{g^2 i(a+bx)(bc-ad)^2} + \frac{Bdn \log^2\left(\frac{a+bx}{c+dx}\right)}{2g^2 i(bc-ad)^2}$$

[Out] $-b*B*n*(d*x+c)/(-a*d+b*c)^2/g^2/i/(b*x+a)-b*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^2/g^2/i/(b*x+a)-d*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))*\ln((b*x+a)/(d*x+c))/(-a*d+b*c)^2/g^2/i+1/2*B*d*n*\ln((b*x+a)/(d*x+c))^2/(-a*d+b*c)^2/g^2/i$

Rubi [C] time = 0.69, antiderivative size = 455, normalized size of antiderivative = 2.51, number of steps used = 22, number of rules used = 11, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.256$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{Bdn \text{PolyLog}\left(2, -\frac{d(a+bx)}{bc-ad}\right)}{g^2 i(bc-ad)^2} - \frac{Bdn \text{PolyLog}\left(2, \frac{b(c+dx)}{bc-ad}\right)}{g^2 i(bc-ad)^2} - \frac{d \log(a+bx) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A\right)}{g^2 i(bc-ad)^2} - \frac{B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{g^2 i(a+bx)(bc-ad)^2}$$

Antiderivative was successfully verified.

[In] $\text{Int}[(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)^2*(c*i + d*i*x)), x]$

[Out] $-((B*n)/((b*c - a*d)*g^2*i*(a + b*x))) - (B*d*n*\text{Log}[a + b*x])/((b*c - a*d)^2*g^2*i) + (B*d*n*\text{Log}[a + b*x]^2)/(2*(b*c - a*d)^2*g^2*i) - (A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])/((b*c - a*d)*g^2*i*(a + b*x)) - (d*\text{Log}[a + b*x]*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)^2*g^2*i) + (B*d*n*\text{Log}[c + d*x])/((b*c - a*d)^2*g^2*i) - (B*d*n*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c + d*x])/((b*c - a*d)^2*g^2*i) + (d*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])*\text{Log}[c + d*x])/((b*c - a*d)^2*g^2*i) + (B*d*n*\text{Log}[c + d*x]^2)/(2*(b*c - a*d)^2*g^2*i) - (B*d*n*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d])]/((b*c - a*d)^2*g^2*i) - (B*d*n*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^2*g^2*i) - (B*d*n*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^2*g^2*i)$

Rule 12

$\text{Int}[(a_*)(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \ \&\amp; \ !\text{MatchQ}[u, (b_*)(v_)] /; \text{FreeQ}[b, x]$

Rule 44

```
Int[((a_) + (b_)*(x_)^(m_))*((c_) + (d_)*(x_)^(n_)), x_Symbol] := Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)/(x_), x_Symbol] := Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_)^(n_))])*(b_)^(p_)*((f_) + (g_
)*(x_)^(q_)), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_)*((d_) + (e_)*(x_)^(n_))]/(x_), x_Symbol] := -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))])*(b_)/((f_) + (g_)*(x_)), x_
Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_)^(n_))])*(b_)/((f_) + (g_)*(x_
)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_)^(n_))])*(b_)^(p_)*(RFx_), x_Sy
mbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol]
:> Simp[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol]
:> With[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(140c + 140dx)(ag + bgx)^2} dx &= \int \left(\frac{b\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{140(bc - ad)g^2(a + bx)^2} - \frac{bd\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{140(bc - ad)^2g^2(a + bx)} + \frac{d^2\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{140(bc - ad)^2g^2} \right) dx \\
&= -\frac{(bd) \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{a+bx} dx}{140(bc - ad)^2g^2} + \frac{d^2 \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{c+dx} dx}{140(bc - ad)^2g^2} + \frac{b \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(a+bx)^2} dx}{140(bc - ad)^2g^2} \\
&= -\frac{A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{140(bc - ad)g^2(a + bx)} - \frac{d \log(a + bx) \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{140(bc - ad)^2g^2} + \frac{d \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{140(bc - ad)^2g^2} \\
&= -\frac{A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{140(bc - ad)g^2(a + bx)} - \frac{d \log(a + bx) \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{140(bc - ad)^2g^2} + \frac{d \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{140(bc - ad)^2g^2} \\
&= -\frac{A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{140(bc - ad)g^2(a + bx)} - \frac{d \log(a + bx) \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{140(bc - ad)^2g^2} + \frac{d \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{140(bc - ad)^2g^2} \\
&= -\frac{Bn}{140(bc - ad)g^2(a + bx)} - \frac{Bdn \log(a + bx)}{140(bc - ad)^2g^2} - \frac{A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{140(bc - ad)g^2(a + bx)} - \frac{d \log(a + bx) \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{140(bc - ad)^2g^2} \\
&= -\frac{Bn}{140(bc - ad)g^2(a + bx)} - \frac{Bdn \log(a + bx)}{140(bc - ad)^2g^2} + \frac{Bdn \log^2(a + bx)}{280(bc - ad)^2g^2} - \frac{A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{140(bc - ad)g^2(a + bx)} \\
&= -\frac{Bn}{140(bc - ad)g^2(a + bx)} - \frac{Bdn \log(a + bx)}{140(bc - ad)^2g^2} + \frac{Bdn \log^2(a + bx)}{280(bc - ad)^2g^2} - \frac{A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{140(bc - ad)g^2(a + bx)}
\end{aligned}$$

Mathematica [C] time = 0.29, size = 304, normalized size = 1.68

$$\frac{2(bc - ad) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right) + 2d(a + bx) \log(a + bx) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right) - 2d(a + bx) \log(c + dx)}{140(bc - ad)^2g^2(a + bx)}$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)^2*(c*i + d*i*x)), x]

[Out] $-1/2*(2*(b*c - a*d)*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]) + 2*d*(a + b*x)*\text{Log}[a + b*x]*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]) - 2*d*(a + b*x)*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])* \text{Log}[c + d*x] + 2*B*n*(b*c - a*d + d*(a + b*x))*\text{Log}[a + b*x] - d*(a + b*x)*\text{Log}[c + d*x]) - B*d*n*(a + b*x)*(\text{Log}[a + b*x] * (\text{Log}[a + b*x] - 2*\text{Log}[(b*(c + d*x))/(b*c - a*d)]) - 2*\text{PolyLog}[2, (d*(a + b*x))/(- (b*c) + a*d)]) + B*d*n*(a + b*x)*((2*\text{Log}[(d*(a + b*x))/(- (b*c) + a*d)]) - \text{Log}[c + d*x])* \text{Log}[c + d*x] + 2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]) / ((b*c - a*d)^2*g^{2*i*(a + b*x)})$

fricas [A] time = 0.77, size = 194, normalized size = 1.07

$$\frac{2\,A\,b\,c - 2\,A\,a\,d + (B\,b\,d\,n\,x + B\,a\,d\,n)\log\left(\frac{b\,x+a}{d\,x+c}\right)^2 + 2\,(B\,b\,c - B\,a\,d)n + 2\,(B\,b\,c - B\,a\,d + (B\,b\,d\,x + B\,a\,d)\log\left(\frac{b\,x+a}{d\,x+c}\right))\log\left(\frac{b\,x+a}{d\,x+c}\right)}{2\left((b^3c^2 - 2ab^2cd + a^2bd^2)g^{2ix} + (ab^2c^2 - 2a^2bcd + a^3d^2)g^{2i}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^2/(d*i*x+c*i),x, algorithm="fricas")`

[Out] $-1/2*(2*A*b*c - 2*A*a*d + (B*b*d*n*x + B*a*d*n)*\log((b*x + a)/(d*x + c))^2 + 2*(B*b*c - B*a*d)*n + 2*(B*b*c - B*a*d + (B*b*d*x + B*a*d)*\log((b*x + a)/(d*x + c)))*\log(e) + 2*(B*b*c*n + A*a*d + (B*b*d*n + A*b*d)*x)*\log((b*x + a)/(d*x + c)))/((b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*g^{2*i*x} + (a*b^2*c^2 - 2*a^2*b*c*d + a^3*d^2)*g^{2*i})$

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^2/(d*i*x+c*i),x, algorithm="giac")`

[Out] Timed out

maple [F] time = 0.48, size = 0, normalized size = 0.00

$$\int \frac{B \ln\left(e\left(\frac{b\,x+a}{d\,x+c}\right)^n\right) + A}{(b\,g\,x + a\,g)^2 (d\,i\,x + c\,i)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^2/(d*i*x+c*i),x)`

[Out] $\int ((B \ln(e((b*x+a)/(d*x+c)))^n) + A) / (b*g*x+a*g)^2 / (d*i*x+c*i), x$

maxima [B] time = 1.29, size = 427, normalized size = 2.36

$$-B \left(\frac{1}{(b^2c - abd)g^2ix + (abc - a^2d)g^2i} + \frac{d \log(bx + a)}{(b^2c^2 - 2abcd + a^2d^2)g^2i} - \frac{d \log(dx + c)}{(b^2c^2 - 2abcd + a^2d^2)g^2i} \right) \log \left(e \left(\frac{bx}{dx + c} + \dots \right) \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((A+B*log(e((b*x+a)/(d*x+c)))^n))/(b*g*x+a*g)^2/(d*i*x+c*i),x, alg orithm="maxima")`

[Out] $-B \left(\frac{1}{(b^2c - a*b*d)*g^{2*i}*x + (a*b*c - a^2*d)*g^{2*i}} + \frac{d*\log(b*x + a)}{((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*g^{2*i})} - \frac{d*\log(d*x + c)}{((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*g^{2*i})} \right) * \log \left(e \left(\frac{b*x}{d*x + c} + \frac{a}{d*x + c} \right)^n + \frac{1}{2} * ((b*d*x + a*d)*\log(b*x + a)^2 + (b*d*x + a*d)*\log(d*x + c)^2 - 2*b*c + 2*a*d - 2*(b*d*x + a*d)*\log(b*x + a) + 2*(b*d*x + a*d - (b*d*x + a*d)*\log(b*x + a))*\log(d*x + c)) * B^n / (a*b^2*c^2*g^{2*i} - 2*a^2*b*c*d*g^{2*i} + a^3*d^2*g^{2*i} + (b^3*c^2*g^{2*i} - 2*a*b^2*c*d*g^{2*i} + a^2*b*d^2*g^{2*i})*x) - A * \left(\frac{1}{(b^2*c - a*b*d)*g^{2*i}*x + (a*b*c - a^2*d)*g^{2*i}} + \frac{d*\log(b*x + a)}{((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*g^{2*i})} - \frac{d*\log(d*x + c)}{((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*g^{2*i})} \right) \right)$

mupad [B] time = 6.08, size = 239, normalized size = 1.32

$$\frac{A}{g^2i(ad-bc)(a+bx)} + \frac{B \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{g^2i(ad-bc)(a+bx)} + \frac{Bn}{g^2i(ad-bc)(a+bx)} - \frac{Bd \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)^2}{2g^2in(ad-bc)^2} + \frac{Ad \operatorname{atan} \left(\frac{ad+bx}{c+dx} \right)}{g^2i(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((A + B*log(e((a + b*x)/(c + d*x)))^n))/((a*g + b*g*x)^2*(c*i + d*i*x)), x)`

[Out] $A / (g^{2*i}*(a*d - b*c)*(a + b*x)) + (B*\log(e((a + b*x)/(c + d*x)))^n) / (g^{2*i}*(a*d - b*c)*(a + b*x)) + (A*d*\operatorname{atan}((a*d*1i + b*c*1i + b*d*x*2i)/(a*d - b*c))*2i) / (g^{2*i}*(a*d - b*c)^2) + (B*n) / (g^{2*i}*(a*d - b*c)*(a + b*x)) + (B*d*n*\operatorname{atan}((a*d*1i + b*c*1i + b*d*x*2i)/(a*d - b*c))*2i) / (g^{2*i}*(a*d - b*c)^2) - (B*d*\log(e((a + b*x)/(c + d*x)))^n)^2 / (2*g^{2*i}*n*(a*d - b*c)^2)$

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((A+B*ln(e((b*x+a)/(d*x+c)))**n))/(b*g*x+a*g)**2/(d*i*x+c*i),x)`

[Out] Timed out

$$3.141 \quad \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(ag+bgx)^3(ci+dix)} dx$$

Optimal. Leaf size=266

$$\frac{b^2(c+dx)^2 \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right)}{2g^3i(a+bx)^2(bc-ad)^3} + \frac{d^2 \log\left(\frac{a+bx}{c+dx}\right) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right)}{g^3i(bc-ad)^3} + \frac{2bd(c+dx) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right)}{g^3i(a+bx)(bc-ad)^3}$$

[Out] $-1/4*B*n*(d*x+c)^2*(b-4*d*(b*x+a)/(d*x+c))^{-2}/(-a*d+b*c)^3/g^3/i/(b*x+a)^{2+2}$
 $*b*d*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^3/g^3/i/(b*x+a)^{-1/2}$
 $*b^2*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^3/g^3/i/(b*x+a)^2$
 $+d^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))*\ln((b*x+a)/(d*x+c))/(-a*d+b*c)^3/g^3/i$
 $-1/2*B*d^2*n*\ln((b*x+a)/(d*x+c))^{-2}/(-a*d+b*c)^3/g^3/i$

Rubi [C] time = 0.83, antiderivative size = 557, normalized size of antiderivative = 2.09, number of steps used = 26, number of rules used = 11, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.256$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{Bd^2n \text{PolyLog}\left(2, -\frac{d(a+bx)}{bc-ad}\right)}{g^3i(bc-ad)^3} + \frac{Bd^2n \text{PolyLog}\left(2, \frac{b(c+dx)}{bc-ad}\right)}{g^3i(bc-ad)^3} + \frac{d^2 \log(a+bx) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right)}{g^3i(bc-ad)^3} - \frac{d^2 \log(c+dx)}{g^3i}$$

Antiderivative was successfully verified.

[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)^3*(c*i + d*i*x)), x]

[Out] $-(B*n)/(4*(b*c - a*d)*g^3*i*(a + b*x)^2) + (3*B*d*n)/(2*(b*c - a*d)^2*g^3*i$
 $*(a + b*x)) + (3*B*d^2*n*Log[a + b*x])/(2*(b*c - a*d)^3*g^3*i) - (B*d^2*n*Log[a + b*x]^2)/(2*(b*c - a*d)^3*g^3*i) - (A + B*Log[e*((a + b*x)/(c + d*x))^n])/(2*(b*c - a*d)*g^3*i*(a + b*x)^2) + (d*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)^2*g^3*i*(a + b*x)) + (d^2*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)^3*g^3*i) - (3*B*d^2*n*Log[c + d*x])/(2*(b*c - a*d)^3*g^3*i) + (B*d^2*n*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/((b*c - a*d)^3*g^3*i) - (d^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x])/((b*c - a*d)^3*g^3*i) - (B*d^2*n*Log[c + d*x]^2)/(2*(b*c - a*d)^3*g^3*i) + (B*d^2*n*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g^3*i) + (B*d^2*n*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^3*g^3*i) + (B*d^2*n*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g^3*i)$

Rule 12

$\text{Int}[(a_*)(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \ \&\& \ !\text{MatchQ}[u, (b_*)(v_)] /; \text{FreeQ}[b, x]$

Rule 44

$\text{Int}[(a_*) + (b_*)(x_)]^{(m_*)} * ((c_*) + (d_*)(x_))^{(n_*)}, x_Symbol] \rightarrow \text{Int}[\text{ExpandIntegrand}[(a + b*x)^m * (c + d*x)^n, x], x] /; \text{FreeQ}[\{a, b, c, d\}, x] \ \&\& \ \text{NeQ}[b*c - a*d, 0] \ \&\& \ \text{ILtQ}[m, 0] \ \&\& \ \text{IntegerQ}[n] \ \&\& \ !(\text{IGtQ}[n, 0] \ \&\& \ \text{LtQ}[m + n + 2, 0])$

Rule 2301

$\text{Int}[(a_*) + \text{Log}[(c_*)(x_)]^{(n_*)} * (b_*)] / (x_), x_Symbol] \rightarrow \text{Simp}[(a + b*\text{Log}[c*x^n])^2 / (2*b*n), x] /; \text{FreeQ}[\{a, b, c, n\}, x]$

Rule 2390

$\text{Int}[(a_*) + \text{Log}[(c_*) * ((d_*) + (e_*)(x_))^{(n_*)}] * (b_*)]^{(p_*)} * ((f_*) + (g_*)(x_))^{(q_*)}, x_Symbol] \rightarrow \text{Dist}[1/e, \text{Subst}[\text{Int}[(f*x)/d]^q * (a + b*\text{Log}[c*x^n])^p, x], x, d + e*x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g, n, p, q\}, x] \ \&\& \ \text{EqQ}[e*f - d*g, 0]$

Rule 2391

$\text{Int}[\text{Log}[(c_*) * ((d_*) + (e_*)(x_))^{(n_*)})] / (x_), x_Symbol] \rightarrow -\text{Simp}[\text{PolyLog}[2, -(c*e*x^n)]/n, x] /; \text{FreeQ}[\{c, d, e, n\}, x] \ \&\& \ \text{EqQ}[c*d, 1]$

Rule 2393

$\text{Int}[(a_*) + \text{Log}[(c_*) * ((d_*) + (e_*)(x_))] * (b_*)] / ((f_*) + (g_*)(x_)), x_Symbol] \rightarrow \text{Dist}[1/g, \text{Subst}[\text{Int}[(a + b*\text{Log}[1 + (c*e*x)/g]]/x, x], x, f + g*x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g\}, x] \ \&\& \ \text{NeQ}[e*f - d*g, 0] \ \&\& \ \text{EqQ}[g + c*(e*f - d*g), 0]$

Rule 2394

$\text{Int}[(a_*) + \text{Log}[(c_*) * ((d_*) + (e_*)(x_))^{(n_*)}] * (b_*)] / ((f_*) + (g_*)(x_)), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[(e*(f + g*x)) / (e*f - d*g)] * (a + b*\text{Log}[c*(d + e*x)^n]) / g, x] - \text{Dist}[(b*e^n)/g, \text{Int}[\text{Log}[(e*(f + g*x)) / (e*f - d*g)] / (d + e*x), x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g, n\}, x] \ \&\& \ \text{NeQ}[e*f - d*g, 0]$

Rule 2418

$\text{Int}[(a_*) + \text{Log}[(c_*) * ((d_*) + (e_*)(x_))^{(n_*)}] * (b_*)]^{(p_*)} * (\text{RFx}_), x_Symbol] \rightarrow \text{With}[\{u = \text{ExpandIntegrand}[(a + b*\text{Log}[c*(d + e*x)^n])^p, \text{RFx}, x]\},$

```
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFX, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFX^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFX^p])^(n - 1)*D[RFX, x])/RFX, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFX, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFX^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFX^p])^(n - 1)*D[RFX, x])/RFX, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFX, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFX^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFX, x] && RationalFunci
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(141c + 141dx)(ag + bgx)^3} dx &= \int \left(\frac{b\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{141(bc - ad)g^3(a + bx)^3} - \frac{bd\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{141(bc - ad)^2g^3(a + bx)^2} + \frac{bd^2\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{141(bc - ad)^3g^3} \right) dx \\
&= \frac{(bd^2) \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{a+bx} dx}{141(bc - ad)^3g^3} - \frac{d^3 \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{c+dx} dx}{141(bc - ad)^3g^3} - \frac{(bd) \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(a+bx)^2} dx}{141(bc - ad)^2g^3} \\
&= -\frac{A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{282(bc - ad)g^3(a + bx)^2} + \frac{d\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{141(bc - ad)^2g^3(a + bx)} + \frac{d^2 \log(a + bx)\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{141(bc - ad)^3g^3} \\
&= -\frac{A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{282(bc - ad)g^3(a + bx)^2} + \frac{d\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{141(bc - ad)^2g^3(a + bx)} + \frac{d^2 \log(a + bx)\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{141(bc - ad)^3g^3} \\
&= -\frac{A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{282(bc - ad)g^3(a + bx)^2} + \frac{d\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{141(bc - ad)^2g^3(a + bx)} + \frac{d^2 \log(a + bx)\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{141(bc - ad)^3g^3} \\
&= -\frac{Bn}{564(bc - ad)g^3(a + bx)^2} + \frac{Bdn}{94(bc - ad)^2g^3(a + bx)} + \frac{Bd^2n \log(a + bx)}{94(bc - ad)^3g^3} - \frac{Bd^2n \log(a + bx)}{94(bc - ad)^3g^3} \\
&= -\frac{Bn}{564(bc - ad)g^3(a + bx)^2} + \frac{Bdn}{94(bc - ad)^2g^3(a + bx)} + \frac{Bd^2n \log(a + bx)}{94(bc - ad)^3g^3} - \frac{Bd^2n \log(a + bx)}{94(bc - ad)^3g^3} \\
&= -\frac{Bn}{564(bc - ad)g^3(a + bx)^2} + \frac{Bdn}{94(bc - ad)^2g^3(a + bx)} + \frac{Bd^2n \log(a + bx)}{94(bc - ad)^3g^3} - \frac{Bd^2n \log(a + bx)}{94(bc - ad)^3g^3}
\end{aligned}$$

Mathematica [C] time = 0.41, size = 434, normalized size = 1.63

$$4d^2(a + bx)^2 \log(a + bx) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right) - 4d^2(a + bx)^2 \log(c + dx) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right) - 2(bc - ad) \log(a + bx) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right)$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)^3*(c*i + d*i*x)), x]

```
[Out] (-2*(b*c - a*d)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 4*d*(b*c - a*d)*
(a + b*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 4*d^2*(a + b*x)^2*Log[a
+ b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 4*d^2*(a + b*x)^2*(A + B*Lo
g[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] + 4*B*d*n*(a + b*x)*(b*c - a*d +
d*(a + b*x)*Log[a + b*x] - d*(a + b*x)*Log[c + d*x]) - B*n*((b*c - a*d)^2
+ 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d^2*(a + b*x)^2*Log[a + b*x] + 2*d^2*(a
+ b*x)^2*Log[c + d*x]) - 2*B*d^2*n*(a + b*x)^2*(Log[a + b*x]*(Log[a + b*x]
- 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) +
a*d)]) + 2*B*d^2*n*(a + b*x)^2*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[
c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(4*(b*c
- a*d)^3*g^3*i*(a + b*x)^2)
```

fricas [A] time = 0.93, size = 483, normalized size = 1.82

$$\frac{2Ab^2c^2 - 8Aabcd + 6Aa^2d^2 - 2(Bb^2d^2nx^2 + 2Babd^2nx + Ba^2d^2n) \log\left(\frac{bx+a}{dx+c}\right)^2 + (Bb^2c^2 - 8Babcd + 7Ba^2d^2)}{4(b^3c^3 - 3a^3b^3c^3 + 3a^2b^3c^3d^2 - a^5d^3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^3/(d*i*x+c*i),x, alg
orithm="fricas")
```

```
[Out] -1/4*(2*A*b^2*c^2 - 8*A*a*b*c*d + 6*A*a^2*d^2 - 2*(B*b^2*d^2*n*x^2 + 2*B*a*
b*d^2*n*x + B*a^2*d^2*n)*log((b*x + a)/(d*x + c))^2 + (B*b^2*c^2 - 8*B*a*b*
c*d + 7*B*a^2*d^2)*n - 2*(2*A*b^2*c*d - 2*A*a*b*d^2 + 3*(B*b^2*c*d - B*a*b*
d^2)*n)*x + 2*(B*b^2*c^2 - 4*B*a*b*c*d + 3*B*a^2*d^2 - 2*(B*b^2*c*d - B*a*b*
d^2)*x - 2*(B*b^2*d^2*x^2 + 2*B*a*b*d^2*x + B*a^2*d^2)*log((b*x + a)/(d*x
+ c)))*log(e) - 2*(2*A*a^2*d^2 + (3*B*b^2*d^2*n + 2*A*b^2*d^2)*x^2 - (B*b^2
*c^2 - 4*B*a*b*c*d)*n + 2*(2*A*a*b*d^2 + (B*b^2*c*d + 2*B*a*b*d^2)*n)*x)*lo
g((b*x + a)/(d*x + c)))/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b
^2*d^3)*g^3*i*x^2 + 2*(a*b^4*c^3 - 3*a^2*b^3*c^2*d + 3*a^3*b^2*c*d^2 - a^4*
b*d^3)*g^3*i*x + (a^2*b^3*c^3 - 3*a^3*b^2*c^2*d + 3*a^4*b*c*d^2 - a^5*d^3)*
g^3*i)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^3/(d*i*x+c*i),x, alg
orithm="giac")
```

```
[Out] Timed out
```


maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A}{(bgx+ag)^3 (dix+ci)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^3/(d*i*x+c*i),x)

[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^3/(d*i*x+c*i),x)

maxima [B] time = 1.73, size = 888, normalized size = 3.34

$$\frac{1}{2} B \left(\frac{2 b d x - b c + 3 a d}{(b^4 c^2 - 2 a b^3 c d + a^2 b^2 d^2) g^3 i x^2 + 2 (a b^3 c^2 - 2 a^2 b^2 c d + a^3 b d^2) g^3 i x + (a^2 b^2 c^2 - 2 a^3 b c d + a^4 d^2) g^3 i} + \frac{1}{b^3 c^3} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^3/(d*i*x+c*i),x, algorithm="maxima")

[Out] 1/2*B*((2*b*d*x - b*c + 3*a*d)/((b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)*g^3*i*x^2 + 2*(a*b^3*c^2 - 2*a^2*b^2*c*d + a^3*b*d^2)*g^3*i*x + (a^2*b^2*c^2 - 2*a^3*b*c*d + a^4*d^2)*g^3*i) + 2*d^2*log(b*x + a)/((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^3*i) - 2*d^2*log(d*x + c)/((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^3*i))*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) - 1/4*(b^2*c^2 - 8*a*b*c*d + 7*a^2*d^2 + 2*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*log(b*x + a)^2 + 2*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*log(d*x + c)^2 - 6*(b^2*c*d - a*b*d^2)*x - 6*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*log(b*x + a) + 2*(3*b^2*d^2*x^2 + 6*a*b*d^2*x + 3*a^2*d^2 - 2*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*log(b*x + a))*log(d*x + c))*B*n/(a^2*b^3*c^3*g^3*i - 3*a^3*b^2*c^2*d*g^3*i + 3*a^4*b*c*d^2*g^3*i - a^5*d^3*g^3*i + (b^5*c^3*g^3*i - 3*a*b^4*c^2*d*g^3*i + 3*a^2*b^3*c*d^2*g^3*i - a^3*b^2*d^3*g^3*i)*x^2 + 2*(a*b^4*c^3*g^3*i - 3*a^2*b^3*c^2*d*g^3*i + 3*a^3*b^2*c*d^2*g^3*i - a^4*b*d^3*g^3*i)*x) + 1/2*A*((2*b*d*x - b*c + 3*a*d)/((b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)*g^3*i*x^2 + 2*(a*b^3*c^2 - 2*a^2*b^2*c*d + a^3*b*d^2)*g^3*i*x + (a^2*b^2*c^2 - 2*a^3*b*c*d + a^4*d^2)*g^3*i) + 2*d^2*log(b*x + a)/((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^3*i) - 2*d^2*log(d*x + c)/((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^3*i))

mupad [B] time = 6.34, size = 573, normalized size = 2.15

$$\frac{B d^2 \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \left(\frac{g^3 \operatorname{in}(ad-bc)(2ad-bc)}{2d^2} + \frac{a g^3 \operatorname{in}(ad-bc)}{2d} + \frac{b g^3 \operatorname{in}x(ad-bc)}{d} \right)}{g^3 \operatorname{in}(ad-bc) (a^2 d^2 - 2 a b c d + b^2 c^2) (i a^2 g^3 + 2 i a b g^3 x + i b^2 g^3 x^2)} - \frac{B d^2 \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)^2}{2 g^3 \operatorname{in}(ad-bc) (a^2 d^2 - 2 a b c d - b^2 c^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))/((a*g + b*g*x)^3*(c*i + d*i*x)),
x)
```

```
[Out] (d^2*atan((d^2*(A + (3*B*n)/2)*(2*a^3*d^3*g^3*i + 2*b^3*c^3*g^3*i - 2*a*b^2
*c^2*d*g^3*i - 2*a^2*b*c*d^2*g^3*i)*1i)/(g^3*i*(2*A*d^2 + 3*B*d^2*n)*(a*d -
b*c)^3) + (b*d^3*x*(A + (3*B*n)/2)*(a^2*d^2*g^3*i + b^2*c^2*g^3*i - 2*a*b*
c*d*g^3*i)*4i)/(g^3*i*(2*A*d^2 + 3*B*d^2*n)*(a*d - b*c)^3))*(A + (3*B*n)/2
*2i)/(g^3*i*(a*d - b*c)^3) - ((6*A*a*d - 2*A*b*c + 7*B*a*d*n - B*b*c*n)/(2*
(a*d - b*c)) + (d*x*(2*A*b + 3*B*b*n))/(a*d - b*c))/(x^2*(2*b^3*c*g^3*i - 2
*a*b^2*d*g^3*i) + x*(4*a*b^2*c*g^3*i - 4*a^2*b*d*g^3*i) - 2*a^3*d*g^3*i + 2
*a^2*b*c*g^3*i) - (B*d^2*log(e*((a + b*x)/(c + d*x))^n)^2)/(2*g^3*i*n*(a*d
- b*c)*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (B*d^2*log(e*((a + b*x)/(c + d*x)
)^n)*((g^3*i*n*(a*d - b*c)*(2*a*d - b*c))/(2*d^2) + (a*g^3*i*n*(a*d - b*c)
)/(2*d) + (b*g^3*i*n*x*(a*d - b*c))/d))/(g^3*i*n*(a*d - b*c)*(a^2*d^2 + b^2*
c^2 - 2*a*b*c*d)*(a^2*g^3*i + b^2*g^3*i*x^2 + 2*a*b*g^3*i*x))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)**3/(d*i*x+c*i),x)
```

```
[Out] Timed out
```

$$3.142 \quad \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(ag+bgx)^4(ci+dix)} dx$$

Optimal. Leaf size=389

$$\frac{b^3(c+dx)^3\left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{3g^4i(a+bx)^3(bc-ad)^4} + \frac{3b^2d(c+dx)^2\left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{2g^4i(a+bx)^2(bc-ad)^4} - \frac{d^3 \log\left(\frac{a+bx}{c+dx}\right)\left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{g^4i(bc-ad)^4}$$

[Out] $-3*b*B*d^2*n*(d*x+c)/(-a*d+b*c)^4/g^4/i/(b*x+a)+3/4*b^2*B*d*n*(d*x+c)^2/(-a*d+b*c)^4/g^4/i/(b*x+a)^2-1/9*b^3*B*n*(d*x+c)^3/(-a*d+b*c)^4/g^4/i/(b*x+a)^3-3*b*d^2*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^4/g^4/i/(b*x+a)+3/2*b^2*d*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^4/g^4/i/(b*x+a)^2-1/3*b^3*(d*x+c)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^4/g^4/i/(b*x+a)^3-d^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))*\ln((b*x+a)/(d*x+c))/(-a*d+b*c)^4/g^4/i+1/2*B*d^3*n*\ln((b*x+a)/(d*x+c))^2/(-a*d+b*c)^4/g^4/i$

Rubi [C] time = 1.08, antiderivative size = 646, normalized size of antiderivative = 1.66, number of steps used = 30, number of rules used = 11, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.256$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{Bd^3n \text{PolyLog}\left(2, -\frac{d(a+bx)}{bc-ad}\right)}{g^4i(bc-ad)^4} - \frac{Bd^3n \text{PolyLog}\left(2, \frac{b(c+dx)}{bc-ad}\right)}{g^4i(bc-ad)^4} - \frac{d^3 \log(a+bx)\left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{g^4i(bc-ad)^4} + \frac{d^3 \log(c+dx)}{g^4i(bc-ad)^4}$$

Antiderivative was successfully verified.

[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)^4*(c*i + d*i*x)), x]

[Out] $-(B*n)/(9*(b*c - a*d)*g^4*i*(a + b*x)^3) + (5*B*d*n)/(12*(b*c - a*d)^2*g^4*i*(a + b*x)^2) - (11*B*d^2*n)/(6*(b*c - a*d)^3*g^4*i*(a + b*x)) - (11*B*d^3*n*\text{Log}[a + b*x])/(6*(b*c - a*d)^4*g^4*i) + (B*d^3*n*\text{Log}[a + b*x]^2)/(2*(b*c - a*d)^4*g^4*i) - (A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])/((3*(b*c - a*d)*g^4*i*(a + b*x)^3) + (d*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(2*(b*c - a*d)^2*g^4*i*(a + b*x)^2) - (d^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)^3*g^4*i*(a + b*x)) - (d^3*\text{Log}[a + b*x]*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)^4*g^4*i) + (11*B*d^3*n*\text{Log}[c + d*x])/(6*(b*c - a*d)^4*g^4*i) - (B*d^3*n*\text{Log}[(-(d*(a + b*x))/(b*c - a*d))]*\text{Log}[c + d*x])/((b*c - a*d)^4*g^4*i) + (d^3*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])* \text{Log}[c + d*x])/((b*c - a*d)^4*g^4*i) + (B*d^3*n*\text{Log}[c + d*x]^2)/(2*(b*c - a*d)^4*g^4*i) - (B*d^3*n*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d])/((b*c - a*d)^4*g^4*i) - (B*d^3*n*\text{PolyLog}[2, -(d*(a + b*x))/(b*c - a*d)])/((b*c - a*d)^4*g^4*i) - (B*d^3*n*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^4*g^4*i)$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 44

Int[((a_) + (b_)*(x_))^(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])

Rule 2301

Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2390

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)])*(b_)^(p_)*((f_) + (g_)*(x_))^(q_), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_)*((d_) + (e_)*(x_))^(n_)]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))])*(b_)/((f_) + (g_)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)]*(b_))/((f_) + (g_)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e^n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n]^p, RFx, x]}, Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(142c + 142dx)(ag + bgx)^4} dx &= \int \left(\frac{b\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{142(bc - ad)g^4(a + bx)^4} - \frac{bd\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{142(bc - ad)^2g^4(a + bx)^3} + \frac{bd^2\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{142(bc - ad)} \right) dx \\
&= -\frac{(bd^3) \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{a+bx} dx}{142(bc - ad)^4g^4} + \frac{d^4 \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{c+dx} dx}{142(bc - ad)^4g^4} + \frac{(bd^2) \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(a+bx)^2} dx}{142(bc - ad)^3} \\
&= -\frac{A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{426(bc - ad)g^4(a + bx)^3} + \frac{d\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{284(bc - ad)^2g^4(a + bx)^2} - \frac{d^2\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{142(bc - ad)^3g^4(a + bx)} \\
&= -\frac{A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{426(bc - ad)g^4(a + bx)^3} + \frac{d\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{284(bc - ad)^2g^4(a + bx)^2} - \frac{d^2\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{142(bc - ad)^3g^4(a + bx)} \\
&= -\frac{A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{426(bc - ad)g^4(a + bx)^3} + \frac{d\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{284(bc - ad)^2g^4(a + bx)^2} - \frac{d^2\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{142(bc - ad)^3g^4(a + bx)} \\
&= -\frac{Bn}{1278(bc - ad)g^4(a + bx)^3} + \frac{5Bdn}{1704(bc - ad)^2g^4(a + bx)^2} - \frac{11Bd^2n}{852(bc - ad)^3g^4(a + bx)} \\
&= -\frac{Bn}{1278(bc - ad)g^4(a + bx)^3} + \frac{5Bdn}{1704(bc - ad)^2g^4(a + bx)^2} - \frac{11Bd^2n}{852(bc - ad)^3g^4(a + bx)} \\
&= -\frac{Bn}{1278(bc - ad)g^4(a + bx)^3} + \frac{5Bdn}{1704(bc - ad)^2g^4(a + bx)^2} - \frac{11Bd^2n}{852(bc - ad)^3g^4(a + bx)}
\end{aligned}$$

Mathematica [C] time = 0.72, size = 518, normalized size = 1.33

$$\frac{36Ad^2(ad-bc)}{a+bx} + \frac{18Ad(bc-ad)^2}{(a+bx)^2} - \frac{12A(bc-ad)^3}{(a+bx)^3} - 36Ad^3 \log(a + bx) - 36Bd^3 \log(a + bx) \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + 36Bd^3 \log(c + dx)$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)^4*(c*i + d*i*x)), x]

```
[Out] ((-12*A*(b*c - a*d)^3)/(a + b*x)^3 - (4*B*(b*c - a*d)^3*n)/(a + b*x)^3 + (1
8*A*d*(b*c - a*d)^2)/(a + b*x)^2 + (15*B*d*(b*c - a*d)^2*n)/(a + b*x)^2 + (
36*A*d^2*(-(b*c) + a*d))/(a + b*x) + (66*B*d^2*(-(b*c) + a*d)*n)/(a + b*x)
- 36*A*d^3*Log[a + b*x] - 66*B*d^3*n*Log[a + b*x] + 18*B*d^3*n*Log[a + b*x]
^2 - (12*B*(b*c - a*d)^3*Log[e*((a + b*x)/(c + d*x))^n])/(a + b*x)^3 + (18*
B*d*(b*c - a*d)^2*Log[e*((a + b*x)/(c + d*x))^n])/(a + b*x)^2 + (36*B*d^2*(
-(b*c) + a*d)*Log[e*((a + b*x)/(c + d*x))^n])/(a + b*x) - 36*B*d^3*Log[a +
b*x]*Log[e*((a + b*x)/(c + d*x))^n] + 36*A*d^3*Log[c + d*x] + 66*B*d^3*n*Lo
g[c + d*x] - 36*B*d^3*n*Log[(d*(a + b*x))/(-(b*c) + a*d)]*Log[c + d*x] + 36
*B*d^3*Log[e*((a + b*x)/(c + d*x))^n]*Log[c + d*x] + 18*B*d^3*n*Log[c + d*x
]^2 - 36*B*d^3*n*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)] - 36*B*d^3*n*P
olyLog[2, (d*(a + b*x))/(-(b*c) + a*d)] - 36*B*d^3*n*PolyLog[2, (b*(c + d*x
)))/(b*c - a*d)]/(36*(b*c - a*d)^4*g^4*i)
```

fricas [B] time = 0.99, size = 859, normalized size = 2.21

$$12 Ab^3c^3 - 54 Aab^2c^2d + 108 Aa^2bcd^2 - 66 Aa^3d^3 + 6 (6 Ab^3cd^2 - 6 Aab^2d^3 + 11 (Bb^3cd^2 - Bab^2d^3)n)x^2 + 18$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^4/(d*i*x+c*i),x, alg
orithm="fricas")
```

```
[Out] -1/36*(12*A*b^3*c^3 - 54*A*a*b^2*c^2*d + 108*A*a^2*b*c*d^2 - 66*A*a^3*d^3 +
6*(6*A*b^3*c*d^2 - 6*A*a*b^2*d^3 + 11*(B*b^3*c*d^2 - B*a*b^2*d^3)*n)*x^2 +
18*(B*b^3*d^3*n*x^3 + 3*B*a*b^2*d^3*n*x^2 + 3*B*a^2*b*d^3*n*x + B*a^3*d^3*n
)*log((b*x + a)/(d*x + c))^2 + (4*B*b^3*c^3 - 27*B*a*b^2*c^2*d + 108*B*a^2
*b*c*d^2 - 85*B*a^3*d^3)*n - 3*(6*A*b^3*c^2*d - 36*A*a*b^2*c*d^2 + 30*A*a^2
*b*d^3 + (5*B*b^3*c^2*d - 54*B*a*b^2*c*d^2 + 49*B*a^2*b*d^3)*n)*x + 6*(2*B*
b^3*c^3 - 9*B*a*b^2*c^2*d + 18*B*a^2*b*c*d^2 - 11*B*a^3*d^3 + 6*(B*b^3*c*d^
2 - B*a*b^2*d^3)*x^2 - 3*(B*b^3*c^2*d - 6*B*a*b^2*c*d^2 + 5*B*a^2*b*d^3)*x
+ 6*(B*b^3*d^3*x^3 + 3*B*a*b^2*d^3*x^2 + 3*B*a^2*b*d^3*x + B*a^3*d^3)*log((
b*x + a)/(d*x + c))*log(e) + 6*(6*A*a^3*d^3 + (11*B*b^3*d^3*n + 6*A*b^3*d^
3)*x^3 + 3*(6*A*a*b^2*d^3 + (2*B*b^3*c*d^2 + 9*B*a*b^2*d^3)*n)*x^2 + (2*B*b
^3*c^3 - 9*B*a*b^2*c^2*d + 18*B*a^2*b*c*d^2)*n + 3*(6*A*a^2*b*d^3 - (B*b^3*
c^2*d - 6*B*a*b^2*c*d^2 - 6*B*a^2*b*d^3)*n)*x)*log((b*x + a)/(d*x + c))/((
b^7*c^4 - 4*a*b^6*c^3*d + 6*a^2*b^5*c^2*d^2 - 4*a^3*b^4*c*d^3 + a^4*b^3*d^4
)*g^4*i*x^3 + 3*(a*b^6*c^4 - 4*a^2*b^5*c^3*d + 6*a^3*b^4*c^2*d^2 - 4*a^4*b^
3*c*d^3 + a^5*b^2*d^4)*g^4*i*x^2 + 3*(a^2*b^5*c^4 - 4*a^3*b^4*c^3*d + 6*a^4
*b^3*c^2*d^2 - 4*a^5*b^2*c*d^3 + a^6*b*d^4)*g^4*i*x + (a^3*b^4*c^4 - 4*a^4*
b^3*c^3*d + 6*a^5*b^2*c^2*d^2 - 4*a^6*b*c*d^3 + a^7*d^4)*g^4*i)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^4/(d*i*x+c*i),x, alg
orithm="giac")
```

```
[Out] Timed out
```

```
maple [F] time = 0.47, size = 0, normalized size = 0.00
```

$$\int \frac{B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A}{(bgx + ag)^4 (dix + ci)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^4/(d*i*x+c*i),x)
```

```
[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^4/(d*i*x+c*i),x)
```

```
maxima [B] time = 2.36, size = 1472, normalized size = 3.78
```

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^4/(d*i*x+c*i),x, alg
orithm="maxima")
```

```
[Out] -1/6*B*((6*b^2*d^2*x^2 + 2*b^2*c^2 - 7*a*b*c*d + 11*a^2*d^2 - 3*(b^2*c*d -
5*a*b*d^2)*x)/((b^6*c^3 - 3*a*b^5*c^2*d + 3*a^2*b^4*c*d^2 - a^3*b^3*d^3)*g^
4*i*x^3 + 3*(a*b^5*c^3 - 3*a^2*b^4*c^2*d + 3*a^3*b^3*c*d^2 - a^4*b^2*d^3)*g^
^4*i*x^2 + 3*(a^2*b^4*c^3 - 3*a^3*b^3*c^2*d + 3*a^4*b^2*c*d^2 - a^5*b*d^3)*
g^4*i*x + (a^3*b^3*c^3 - 3*a^4*b^2*c^2*d + 3*a^5*b*c*d^2 - a^6*d^3)*g^4*i)
+ 6*d^3*log(b*x + a)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*
b*c*d^3 + a^4*d^4)*g^4*i) - 6*d^3*log(d*x + c)/((b^4*c^4 - 4*a*b^3*c^3*d +
6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^4*i))*log(e*(b*x/(d*x + c) +
a/(d*x + c))^n) - 1/36*(4*b^3*c^3 - 27*a*b^2*c^2*d + 108*a^2*b*c*d^2 - 85*
a^3*d^3 + 66*(b^3*c*d^2 - a*b^2*d^3)*x^2 - 18*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^
2 + 3*a^2*b*d^3*x + a^3*d^3)*log(b*x + a)^2 - 18*(b^3*d^3*x^3 + 3*a*b^2*d^3
*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*log(d*x + c)^2 - 3*(5*b^3*c^2*d - 54*a*b^2*
c*d^2 + 49*a^2*b*d^3)*x + 66*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x
+ a^3*d^3)*log(b*x + a) - 6*(11*b^3*d^3*x^3 + 33*a*b^2*d^3*x^2 + 33*a^2*b*
d^3*x + 11*a^3*d^3 - 6*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3
*d^3)*log(b*x + a))*log(d*x + c))*B*n/(a^3*b^4*c^4*g^4*i - 4*a^4*b^3*c^3*d*
g^4*i + 6*a^5*b^2*c^2*d^2*g^4*i - 4*a^6*b*c*d^3*g^4*i + a^7*d^4*g^4*i + (b^
7*c^4*g^4*i - 4*a*b^6*c^3*d*g^4*i + 6*a^2*b^5*c^2*d^2*g^4*i - 4*a^3*b^4*c*d
```



```

^3*g^4*i + a^4*b^3*d^4*g^4*i)*x^3 + 3*(a*b^6*c^4*g^4*i - 4*a^2*b^5*c^3*d*g^
4*i + 6*a^3*b^4*c^2*d^2*g^4*i - 4*a^4*b^3*c*d^3*g^4*i + a^5*b^2*d^4*g^4*i)*
x^2 + 3*(a^2*b^5*c^4*g^4*i - 4*a^3*b^4*c^3*d*g^4*i + 6*a^4*b^3*c^2*d^2*g^4*
i - 4*a^5*b^2*c*d^3*g^4*i + a^6*b*d^4*g^4*i)*x) - 1/6*A*((6*b^2*d^2*x^2 + 2
*b^2*c^2 - 7*a*b*c*d + 11*a^2*d^2 - 3*(b^2*c*d - 5*a*b*d^2)*x)/((b^6*c^3 -
3*a*b^5*c^2*d + 3*a^2*b^4*c*d^2 - a^3*b^3*d^3)*g^4*i*x^3 + 3*(a*b^5*c^3 - 3
*a^2*b^4*c^2*d + 3*a^3*b^3*c*d^2 - a^4*b^2*d^3)*g^4*i*x^2 + 3*(a^2*b^4*c^3
- 3*a^3*b^3*c^2*d + 3*a^4*b^2*c*d^2 - a^5*b*d^3)*g^4*i*x + (a^3*b^3*c^3 - 3
*a^4*b^2*c^2*d + 3*a^5*b*c*d^2 - a^6*d^3)*g^4*i) + 6*d^3*log(b*x + a)/((b^4
*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^4*i)
- 6*d^3*log(d*x + c)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*
b*c*d^3 + a^4*d^4)*g^4*i))

```

mupad [B] time = 7.23, size = 986, normalized size = 2.53

$$\frac{66 A a^2 d^2 + 12 A b^2 c^2 + 85 B a^2 d^2 n + 4 B b^2 c^2 n - 42 A a b c d - 23 B a b c d n}{6(a d - b c)} + \frac{x(30 A a b d^2 - 6 A a^2 b^2 c d + 49 B a^2 b^2 d^2 n - 5 B b^2 c^2 d n)}{2(a d - b c)} + \frac{x^2(18 i a^3 b^2 d^2 g^4 - 36 i a^2 b^3 c d g^4 + 18 i a b^4 c^2 g^4) + x^3(18 i a^4 b d^2 g^4 - 36 i a^3 b^2 c d g^4 + 18 i a^2 b^3 c^2 g^4) + x^4(18 i a^5 b^2 c^2 d g^4 - 36 i a^4 b^3 c d^2 g^4 + 18 i a^3 b^4 c^2 d^2 g^4 - 36 i a^2 b^5 c^2 d^3 g^4 + 18 i a b^6 c^2 d^4 g^4 - 18 i a^7 c^2 d^4 g^4)}{(b^6 c^3 - 3 a b^5 c^2 d + 3 a^2 b^4 c d^2 - a^3 b^3 d^3) g^4 i x^3 + 3(a b^5 c^3 - 3 a^2 b^4 c^2 d + 3 a^3 b^3 c d^2 - a^4 b^2 d^3) g^4 i x^2 + 3(a^2 b^4 c^3 - 3 a^3 b^3 c^2 d + 3 a^4 b^2 c d^2 - a^5 b d^3) g^4 i x + (a^3 b^3 c^3 - 3 a^4 b^2 c^2 d + 3 a^5 b c d^2 - a^6 d^3) g^4 i} + \frac{6 d^3 \log(b x + a)}{(b^4 c^4 - 4 a b^3 c^3 d + 6 a^2 b^2 c^2 d^2 - 4 a^3 b c d^3 + a^4 d^4) g^4 i} - \frac{6 d^3 \log(d x + c)}{(b^4 c^4 - 4 a b^3 c^3 d + 6 a^2 b^2 c^2 d^2 - 4 a^3 b c d^3 + a^4 d^4) g^4 i}$$

Verification of antiderivative is not currently implemented for this CAS.

```

[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))/((a*g + b*g*x)^4*(c*i + d*i*x)),
x)

```

```

[Out] ((66*A*a^2*d^2 + 12*A*b^2*c^2 + 85*B*a^2*d^2*n + 4*B*b^2*c^2*n - 42*A*a*b*c
*d - 23*B*a*b*c*d*n)/(6*(a*d - b*c)) + (x*(30*A*a*b*d^2 - 6*A*b^2*c*d + 49*
B*a*b*d^2*n - 5*B*b^2*c*d*n))/(2*(a*d - b*c)) + (d*x^2*(6*A*b^2*d + 11*B*b^
2*d*n))/(a*d - b*c))/(x*(18*a^4*b*d^2*g^4*i + 18*a^2*b^3*c^2*g^4*i - 36*a^3
*b^2*c*d*g^4*i) + x^2*(18*a*b^4*c^2*g^4*i + 18*a^3*b^2*d^2*g^4*i - 36*a^2*b
^3*c*d*g^4*i) + x^3*(6*b^5*c^2*g^4*i + 6*a^2*b^3*d^2*g^4*i - 12*a*b^4*c*d*g
^4*i) + 6*a^5*d^2*g^4*i + 6*a^3*b^2*c^2*g^4*i - 12*a^4*b*c*d*g^4*i) + (d^3*
atan((d^3*((a^4*d^4*g^4*i - b^4*c^4*g^4*i + 2*a*b^3*c^3*d*g^4*i - 2*a^3*b*c
*d^3*g^4*i)/(a^3*d^3*g^4*i - b^3*c^3*g^4*i + 3*a*b^2*c^2*d*g^4*i - 3*a^2*b*
c*d^2*g^4*i) + 2*b*d*x)*(A + (11*B*n)/6)*(a^3*d^3*g^4*i - b^3*c^3*g^4*i + 3
*a*b^2*c^2*d*g^4*i - 3*a^2*b*c*d^2*g^4*i)*6i)/(g^4*i*(6*A*d^3 + 11*B*d^3*n)
*(a*d - b*c)^4))*(A + (11*B*n)/6)*2i)/(g^4*i*(a*d - b*c)^4) - (B*d^3*log(e
((a + b*x)/(c + d*x))^n)^2)/(2*g^4*i*n*(a*d - b*c)*(a^3*d^3 - b^3*c^3 + 3*a
*b^2*c^2*d - 3*a^2*b*c*d^2)) + (B*d^3*log(e*((a + b*x)/(c + d*x))^n)*(x*(b
((g^4*i*n*(a*d - b*c)*(3*a*d - b*c))/(6*d^2) + (a*g^4*i*n*(a*d - b*c))/(3*d
)) + (2*a*b*g^4*i*n*(a*d - b*c))/(3*d) + (b*g^4*i*n*(a*d - b*c)*(3*a*d - b*
c))/(3*d^2)) + a*((g^4*i*n*(a*d - b*c)*(3*a*d - b*c))/(6*d^2) + (a*g^4*i*n*
(a*d - b*c))/(3*d)) + (g^4*i*n*(a*d - b*c)*(3*a^2*d^2 + b^2*c^2 - 3*a*b*c*d
)))/(3*d^3) + (b^2*g^4*i*n*x^2*(a*d - b*c))/d))/(g^4*i*n*(a*d - b*c)*(a^3*d^

```

```
3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2)*(a^3*g^4*i + b^3*g^4*i*x^3 + 3
*a^2*b*g^4*i*x + 3*a*b^2*g^4*i*x^2)
```

```
sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00
```

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))**n))/(b*g*x+a*g)**4/(d*i*x+c*i),x)
```

```
[Out] Timed out
```

$$3.143 \quad \int \frac{(ag+bgx)^3 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ci+dix)^2} dx$$

Optimal. Leaf size=359

$$\frac{bg^3(bc-ad)^2 \log \left(\frac{bc-ad}{b(c+dx)} \right) \left(6B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + 6A + 5Bn \right)}{2d^4i^2} - \frac{g^3(a+bx)(6A+5Bn)(bc-ad)^2}{2d^3i^2(c+dx)} - \frac{g^3(a+bx)^2(bc-ad)}{d^3i^2}$$

[Out] $3*B*(-a*d+b*c)^2*g^3*n*(b*x+a)/d^3/i^2/(d*x+c)-1/2*(-a*d+b*c)^2*g^3*(5*B*n+6*A)*(b*x+a)/d^3/i^2/(d*x+c)-3*B*(-a*d+b*c)^2*g^3*(b*x+a)*\ln(e*((b*x+a)/(d*x+c))^n)/d^3/i^2/(d*x+c)+1/2*g^3*(b*x+a)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/d/i^2/(d*x+c)-1/2*(-a*d+b*c)*g^3*(b*x+a)^2*(3*A+B*n+3*B*\ln(e*((b*x+a)/(d*x+c))^n))/d^2/i^2/(d*x+c)-1/2*b*(-a*d+b*c)^2*g^3*(6*A+5*B*n+6*B*\ln(e*((b*x+a)/(d*x+c))^n))*\ln((-a*d+b*c)/b/(d*x+c))/d^4/i^2-3*b*B*(-a*d+b*c)^2*g^3*n*\text{polylog}(2,d*(b*x+a)/b/(d*x+c))/d^4/i^2$

Rubi [A] time = 0.73, antiderivative size = 541, normalized size of antiderivative = 1.51, number of steps used = 21, number of rules used = 14, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.326$, Rules used = {2528, 2486, 31, 2525, 12, 72, 44, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$\frac{3bBg^3n(bc-ad)^2 \text{PolyLog} \left(2, \frac{b(c+dx)}{bc-ad} \right)}{d^4i^2} - \frac{a^2bBg^3n \log(a+bx)}{2d^2i^2} + \frac{b^3g^3x^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{2d^2i^2} - \frac{Ab^2g^3x(2bc-ad)}{d^3i^2}$$

Antiderivative was successfully verified.

[In] Int[((a*g + b*g*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c*i + d*i*x)^2,x]

[Out] $-((A*b^2*(2*b*c - 3*a*d)*g^3*x)/(d^3*i^2)) - (b^2*B*(b*c - a*d)*g^3*n*x)/(2*d^3*i^2) - (B*(b*c - a*d)^3*g^3*n)/(d^4*i^2*(c + d*x)) - (a^2*b*B*g^3*n*\text{Log}[a + b*x])/(2*d^2*i^2) - (b*B*(b*c - a*d)^2*g^3*n*\text{Log}[a + b*x])/(d^4*i^2) - (b*B*(2*b*c - 3*a*d)*g^3*(a + b*x)*\text{Log}[e*((a + b*x)/(c + d*x))^n])/(d^3*i^2) + (b^3*g^3*x^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(2*d^2*i^2) + ((b*c - a*d)^3*g^3*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(d^4*i^2*(c + d*x)) + (b^3*B*c^2*g^3*n*\text{Log}[c + d*x])/(2*d^4*i^2) + (b*B*(2*b*c - 3*a*d)*(b*c - a*d)*g^3*n*\text{Log}[c + d*x])/(d^4*i^2) + (b*B*(b*c - a*d)^2*g^3*n*\text{Log}[c + d*x])/(d^4*i^2) - (3*b*B*(b*c - a*d)^2*g^3*n*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c + d*x])/(d^4*i^2) + (3*b*(b*c - a*d)^2*g^3*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])*\text{Log}[c + d*x])/(d^4*i^2) + (3*b*B*(b*c - a*d)^2*g^3*n*\text{Log}[c + d*x]^2)/(2*d^4*i^2) - (3*b*B*(b*c - a*d)^2*g^3*n*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/(d^4*i^2)$

Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_)*(x_))^-1, x_Symbol] := Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 44

```
Int[((a_) + (b_)*(x_))^(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 72

```
Int[((e_) + (f_)*(x_))^(p_)/(((a_) + (b_)*(x_))*((c_) + (d_)*(x_))),
x_Symbol] := Int[ExpandIntegrand[(e + f*x)^p/((a + b*x)*(c + d*x)), x], x]
/; FreeQ[{a, b, c, d, e, f}, x] && IntegerQ[p]
```

Rule 2301

```
Int[((a_) + Log[(c_)*(x_)]^(n_))*((b_))/(x_), x_Symbol] := Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_))*((b_))^(p_)*((f_) + (g_
)*(x_))^(q_), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_)*((d_) + (e_)*(x_))^(n_)]/(x_), x_Symbol] := -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))])*((b_))/((f_) + (g_)*(x_)), x_
Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
```

$(e*f - d*g), 0]$

Rule 2394

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_.) + (e_.)*(x_.))^{(n_.)}]*(b_.)]/((f_.) + (g_.)*(x_.)), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[(e*(f + g*x))/(e*f - d*g)]*(a + b*\text{Log}[c*(d + e*x)^n])/g, x] - \text{Dist}[(b*e^n)/g, \text{Int}[\text{Log}[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g, n\}, x] \&\& \text{NeQ}[e*f - d*g, 0]$

Rule 2418

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_.) + (e_.)*(x_.))^{(n_.)}]*(b_.))^{(p_.)}*(\text{RFx}_.), x_Symbol] \rightarrow \text{With}[\{u = \text{ExpandIntegrand}[(a + b*\text{Log}[c*(d + e*x)^n]]^p, \text{RFx}, x]\}, \text{Int}[u, x] /; \text{SumQ}[u] /; \text{FreeQ}[\{a, b, c, d, e, n\}, x] \&\& \text{RationalFunctionQ}[\text{RFx}, x] \&\& \text{IntegerQ}[p]$

Rule 2486

$\text{Int}[\text{Log}[(e_.)*((f_.)*((a_.) + (b_.)*(x_.))^{(p_.)}*((c_.) + (d_.)*(x_.))^{(q_.)})^{(r_.)}]^{(s_.)}, x_Symbol] \rightarrow \text{Simp}[(a + b*x)*\text{Log}[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s/b, x] + \text{Dist}[(q*r*s*(b*c - a*d))/b, \text{Int}[\text{Log}[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^{(s - 1)}/(c + d*x), x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, p, q, r, s\}, x] \&\& \text{NeQ}[b*c - a*d, 0] \&\& \text{EqQ}[p + q, 0] \&\& \text{IGtQ}[s, 0]$

Rule 2524

$\text{Int}[(a_.) + \text{Log}[(c_.)*(\text{RFx}_.)^{(p_.)}]*(b_.))^{(n_.)}/((d_.) + (e_.)*(x_.)), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[d + e*x]*(a + b*\text{Log}[c*\text{RFx}^p])^n)/e, x] - \text{Dist}[(b*n*p)/e, \text{Int}[(\text{Log}[d + e*x]*(a + b*\text{Log}[c*\text{RFx}^p])^{(n - 1)}*D[\text{RFx}, x])/(\text{RFx}, x)], x] /; \text{FreeQ}[\{a, b, c, d, e, p\}, x] \&\& \text{RationalFunctionQ}[\text{RFx}, x] \&\& \text{IGtQ}[n, 0]$

Rule 2525

$\text{Int}[(a_.) + \text{Log}[(c_.)*(\text{RFx}_.)^{(p_.)}]*(b_.))^{(n_.)*((d_.) + (e_.)*(x_.))^{(m_.)}], x_Symbol] \rightarrow \text{Simp}[(d + e*x)^{(m + 1)}*(a + b*\text{Log}[c*\text{RFx}^p])^n/(e*(m + 1)), x] - \text{Dist}[(b*n*p)/(e*(m + 1)), \text{Int}[\text{SimplifyIntegrand}[(d + e*x)^{(m + 1)}*(a + b*\text{Log}[c*\text{RFx}^p])^{(n - 1)}*D[\text{RFx}, x])/(\text{RFx}, x)], x], x] /; \text{FreeQ}[\{a, b, c, d, e, m, p\}, x] \&\& \text{RationalFunctionQ}[\text{RFx}, x] \&\& \text{IGtQ}[n, 0] \&\& (\text{EqQ}[n, 1] || \text{IntegerQ}[m]) \&\& \text{NeQ}[m, -1]$

Rule 2528

$\text{Int}[(a_.) + \text{Log}[(c_.)*(\text{RFx}_.)^{(p_.)}]*(b_.))^{(n_.)}*(\text{RGx}_.), x_Symbol] \rightarrow \text{With}[\{u = \text{ExpandIntegrand}[(a + b*\text{Log}[c*\text{RFx}^p])^n, \text{RGx}, x]\}, \text{Int}[u, x] /; \text{SumQ}[u] /; \text{FreeQ}[\{a, b, c, p\}, x] \&\& \text{RationalFunctionQ}[\text{RFx}, x] \&\& \text{RationalFunctionQ}[\text{RGx}, x]$

onQ[RGx, x] && IGtQ[n, 0]

Rubi steps

$$\begin{aligned}
 \int \frac{(ag + bgx)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(143c + 143dx)^2} dx &= \int \left(-\frac{b^2(2bc - 3ad)g^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{20449d^3} + \frac{b^3g^3x \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{20449d^3} \right) dx \\
 &= \frac{(b^3g^3) \int x \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) dx}{20449d^2} - \frac{(b^2(2bc - 3ad)g^3) \int \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) dx}{20449d^3} \\
 &= -\frac{Ab^2(2bc - 3ad)g^3x}{20449d^3} + \frac{b^3g^3x^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{40898d^2} + \frac{(bc - ad)^3 \int \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) dx}{20449d^3} \\
 &= -\frac{Ab^2(2bc - 3ad)g^3x}{20449d^3} - \frac{bB(2bc - 3ad)g^3(a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{20449d^3} + \frac{b^3g^3x^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{40898d^2} \\
 &= -\frac{Ab^2(2bc - 3ad)g^3x}{20449d^3} - \frac{bB(2bc - 3ad)g^3(a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{20449d^3} + \frac{b^3g^3x^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{40898d^2} \\
 &= -\frac{Ab^2(2bc - 3ad)g^3x}{20449d^3} - \frac{b^2B(bc - ad)g^3nx}{40898d^3} - \frac{B(bc - ad)^3g^3n}{20449d^4(c + dx)} - \frac{a^2b^3g^3x^2}{40898d^2} \\
 &= -\frac{Ab^2(2bc - 3ad)g^3x}{20449d^3} - \frac{b^2B(bc - ad)g^3nx}{40898d^3} - \frac{B(bc - ad)^3g^3n}{20449d^4(c + dx)} - \frac{a^2b^3g^3x^2}{40898d^2} \\
 &= -\frac{Ab^2(2bc - 3ad)g^3x}{20449d^3} - \frac{b^2B(bc - ad)g^3nx}{40898d^3} - \frac{B(bc - ad)^3g^3n}{20449d^4(c + dx)} - \frac{a^2b^3g^3x^2}{40898d^2}
 \end{aligned}$$

Mathematica [A] time = 0.45, size = 375, normalized size = 1.04

$$\frac{g^3 \left(bBn \left(b \left(dx(ad - bc) + bc^2 \log(c + dx) \right) - a^2d^2 \log(a + bx) \right) + b^3d^2x^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right) - 2Ab^2dx(2bc - 3ad) \right)}{20449d^3}$$

Antiderivative was successfully verified.

[In] Integrate[((a*g + b*g*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c*i + d*i*x)^2,x]

[Out] (g^3*(-2*A*b^2*d*(2*b*c - 3*a*d)*x - 2*b*B*d*(2*b*c - 3*a*d)*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n] + b^3*d^2*x^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + (2*(b*c - a*d)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c + d*x) + 2*b*B*(2*b*c - 3*a*d)*(b*c - a*d)*n*Log[c + d*x] + 6*b*(b*c - a*d)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] - 2*B*(b*c - a*d)^2*n*((b*c - a*d)/(c + d*x) + b*Log[a + b*x] - b*Log[c + d*x]) + b*B*n*(-(a^2*d^2*Log[a + b*x]) + b*(d*(-(b*c) + a*d)*x + b*c^2*Log[c + d*x])) - 3*b*B*(b*c - a*d)^2*n*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(2*d^4*i^2)

fricas [F] time = 0.93, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{Ab^3g^3x^3 + 3Aab^2g^3x^2 + 3Aa^2bg^3x + Aa^3g^3 + (Bb^3g^3x^3 + 3Bab^2g^3x^2 + 3Ba^2bg^3x + Ba^3g^3) \log \left(e \left(\frac{bx+a}{dx+c} \right)^n \right)}{d^2i^2x^2 + 2cdi^2x + c^2i^2} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^2,x, algorithm="fricas")

[Out] integral((A*b^3*g^3*x^3 + 3*A*a*b^2*g^3*x^2 + 3*A*a^2*b*g^3*x + A*a^3*g^3 + (B*b^3*g^3*x^3 + 3*B*a*b^2*g^3*x^2 + 3*B*a^2*b*g^3*x + B*a^3*g^3)*log(e*((b*x + a)/(d*x + c))^n))/(d^2*i^2*x^2 + 2*c*d*i^2*x + c^2*i^2), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^2,x, algorithm="giac")

[Out] Timed out

maple [F] time = 0.45, size = 0, normalized size = 0.00

$$\int \frac{(bgx + ag)^3 \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)}{(dix + ci)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.


```
d*g^3 - 3*a*b^3*c^2*d^2*g^3 + 3*a^2*b^2*c*d^3*g^3 - a^3*b*d^4*g^3)*B*x + (b
^4*c^4*g^3 - 3*a*b^3*c^3*d*g^3 + 3*a^2*b^2*c^2*d^2*g^3 - a^3*b*c*d^3*g^3)*B
)*log(d*x + c))*log((d*x + c)^n))/(b*c^2*d^4*i^2 - a*c*d^5*i^2 + (b*c*d^5*i
^2 - a*d^6*i^2)*x) + 3*(b^3*c^2*g^3*n - 2*a*b^2*c*d*g^3*n + a^2*b*d^2*g^3*n
)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(
b*c - a*d)))*B/(d^4*i^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ag + bgx)^3 \left(A + B \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ci + dix)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(c*i + d*i*x)^
2,x)
```

```
[Out] int(((a*g + b*g*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(c*i + d*i*x)^
2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**3*(A+B*ln(e*((b*x+a)/(d*x+c))**n))/(d*i*x+c*i)**2,x)
```

```
[Out] Timed out
```

$$3.144 \quad \int \frac{(ag+bgx)^2 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ci+dix)^2} dx$$

Optimal. Leaf size=275

$$\frac{bg^2(bc-ad) \log \left(\frac{bc-ad}{b(c+dx)} \right) \left(2B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + 2A + Bn \right)}{d^3 i^2} + \frac{g^2(a+bx)(2A+Bn)(bc-ad)}{d^2 i^2(c+dx)} + \frac{g^2(a+bx)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{d i^2(c+dx)}$$

[Out] $-2*B*(-a*d+b*c)*g^{2*n}*(b*x+a)/d^2/i^2/(d*x+c)+(-a*d+b*c)*g^{2*(B*n+2*A)}*(b*x+a)/d^2/i^2/(d*x+c)+2*B*(-a*d+b*c)*g^{2*(b*x+a)}*\ln(e*((b*x+a)/(d*x+c))^n)/d^2/i^2/(d*x+c)+g^{2*(b*x+a)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/d/i^2/(d*x+c)+b*(-a*d+b*c)*g^{2*(2*A+B*n+2*B*\ln(e*((b*x+a)/(d*x+c))^n))*\ln((-a*d+b*c)/b/(d*x+c))}/d^3/i^2+2*b*B*(-a*d+b*c)*g^{2*n}*polylog(2,d*(b*x+a)/b/(d*x+c))/d^3/i^2$

Rubi [A] time = 0.53, antiderivative size = 351, normalized size of antiderivative = 1.28, number of steps used = 17, number of rules used = 13, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.302$, Rules used = {2528, 2486, 31, 2525, 12, 44, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$\frac{2bBg^2n(bc-ad)\text{PolyLog}\left(2, \frac{b(c+dx)}{bc-ad}\right)}{d^3 i^2} - \frac{g^2(bc-ad)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{d^3 i^2(c+dx)} - \frac{2bg^2(bc-ad) \log(c+dx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{d^3 i^2}$$

Antiderivative was successfully verified.

[In] $\text{Int}[\left((a*g + b*g*x)^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]\right))/(c*i + d*i*x)^2, x]$

[Out] $(A*b^2*g^2*x)/(d^2*i^2) + (B*(b*c - a*d)^2*g^2*n)/(d^3*i^2*(c + d*x)) + (b*B*(b*c - a*d)*g^2*n*\text{Log}[a + b*x])/(d^3*i^2) + (b*B*g^2*(a + b*x)*\text{Log}[e*((a + b*x)/(c + d*x))^n])/(d^2*i^2) - ((b*c - a*d)^2*g^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])/(d^3*i^2*(c + d*x)) - (2*b*B*(b*c - a*d)*g^2*n*\text{Log}[c + d*x])/(d^3*i^2) + (2*b*B*(b*c - a*d)*g^2*n*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c + d*x])/(d^3*i^2) - (2*b*(b*c - a*d)*g^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])*\text{Log}[c + d*x])/(d^3*i^2) - (b*B*(b*c - a*d)*g^2*n*\text{Log}[c + d*x]^2)/(d^3*i^2) + (2*b*B*(b*c - a*d)*g^2*n*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/(d^3*i^2)$

Rule 12

$\text{Int}[(a_*)(u_), x_Symbol] := \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \ \&\& \ !\text{MatchQ}[u, (b_*)(v_)] /; \text{FreeQ}[b, x]$

Rule 31

Int[((a_) + (b_)*(x_))⁽⁻¹⁾, x_Symbol] := Simp[Log[RemoveContent[a + b*x, x]]/b, x] /; FreeQ[{a, b}, x]

Rule 44

Int[((a_) + (b_)*(x_))^{(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)ⁿ, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])}

Rule 2301

Int[((a_) + Log[(c_)*(x_)^{(n_)]*(b_))/(x_), x_Symbol] := Simp[(a + b*Log[c*xⁿ])²/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]}

Rule 2390

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^{(n_)]*(b_))^{(p_)*((f_) + (g_)*(x_))^(q_), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*xⁿ])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]}}

Rule 2391

Int[Log[(c_)*((d_) + (e_)*(x_))^{(n_)]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*xⁿ)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]}

Rule 2393

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))]*(b_))/((f_) + (g_)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^{(n_)]*(b_))/((f_) + (g_)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)ⁿ])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]}

Rule 2418

```
Int[((a_.) + Log[(c_.)*(d_.) + (e_.)*(x_.)]^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n]^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_.))^(p_.))*((c_.) + (d_.)*(x_.))^(q_.)
^(r_.)]^(s_.), x_Symbol] := Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q]^r]^s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_.)), x_S
ymbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_.))^(m_.
), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunci
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(ag + bgx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(144c + 144dx)^2} dx &= \int \left(\frac{b^2 g^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{20736d^2} + \frac{(-bc + ad)^2 g^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{20736d^2 (c + dx)^2} \right) dx \\
&= \frac{(b^2 g^2) \int \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) dx}{20736d^2} - \frac{(b(bc - ad)g^2) \int \frac{A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{c+dx}}{10368d^2} \\
&= \frac{Ab^2 g^2 x}{20736d^2} - \frac{(bc - ad)^2 g^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{20736d^3 (c + dx)} - \frac{b(bc - ad)g^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{10368d^2} \\
&= \frac{Ab^2 g^2 x}{20736d^2} + \frac{bB g^2 (a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{20736d^2} - \frac{(bc - ad)^2 g^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{20736d^3 (c + dx)} \\
&= \frac{Ab^2 g^2 x}{20736d^2} + \frac{bB g^2 (a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{20736d^2} - \frac{(bc - ad)^2 g^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{20736d^3 (c + dx)} \\
&= \frac{Ab^2 g^2 x}{20736d^2} + \frac{B(bc - ad)^2 g^2 n}{20736d^3 (c + dx)} + \frac{bB(bc - ad)g^2 n \log(a + bx)}{20736d^3} + \frac{bB g^2 (a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{20736d^2} \\
&= \frac{Ab^2 g^2 x}{20736d^2} + \frac{B(bc - ad)^2 g^2 n}{20736d^3 (c + dx)} + \frac{bB(bc - ad)g^2 n \log(a + bx)}{20736d^3} + \frac{bB g^2 (a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{20736d^2} \\
&= \frac{Ab^2 g^2 x}{20736d^2} + \frac{B(bc - ad)^2 g^2 n}{20736d^3 (c + dx)} + \frac{bB(bc - ad)g^2 n \log(a + bx)}{20736d^3} + \frac{bB g^2 (a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{20736d^2}
\end{aligned}$$

Mathematica [A] time = 0.25, size = 252, normalized size = 0.92

$$\frac{g^2 \left(-2b(bc - ad) \log(c + dx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right) - \frac{(bc - ad)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{c + dx} + bBd(a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + \frac{bB g^2 (a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{20736d^2} \right)}{20736d^2}$$

Antiderivative was successfully verified.

[In] Integrate[((a*g + b*g*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c*i + d*i*x)^2,x]

[Out] $(g^2*(A*b^2*d*x + (B*(b*c - a*d)^2*n)/(c + d*x) + b*B*(b*c - a*d)*n*\text{Log}[a + b*x] + b*B*d*(a + b*x)*\text{Log}[e*((a + b*x)/(c + d*x))^n] - ((b*c - a*d)^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(c + d*x) - 2*b*B*(b*c - a*d)*n*\text{Log}[c + d*x] - 2*b*(b*c - a*d)*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])*\text{Log}[c + d*x] + b*B*(b*c - a*d)*n*((2*\text{Log}[(d*(a + b*x))/(-b*c + a*d)] - \text{Log}[c + d*x])*\text{Log}[c + d*x] + 2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])))/(d^3*i^2)$

fricas [F] time = 0.85, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{Ab^2g^2x^2 + 2Aabg^2x + Aa^2g^2 + (Bb^2g^2x^2 + 2Babg^2x + Ba^2g^2) \log \left(e \left(\frac{bx+a}{dx+c} \right)^n \right)}{d^2i^2x^2 + 2cdi^2x + c^2i^2}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((b*g*x+a*g)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^2,x, algorithm="fricas")`

[Out] `integral((A*b^2*g^2*x^2 + 2*A*a*b*g^2*x + A*a^2*g^2 + (B*b^2*g^2*x^2 + 2*B*a*b*g^2*x + B*a^2*g^2)*log(e*((b*x + a)/(d*x + c))^n))/(d^2*i^2*x^2 + 2*c*d*i^2*x + c^2*i^2), x)`

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((b*g*x+a*g)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^2,x, algorithm="giac")`

[Out] Timed out

maple [F] time = 0.45, size = 0, normalized size = 0.00

$$\int \frac{(bgx + ag)^2 \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)}{(dix + ci)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((b*g*x+a*g)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(d*i*x+c*i)^2,x)`

[Out] `int((b*g*x+a*g)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(d*i*x+c*i)^2,x)`

maxima [B] time = 4.92, size = 1273, normalized size = 4.63

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^2,x, algorithm="maxima")

[Out] B*a^2*g^2*n*(1/(d^2*i^2*x + c*d*i^2) + b*log(b*x + a)/((b*c*d - a*d^2)*i^2) - b*log(d*x + c)/((b*c*d - a*d^2)*i^2)) - A*b^2*(c^2/(d^4*i^2*x + c*d^3*i^2) - x/(d^2*i^2) + 2*c*log(d*x + c)/(d^3*i^2))*g^2 + 2*A*a*b*g^2*(c/(d^3*i^2*x + c*d^2*i^2) + log(d*x + c)/(d^2*i^2)) - B*a^2*g^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(d^2*i^2*x + c*d*i^2) - A*a^2*g^2/(d^2*i^2*x + c*d*i^2) - (2*a^2*b*d^2*g^2*log(e) + 2*(g^2*n + g^2*log(e))*b^3*c^2 - (3*g^2*n + 4*g^2*log(e))*a*b^2*c*d)*B*log(d*x + c)/(b*c*d^3*i^2 - a*d^4*i^2) + ((b^3*c*d^2*g^2*log(e) - a*b^2*d^3*g^2*log(e))*B*x^2 + (b^3*c^2*d*g^2*log(e) - a*b^2*c*d^2*g^2*log(e))*B*x + 2*((b^3*c^2*d*g^2*n - 2*a*b^2*c*d^2*g^2*n + a^2*b*d^3*g^2*n)*B*x + (b^3*c^3*g^2*n - 2*a*b^2*c^2*d*g^2*n + a^2*b*c*d^2*g^2*n)*B)*log(b*x + a)*log(d*x + c) - ((b^3*c^2*d*g^2*n - 2*a*b^2*c*d^2*g^2*n + a^2*b*d^3*g^2*n)*B*x + (b^3*c^3*g^2*n - 2*a*b^2*c^2*d*g^2*n + a^2*b*c*d^2*g^2*n)*B)*log(d*x + c)^2 + ((g^2*n - g^2*log(e))*b^3*c^3 - 3*(g^2*n - g^2*log(e))*a*b^2*c^2*d + 2*(g^2*n - g^2*log(e))*a^2*b*c*d^2)*B + ((b^3*c^2*d*g^2*n - a*b^2*c*d^2*g^2*n - a^2*b*d^3*g^2*n)*B*x + (b^3*c^3*g^2*n - a*b^2*c^2*d*g^2*n - a^2*b*c*d^2*g^2*n)*B)*log(b*x + a) + ((b^3*c*d^2*g^2 - a*b^2*d^3*g^2)*B*x^2 + (b^3*c^2*d*g^2 - a*b^2*c*d^2*g^2)*B*x - (b^3*c^3*g^2 - 3*a*b^2*c^2*d*g^2 + 2*a^2*b*c*d^2*g^2)*B - 2*((b^3*c^2*d*g^2 - 2*a*b^2*c*d^2*g^2 + a^2*b*d^3*g^2)*B*x + (b^3*c^3*g^2 - 2*a*b^2*c^2*d*g^2 + a^2*b*c*d^2*g^2)*B)*log(d*x + c))*log((d*x + c)^n)/(b*c^2*d^3*i^2 - a*c*d^4*i^2 + (b*c*d^4*i^2 - a*d^5*i^2)*x) - 2*(b^2*c*g^2*n - a*b*d*g^2*n)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d)))*B/(d^3*i^2)

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ag + bgx)^2 \left(A + B \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ci + dix)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((a*g + b*g*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(c*i + d*i*x)^2,x)

```
[Out] int(((a*g + b*g*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(c*i + d*i*x)^2, x)
```

```
sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00
```

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n))/(d*i*x+c*i)**2,x)
```

```
[Out] Timed out
```


$$3.145 \quad \int \frac{(ag+bgx) \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ci+dir)^2} dx$$

Optimal. Leaf size=168

$$\frac{bg \log \left(\frac{bc-ad}{b(c+dx)} \right) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{d^2 i^2} - \frac{Ag(a+bx)}{di^2(c+dx)} - \frac{bBgnLi_2 \left(\frac{d(a+bx)}{b(c+dx)} \right)}{d^2 i^2} - \frac{Bg(a+bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{di^2(c+dx)} + \frac{Bgn(a+bx)}{di^2(c+dx)}$$

[Out] $-A*g*(b*x+a)/d/i^2/(d*x+c)+B*g*n*(b*x+a)/d/i^2/(d*x+c)-B*g*(b*x+a)*\ln(e*((b*x+a)/(d*x+c))^n)/d/i^2/(d*x+c)-b*g*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))*\ln((-a*d+b*c)/b/(d*x+c))/d^2/i^2-b*B*g*n*polylog(2,d*(b*x+a)/b/(d*x+c))/d^2/i^2$

Rubi [A] time = 0.39, antiderivative size = 234, normalized size of antiderivative = 1.39, number of steps used = 14, number of rules used = 11, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}} = 0.268$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$\frac{bBgnPolyLog \left(2, \frac{b(c+dx)}{bc-ad} \right)}{d^2 i^2} + \frac{bg \log(c+dx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{d^2 i^2} + \frac{g(bc-ad) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{d^2 i^2(c+dx)} - \frac{Bgn(a+bx)}{d^2 i^2}$$

Antiderivative was successfully verified.

[In] $\text{Int}[\frac{(a*g + b*g*x)*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])}{(c*i + d*i*x)^2}, x]$

[Out] $-\frac{(B*(b*c - a*d)*g*n)}{d^2*i^2*(c + d*x)} - \frac{(b*B*g*n*\text{Log}[a + b*x])}{d^2*i^2} + \frac{((b*c - a*d)*g*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])}{d^2*i^2*(c + d*x)} + \frac{(b*B*g*n*\text{Log}[c + d*x])}{d^2*i^2} - \frac{(b*B*g*n*\text{Log}[-((d*(a + b*x))/(b*c - a*d)])*\text{Log}[c + d*x])}{d^2*i^2} + \frac{(b*g*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])*\text{Log}[c + d*x])}{d^2*i^2} + \frac{(b*B*g*n*\text{Log}[c + d*x]^2)}{(2*d^2*i^2)} - \frac{(b*B*g*n*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])}{d^2*i^2}$

Rule 12

$\text{Int}[(a_*)(u_), x_Symbol] := \text{Dist}[a, \text{Int}[u, x], x] /;$ FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 44

$\text{Int}[(a_*) + (b_*)(x_)^{(m_*)} * ((c_*) + (d_*)(x_))^{(n_*)}, x_Symbol] := \text{Int}[\text{ExpandIntegrand}[(a + b*x)^m*(c + d*x)^n, x], x] /;$ FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m

+ n + 2, 0])

Rule 2301

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*((f_) + (g_.)*(x_)^(q_.)), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2418

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]

Rule 2524

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;

FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]

Rule 2525

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_.))^(m_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]

Rule 2528

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]

Rubi steps

$$\begin{aligned}
\int \frac{(ag + bgx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(145c + 145dx)^2} dx &= \int \left(\frac{(-bc + ad)g \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{21025d(c + dx)^2} + \frac{bg \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{21025d(c + dx)} \right) dx \\
&= \frac{(bg) \int \frac{A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{c+dx} dx}{21025d} - \frac{((bc - ad)g) \int \frac{A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{(c+dx)^2} dx}{21025d} \\
&= \frac{(bc - ad)g \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{21025d^2(c + dx)} + \frac{bg \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) \log \left(\frac{a+bx}{c+dx} \right)}{21025d^2} \\
&= \frac{(bc - ad)g \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{21025d^2(c + dx)} + \frac{bg \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) \log \left(\frac{a+bx}{c+dx} \right)}{21025d^2} \\
&= \frac{(bc - ad)g \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{21025d^2(c + dx)} + \frac{bg \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) \log \left(\frac{a+bx}{c+dx} \right)}{21025d^2} \\
&= \frac{B(bc - ad)gn}{21025d^2(c + dx)} - \frac{bBgn \log(a + bx)}{21025d^2} + \frac{(bc - ad)g \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{21025d^2(c + dx)} \\
&= \frac{B(bc - ad)gn}{21025d^2(c + dx)} - \frac{bBgn \log(a + bx)}{21025d^2} + \frac{(bc - ad)g \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{21025d^2(c + dx)} \\
&= \frac{B(bc - ad)gn}{21025d^2(c + dx)} - \frac{bBgn \log(a + bx)}{21025d^2} + \frac{(bc - ad)g \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{21025d^2(c + dx)}
\end{aligned}$$

Mathematica [A] time = 0.18, size = 183, normalized size = 1.09

$$\frac{g \left(2b \log(c + dx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right) + \frac{2(bc-ad) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{c+dx} - bBn \left(2\text{Li}_2 \left(\frac{b(c+dx)}{bc-ad} \right) + \log(c + dx) \left(2 \log \left(\frac{a+bx}{c+dx} \right) \right) \right)}{2d^2i^2}$$

Antiderivative was successfully verified.

[In] Integrate[((a*g + b*g*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c*i + d*i*x)^2,x]

[Out] $(g*((2*(b*c - a*d)*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(c + d*x) + 2*b*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]*\text{Log}[c + d*x] - 2*B*n*((b*c - a*d)/(c + d*x) + b*\text{Log}[a + b*x] - b*\text{Log}[c + d*x]) - b*B*n*((2*\text{Log}[(d*(a + b*x))/(- (b*c) + a*d)] - \text{Log}[c + d*x])*\text{Log}[c + d*x] + 2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])))/(2*d^2*i^2)$

fricas [F] time = 0.88, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{A b g x + A a g + (B b g x + B a g) \log \left(e \left(\frac{b x + a}{d x + c} \right)^n \right)}{d^2 i^2 x^2 + 2 c d i^2 x + c^2 i^2}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((b*g*x+a*g)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^2,x, algorithm="fricas")`

[Out] `integral((A*b*g*x + A*a*g + (B*b*g*x + B*a*g)*log(e*((b*x + a)/(d*x + c))^n))/(d^2*i^2*x^2 + 2*c*d*i^2*x + c^2*i^2), x)`

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((b*g*x+a*g)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^2,x, algorithm="giac")`

[Out] Timed out

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int \frac{(b g x + a g) \left(B \ln \left(e \left(\frac{b x + a}{d x + c} \right)^n \right) + A \right)}{(d i x + c i)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((b*g*x+a*g)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(d*i*x+c*i)^2,x)`

[Out] `int((b*g*x+a*g)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(d*i*x+c*i)^2,x)`

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$B a g n \left(\frac{1}{d^2 i^2 x + c d i^2} + \frac{b \log(b x + a)}{(b c d - a d^2) i^2} - \frac{b \log(d x + c)}{(b c d - a d^2) i^2} \right) - \frac{1}{2} B b g \left(\frac{2(d n x + c n) \log(b x + a) \log(d x + c) - (d n x + c n)}{\dots} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^2,x, algorithm="maxima")
```

```
[Out] B*a*g*n*(1/(d^2*i^2*x + c*d*i^2) + b*log(b*x + a)/((b*c*d - a*d^2)*i^2) - b*log(d*x + c)/((b*c*d - a*d^2)*i^2)) - 1/2*B*b*g*((2*(d*n*x + c*n)*log(b*x + a)*log(d*x + c) - (d*n*x + c*n)*log(d*x + c)^2 - 2*((d*x + c)*log(d*x + c) + c)*log((b*x + a)^n) + 2*((d*x + c)*log(d*x + c) + c)*log((d*x + c)^n))/(d^3*i^2*x + c*d^2*i^2) - 2*integrate((b*d^2*x^2*log(e) + a*d^2*x*log(e) - b*c^2*n + a*c*d*n + (b*d^2*n*x^2 + a*c*d*n + (b*c*d*n + a*d^2*n)*x)*log(b*x + a))/(b*d^4*i^2*x^3 + a*c^2*d^2*i^2 + (2*b*c*d^3*i^2 + a*d^4*i^2)*x^2 + (b*c^2*d^2*i^2 + 2*a*c*d^3*i^2)*x), x) + A*b*g*(c/(d^3*i^2*x + c*d^2*i^2) + log(d*x + c)/(d^2*i^2)) - B*a*g*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(d^2*i^2*x + c*d*i^2) - A*a*g/(d^2*i^2*x + c*d*i^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(ag + bgx) \left(A + B \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ci + dix)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(c*i + d*i*x)^2, x)
```

```
[Out] int(((a*g + b*g*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(c*i + d*i*x)^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)**2,x)
```

```
[Out] Timed out
```

$$3.146 \quad \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(ci+dx)^2} dx$$

Optimal. Leaf size=102

$$\frac{A(a+bx)}{i^2(c+dx)(bc-ad)} + \frac{B(a+bx) \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{i^2(c+dx)(bc-ad)} - \frac{Bn(a+bx)}{i^2(c+dx)(bc-ad)}$$

[Out] $A*(b*x+a)/(-a*d+b*c)/i^2/(d*x+c)-B*n*(b*x+a)/(-a*d+b*c)/i^2/(d*x+c)+B*(b*x+a)*\ln(e*((b*x+a)/(d*x+c))^n)/(-a*d+b*c)/i^2/(d*x+c)$

Rubi [A] time = 0.08, antiderivative size = 107, normalized size of antiderivative = 1.05, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {2525, 12, 44}

$$-\frac{B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A}{di^2(c+dx)} + \frac{bBn \log(a+bx)}{di^2(bc-ad)} - \frac{bBn \log(c+dx)}{di^2(bc-ad)} + \frac{Bn}{di^2(c+dx)}$$

Antiderivative was successfully verified.

[In] $\text{Int}[(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])/(c*i + d*i*x)^2, x]$

[Out] $(B*n)/(d*i^2*(c + d*x)) + (b*B*n*\text{Log}[a + b*x])/(d*(b*c - a*d)*i^2) - (A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])/(d*i^2*(c + d*x)) - (b*B*n*\text{Log}[c + d*x])/(d*(b*c - a*d)*i^2)$

Rule 12

$\text{Int}[(a_*)(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \&\& \text{!MatchQ}[u, (b_)*(v_)] /; \text{FreeQ}[b, x]$

Rule 44

$\text{Int}[((a_) + (b_)*(x_))^(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] \rightarrow \text{Int}[\text{ExpandIntegrand}[(a + b*x)^m*(c + d*x)^n, x], x] /; \text{FreeQ}\{a, b, c, d\}, x] \&\& \text{NeQ}[b*c - a*d, 0] \&\& \text{ILtQ}[m, 0] \&\& \text{IntegerQ}[n] \&\& \text{!(IGtQ}[n, 0] \&\& \text{LtQ}[m + n + 2, 0])$

Rule 2525

$\text{Int}[(a_.) + \text{Log}[(c_.)*(\text{RFx}_.)^(p_.)]*(b_.)^(n_.)*((d_.) + (e_.)*(x_))^(m_.)], x_Symbol] \rightarrow \text{Simp}[(d + e*x)^(m + 1)*(a + b*\text{Log}[c*\text{RFx}^p])^n/(e*(m + 1))$

, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1))*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]

Rubi steps

$$\begin{aligned}
 \int \frac{A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(146c + 146dx)^2} dx &= -\frac{A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{21316d(c + dx)} + \frac{(Bn) \int \frac{bc-ad}{146(a+bx)(c+dx)^2} dx}{146d} \\
 &= -\frac{A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{21316d(c + dx)} + \frac{(B(bc - ad)n) \int \frac{1}{(a+bx)(c+dx)^2} dx}{21316d} \\
 &= -\frac{A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{21316d(c + dx)} + \frac{(B(bc - ad)n) \int \left(\frac{b^2}{(bc-ad)^2(a+bx)} - \frac{d}{(bc-ad)(c+dx)^2} - \frac{bd}{(bc-ad)^2(c+dx)}\right) dx}{21316d} \\
 &= \frac{Bn}{21316d(c + dx)} + \frac{bBn \log(a + bx)}{21316d(bc - ad)} - \frac{A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{21316d(c + dx)} - \frac{bBn \log(c + dx)}{21316d(bc - ad)}
 \end{aligned}$$

Mathematica [A] time = 0.06, size = 114, normalized size = 1.12

$$\frac{Bn(bc - ad) \left(\frac{1}{(c+dx)(bc-ad)} + \frac{b \log(a+bx)}{(bc-ad)^2} - \frac{b \log(c+dx)}{(bc-ad)^2} \right) - \frac{B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A}{di(ci + dix)}}{di^2}$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/(c*i + d*i*x)^2,x]

[Out] -((A + B*Log[e*((a + b*x)/(c + d*x))^n])/(d*i*(c*i + d*i*x))) + (B*(b*c - a*d)*n*(1/((b*c - a*d)*(c + d*x)) + (b*Log[a + b*x])/(b*c - a*d)^2 - (b*Log[c + d*x])/(b*c - a*d)^2))/(d*i^2)

fricas [A] time = 0.61, size = 105, normalized size = 1.03

$$\frac{A bc - A ad - (B bc - B ad)n + (B bc - B ad) \log(e) - (B b d n x + B a d n) \log\left(\frac{bx+a}{dx+c}\right)}{(bcd^2 - ad^3)i^2x + (bc^2d - acd^2)i^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^2,x, algorithm="fricas")

[Out] -(A*b*c - A*a*d - (B*b*c - B*a*d)*n + (B*b*c - B*a*d)*log(e) - (B*b*d*n*x + B*a*d*n)*log((b*x + a)/(d*x + c)))/((b*c*d^2 - a*d^3)*i^2*x + (b*c^2*d - a*c*d^2)*i^2)

giac [A] time = 1.71, size = 84, normalized size = 0.82

$$-\left(\frac{(bx+a)Bn \log\left(\frac{bx+a}{dx+c}\right)}{dx+c} - \frac{(Bn-A-B)(bx+a)}{dx+c}\right)\left(\frac{bc}{(bc-ad)^2} - \frac{ad}{(bc-ad)^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^2,x, algorithm="giac")

[Out] -((b*x + a)*B*n*log((b*x + a)/(d*x + c))/(d*x + c) - (B*n - A - B)*(b*x + a)/(d*x + c))*(b*c/(b*c - a*d)^2 - a*d/(b*c - a*d)^2)

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int \frac{B \ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right) + A}{(dix+ci)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(d*i*x+c*i)^2,x)

[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(d*i*x+c*i)^2,x)

maxima [A] time = 1.30, size = 136, normalized size = 1.33

$$Bn\left(\frac{1}{d^2i^2x + cdi^2} + \frac{b \log(bx+a)}{(bcd - ad^2)i^2} - \frac{b \log(dx+c)}{(bcd - ad^2)i^2}\right) - \frac{B \log\left(e\left(\frac{bx}{dx+c} + \frac{a}{dx+c}\right)^n\right)}{d^2i^2x + cdi^2} - \frac{A}{d^2i^2x + cdi^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^2,x, algorithm="maxima")

[Out] B*n*(1/(d^2*i^2*x + c*d*i^2) + b*log(b*x + a)/((b*c*d - a*d^2)*i^2) - b*log(d*x + c)/((b*c*d - a*d^2)*i^2)) - B*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(d^2*i^2*x + c*d*i^2) - A/(d^2*i^2*x + c*d*i^2)

mupad [B] time = 4.84, size = 113, normalized size = 1.11

$$-\frac{A - B n}{x d^2 i^2 + c d i^2} - \frac{B \ln\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{d(c i^2 + d i^2 x)} + \frac{B b n \operatorname{atan}\left(\frac{b c 2i + b d x 2i}{a d - b c} + 1i\right) 2i}{d i^2 (a d - b c)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))/(c*i + d*i*x)^2,x)

[Out] (B*b*n*atan((b*c*2i + b*d*x*2i)/(a*d - b*c) + 1i)*2i)/(d*i^2*(a*d - b*c)) - (B*log(e*((a + b*x)/(c + d*x))^n))/(d*(c*i^2 + d*i^2*x)) - (A - B*n)/(d^2*i^2*x + c*d*i^2)

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)**2,x)

[Out] Exception raised: NotImplementedError

$$3.147 \quad \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(ag+bgx)(ci+dix)^2} dx$$

Optimal. Leaf size=166

$$\frac{b\left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A\right)^2}{2Bgi^2n(bc-ad)^2} - \frac{Ad(a+bx)}{gi^2(c+dx)(bc-ad)^2} - \frac{Bd(a+bx) \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{gi^2(c+dx)(bc-ad)^2} + \frac{Bdn(a+bx)}{gi^2(c+dx)(bc-ad)^2}$$

[Out] $-A*d*(b*x+a)/(-a*d+b*c)^2/g/i^2/(d*x+c)+B*d*n*(b*x+a)/(-a*d+b*c)^2/g/i^2/(d*x+c)-B*d*(b*x+a)*\ln(e*((b*x+a)/(d*x+c))^n)/(-a*d+b*c)^2/g/i^2/(d*x+c)+1/2*b*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/B/(-a*d+b*c)^2/g/i^2/n$

Rubi [C] time = 0.68, antiderivative size = 450, normalized size of antiderivative = 2.71, number of steps used = 22, number of rules used = 11, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.256$, Rules used = {2528, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 12, 44}

$$\frac{bBn \text{PolyLog}\left(2, -\frac{d(a+bx)}{bc-ad}\right)}{gi^2(bc-ad)^2} + \frac{bBn \text{PolyLog}\left(2, \frac{b(c+dx)}{bc-ad}\right)}{gi^2(bc-ad)^2} + \frac{b \log(a+bx) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A\right)}{gi^2(bc-ad)^2} + \frac{B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{gi^2(c+dx)(bc-ad)^2}$$

Antiderivative was successfully verified.

[In] $\text{Int}[(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)*(c*i + d*i*x)^2), x]$

[Out] $-((B*n)/((b*c - a*d)*g*i^2*(c + d*x))) - (b*B*n*\text{Log}[a + b*x])/((b*c - a*d)^2*g*i^2) - (b*B*n*\text{Log}[a + b*x]^2)/(2*(b*c - a*d)^2*g*i^2) + (A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])/((b*c - a*d)*g*i^2*(c + d*x)) + (b*\text{Log}[a + b*x]*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)^2*g*i^2) + (b*B*n*\text{Log}[c + d*x])/((b*c - a*d)^2*g*i^2) + (b*B*n*\text{Log}[-(d*(a + b*x))/(b*c - a*d)])*\text{Log}[c + d*x])/((b*c - a*d)^2*g*i^2) - (b*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])*\text{Log}[c + d*x])/((b*c - a*d)^2*g*i^2) - (b*B*n*\text{Log}[c + d*x]^2)/(2*(b*c - a*d)^2*g*i^2) + (b*B*n*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^2*g*i^2) + (b*B*n*\text{PolyLog}[2, -(d*(a + b*x))/(b*c - a*d)])/((b*c - a*d)^2*g*i^2) + (b*B*n*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^2*g*i^2)$

Rule 12

$\text{Int}[(a_*)(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \&\& \text{!MatchQ}[u, (b_*)(v_)] /; \text{FreeQ}[b, x]$

Rule 44

```
Int[((a_) + (b_)*(x_))^(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_))/(x_), x_Symbol] := Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)])*(b_)^(p_)*((f_) + (g_
)*(x_))^(q_), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_)*((d_) + (e_)*(x_))^(n_)])/(x_), x_Symbol] := -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))])*(b_))/((f_) + (g_)*(x_)), x_
Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)])*(b_))/((f_) + (g_)*(x_
)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x
), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)])*(b_)^(p_)*(RFx_), x_Sy
mbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(147c + 147dx)^2(ag + bgx)} dx &= \int \left(\frac{b^2 \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) \right)}{21609(bc - ad)^2g(a + bx)} - \frac{d \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) \right)}{21609(bc - ad)g(c + dx)^2} - \frac{bd \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) \right)}{21609(bc - ad)^2g} \right) dx \\
&= \frac{b^2 \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{a+bx} dx}{21609(bc - ad)^2g} - \frac{(bd) \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{c+dx} dx}{21609(bc - ad)^2g} - \frac{d \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(c+dx)^2} dx}{21609(bc - ad)g} \\
&= \frac{A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{21609(bc - ad)g(c + dx)} + \frac{b \log(a + bx) \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) \right)}{21609(bc - ad)^2g} - \frac{b \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) \right)}{21609(bc - ad)^2g} \\
&= \frac{A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{21609(bc - ad)g(c + dx)} + \frac{b \log(a + bx) \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) \right)}{21609(bc - ad)^2g} - \frac{b \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) \right)}{21609(bc - ad)^2g} \\
&= \frac{A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{21609(bc - ad)g(c + dx)} + \frac{b \log(a + bx) \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) \right)}{21609(bc - ad)^2g} - \frac{b \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) \right)}{21609(bc - ad)^2g} \\
&= -\frac{Bn}{21609(bc - ad)g(c + dx)} - \frac{bBn \log(a + bx)}{21609(bc - ad)^2g} + \frac{A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{21609(bc - ad)g(c + dx)} + \\
&= -\frac{Bn}{21609(bc - ad)g(c + dx)} - \frac{bBn \log(a + bx)}{21609(bc - ad)^2g} - \frac{bBn \log^2(a + bx)}{43218(bc - ad)^2g} + \frac{A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{21609(bc - ad)g(c + dx)} \\
&= -\frac{Bn}{21609(bc - ad)g(c + dx)} - \frac{bBn \log(a + bx)}{21609(bc - ad)^2g} - \frac{bBn \log^2(a + bx)}{43218(bc - ad)^2g} + \frac{A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{21609(bc - ad)g(c + dx)}
\end{aligned}$$

Mathematica [C] time = 0.35, size = 304, normalized size = 1.83

$$\frac{2(bc - ad) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right) + 2b(c + dx) \log(a + bx) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right) - 2b(c + dx) \log(c + dx) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right)}{(147c + 147dx)^2(ag + bgx)}$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n]]/((a*g + b*g*x)*(c*i + d*i*x)^2), x]

[Out] $(2*(b*c - a*d)*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]) + 2*b*(c + d*x)*\text{Log}[a + b*x]*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]) - 2*b*(c + d*x)*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])*\text{Log}[c + d*x] - 2*B*n*(b*c - a*d + b*(c + d*x))*\text{Log}[a + b*x] - b*(c + d*x)*\text{Log}[c + d*x]) - b*B*n*(c + d*x)*(\text{Log}[a + b*x]*(\text{Log}[a + b*x] - 2*\text{Log}[(b*(c + d*x))/(b*c - a*d)]) - 2*\text{PolyLog}[2, (d*(a + b*x))/(-b*c + a*d)]) + b*B*n*(c + d*x)*((2*\text{Log}[(d*(a + b*x))/(-b*c + a*d)] - \text{Log}[c + d*x])*\text{Log}[c + d*x] + 2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])))/(2*(b*c - a*d)^2*g*i^2*(c + d*x))$

fricas [A] time = 0.93, size = 196, normalized size = 1.18

$$\frac{2\,A\,b\,c - 2\,A\,a\,d + (B\,b\,d\,n\,x + B\,b\,c\,n)\log\left(\frac{b\,x+a}{d\,x+c}\right)^2 - 2\,(B\,b\,c - B\,a\,d)\,n + 2\left(B\,b\,c - B\,a\,d + (B\,b\,d\,x + B\,b\,c)\log\left(\frac{b\,x+a}{d\,x+c}\right)\right)\log\left(\frac{b\,x+a}{d\,x+c}\right)}{2\left((b^2\,c^2\,d - 2\,a\,b\,c\,d^2 + a^2\,d^3)g\,i^2\,x + (b^2\,c^3 - 2\,a\,b\,c^2\,d + a^2\,c\,d^2)g\,i^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)/(d*i*x+c*i)^2,x, algorithm="fricas")`

[Out] $1/2*(2*A*b*c - 2*A*a*d + (B*b*d*n*x + B*b*c*n)*\log((b*x + a)/(d*x + c))^2 - 2*(B*b*c - B*a*d)*n + 2*(B*b*c - B*a*d + (B*b*d*x + B*b*c)*\log((b*x + a)/(d*x + c)))*\log(e) - 2*(B*a*d*n - A*b*c + (B*b*d*n - A*b*d)*x)*\log((b*x + a)/(d*x + c)))/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*g*i^2*x + (b^2*c^3 - 2*a*b*c^2*d + a^2*c*d^2)*g*i^2)$

giac [A] time = 4.50, size = 180, normalized size = 1.08

$$-\frac{1}{2}\left(\frac{B\,b\,n\log\left(\frac{b\,x+a}{d\,x+c}\right)^2}{b\,c\,g - a\,d\,g} - \frac{2\,(b\,x + a)\,B\,d\,n\log\left(\frac{b\,x+a}{d\,x+c}\right)}{(b\,c\,g - a\,d\,g)(d\,x + c)} + \frac{2\,(A\,b + B\,b)\log\left(\frac{b\,x+a}{d\,x+c}\right)}{b\,c\,g - a\,d\,g} + \frac{2\,(B\,d\,n - A\,d - B\,d)(b\,x + a)}{(b\,c\,g - a\,d\,g)(d\,x + c)}\right)\left(\frac{1}{(b\,c - a\,d)^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)/(d*i*x+c*i)^2,x, algorithm="giac")`

[Out] $-1/2*(B*b*n*\log((b*x + a)/(d*x + c))^2/(b*c*g - a*d*g) - 2*(b*x + a)*B*d*n*\log((b*x + a)/(d*x + c))/((b*c*g - a*d*g)*(d*x + c)) + 2*(A*b + B*b)*\log((b*x + a)/(d*x + c))/(b*c*g - a*d*g) + 2*(B*d*n - A*d - B*d)*(b*x + a)/((b*c*g - a*d*g)*(d*x + c)))*(b*c/(b*c - a*d)^2 - a*d/(b*c - a*d)^2)$

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{B \ln\left(e\left(\frac{b\,x+a}{d\,x+c}\right)^n\right) + A}{(b\,g\,x + a\,g)(d\,i\,x + c\,i)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)/(d*i*x+c*i)^2,x)`

[Out] `int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)/(d*i*x+c*i)^2,x)`

maxima [B] time = 1.43, size = 424, normalized size = 2.55

$$B \left(\frac{1}{(bcd - ad^2)gi^2x + (bc^2 - acd)gi^2} + \frac{b \log(bx + a)}{(b^2c^2 - 2abcd + a^2d^2)gi^2} - \frac{b \log(dx + c)}{(b^2c^2 - 2abcd + a^2d^2)gi^2} \right) \log \left(e \left(\frac{bx}{dx + c} + \frac{a}{d} \right) \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)/(d*i*x+c*i)^2,x, algorithm="maxima")`

[Out] `B*(1/((b*c*d - a*d^2)*g*i^2*x + (b*c^2 - a*c*d)*g*i^2) + b*log(b*x + a)/((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*g*i^2) - b*log(d*x + c)/((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*g*i^2))*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) - 1/2*((b*d*x + b*c)*log(b*x + a)^2 + (b*d*x + b*c)*log(d*x + c)^2 + 2*b*c - 2*a*d + 2*(b*d*x + b*c)*log(b*x + a) - 2*(b*d*x + b*c + (b*d*x + b*c)*log(b*x + a))*log(d*x + c))*B*n/(b^2*c^3*g*i^2 - 2*a*b*c^2*d*g*i^2 + a^2*c*d^2*g*i^2 + (b^2*c^2*d*g*i^2 - 2*a*b*c*d^2*g*i^2 + a^2*d^3*g*i^2)*x) + A*(1/((b*c*d - a*d^2)*g*i^2*x + (b*c^2 - a*c*d)*g*i^2) + b*log(b*x + a)/((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*g*i^2) - b*log(d*x + c)/((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*g*i^2))`

mupad [B] time = 4.82, size = 241, normalized size = 1.45

$$\frac{Bn}{gi^2(ad-bc)(c+dx)} - \frac{A}{gi^2(ad-bc)(c+dx)} - \frac{B \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{gi^2(ad-bc)(c+dx)} + \frac{B b \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)^2}{2gi^2n(ad-bc)^2} - \frac{A b \operatorname{atan} \left(\frac{ad+bx}{a} \right)}{gi^2(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((A + B*log(e*((a + b*x)/(c + d*x))^n))/((a*g + b*g*x)*(c*i + d*i*x)^2), x)`

[Out] `(B*n)/(g*i^2*(a*d - b*c)*(c + d*x)) - A/(g*i^2*(a*d - b*c)*(c + d*x)) - (B*log(e*((a + b*x)/(c + d*x))^n))/(g*i^2*(a*d - b*c)*(c + d*x)) - (A*b*atan((a*d*1i + b*c*1i + b*d*x*2i)/(a*d - b*c))*2i)/(g*i^2*(a*d - b*c)^2) + (B*b*n*atan((a*d*1i + b*c*1i + b*d*x*2i)/(a*d - b*c))*2i)/(g*i^2*(a*d - b*c)^2) + (B*b*log(e*((a + b*x)/(c + d*x))^n)^2)/(2*g*i^2*n*(a*d - b*c)^2)`

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))**n)))/(b*g*x+a*g)/(d*i*x+c*i)**2,x)
```

```
[Out] Timed out
```

$$3.148 \quad \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(ag+bgx)^2(ci+dix)^2} dx$$

Optimal. Leaf size=273

$$\frac{b^2(c+dx)\left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{g^2i^2(a+bx)(bc-ad)^3} + \frac{d^2(a+bx)\left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{g^2i^2(c+dx)(bc-ad)^3} - \frac{2bd \log\left(\frac{a+bx}{c+dx}\right)\left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{g^2i^2(bc-ad)^3}$$

[Out] $-B*d^2*n*(b*x+a)/(-a*d+b*c)^3/g^2/i^2/(d*x+c)-b^2*B*n*(d*x+c)/(-a*d+b*c)^3/g^2/i^2/(b*x+a)+d^2*(b*x+a)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^3/g^2/i^2/(d*x+c)-b^2*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^3/g^2/i^2/(b*x+a)-2*b*d*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))*\ln((b*x+a)/(d*x+c))/(-a*d+b*c)^3/g^2/i^2+b*B*d*n*\ln((b*x+a)/(d*x+c))^2/(-a*d+b*c)^3/g^2/i^2$

Rubi [C] time = 0.83, antiderivative size = 482, normalized size of antiderivative = 1.77, number of steps used = 26, number of rules used = 11, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.256$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{2bBdn \text{PolyLog}\left(2, -\frac{d(a+bx)}{bc-ad}\right)}{g^2i^2(bc-ad)^3} - \frac{2bBdn \text{PolyLog}\left(2, \frac{b(c+dx)}{bc-ad}\right)}{g^2i^2(bc-ad)^3} - \frac{2bd \log(a+bx)\left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{g^2i^2(bc-ad)^3} - \frac{b\left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{g^2i^2(a+bx)}$$

Antiderivative was successfully verified.

[In] $\text{Int}[(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)^2*(c*i + d*i*x)^2), x]$

[Out] $-((b*B*n)/((b*c - a*d)^2*g^2*i^2*(a + b*x))) + (B*d*n)/((b*c - a*d)^2*g^2*i^2*(c + d*x)) + (b*B*d*n*\text{Log}[a + b*x]^2)/((b*c - a*d)^3*g^2*i^2) - (b*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])/((b*c - a*d)^2*g^2*i^2*(a + b*x)) - (d*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])/((b*c - a*d)^2*g^2*i^2*(c + d*x)) - (2*b*d*\text{Log}[a + b*x]*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])/((b*c - a*d)^3*g^2*i^2) - (2*b*B*d*n*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c + d*x])/((b*c - a*d)^3*g^2*i^2) + (2*b*d*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])* \text{Log}[c + d*x])/((b*c - a*d)^3*g^2*i^2) + (b*B*d*n*\text{Log}[c + d*x]^2)/((b*c - a*d)^3*g^2*i^2) - (2*b*B*d*n*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)]/((b*c - a*d)^3*g^2*i^2) - (2*b*B*d*n*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))]/((b*c - a*d)^3*g^2*i^2) - (2*b*B*d*n*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]/((b*c - a*d)^3*g^2*i^2)$

Rule 12

$\text{Int}[(a_*)(u_), x_Symbol] := \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \ \&\& \ !\text{MatchQ}[u, (b_*)(v_)] /; \text{FreeQ}[b, x]$

Rule 44

```
Int[((a_) + (b_)*(x_)^(m_))*((c_) + (d_)*(x_)^(n_)), x_Symbol] := Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)/(x_), x_Symbol] := Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_)^(n_))])*(b_)^(p_)*((f_) + (g_
)*(x_)^(q_)), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_)*((d_) + (e_)*(x_)^(n_))]/(x_), x_Symbol] := -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))])*(b_)/((f_) + (g_)*(x_)), x_
Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_)^(n_))])*(b_)/((f_) + (g_)*(x_
)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e^n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_)^(n_))])*(b_)^(p_)*(RFx_), x_Sy
mbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol]
:> Simp[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol]
:> With[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{(148c + 148dx)^2 (ag + bgx)^2} dx &= \int \left(\frac{b^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{21904(bc - ad)^2 g^2 (a + bx)^2} - \frac{b^2 d \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{10952(bc - ad)^3 g^2 (a + bx)} + \frac{d^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{21904(bc - ad)^2 g^2 (c + dx)^2} \right) dx \\
&= -\frac{(b^2 d) \int \frac{A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{a+bx} dx}{10952(bc - ad)^3 g^2} + \frac{(bd^2) \int \frac{A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{c+dx} dx}{10952(bc - ad)^3 g^2} + \frac{b^2 \int \frac{A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{(a+bx)^2} dx}{21904(bc - ad)^2 g^2} \\
&= -\frac{b \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{21904(bc - ad)^2 g^2 (a + bx)} - \frac{d \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{21904(bc - ad)^2 g^2 (c + dx)} - \frac{bd \log(a + bx)}{10952(bc - ad)^2 g^2} \\
&= -\frac{b \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{21904(bc - ad)^2 g^2 (a + bx)} - \frac{d \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{21904(bc - ad)^2 g^2 (c + dx)} - \frac{bd \log(a + bx)}{10952(bc - ad)^2 g^2} \\
&= -\frac{b \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{21904(bc - ad)^2 g^2 (a + bx)} - \frac{d \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{21904(bc - ad)^2 g^2 (c + dx)} - \frac{bd \log(a + bx)}{10952(bc - ad)^2 g^2} \\
&= -\frac{bBn}{21904(bc - ad)^2 g^2 (a + bx)} + \frac{Bdn}{21904(bc - ad)^2 g^2 (c + dx)} - \frac{b \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{21904(bc - ad)^2 g^2} \\
&= -\frac{bBn}{21904(bc - ad)^2 g^2 (a + bx)} + \frac{Bdn}{21904(bc - ad)^2 g^2 (c + dx)} + \frac{bBdn \log^2(a + bx)}{21904(bc - ad)^2 g^2} \\
&= -\frac{bBn}{21904(bc - ad)^2 g^2 (a + bx)} + \frac{Bdn}{21904(bc - ad)^2 g^2 (c + dx)} + \frac{bBdn \log^2(a + bx)}{21904(bc - ad)^2 g^2}
\end{aligned}$$

Mathematica [C] time = 0.45, size = 342, normalized size = 1.25

$$-2bd \log(a + bx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right) - \frac{b(bc-ad) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{a+bx} + 2bd \log(c + dx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)^2*(c*i + d*i*x)^2), x]

```
[Out] (-((b^2*B*c*n)/(a + b*x)) + (a*b*B*d*n)/(a + b*x) + (b*B*c*d*n)/(c + d*x) -
(a*B*d^2*n)/(c + d*x) - (b*(b*c - a*d)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a + b*x) +
(d*(-(b*c) + a*d)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c + d*x) - 2*b*d*Log[a + b*x]*
(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 2*b*d*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*
Log[c + d*x] + b*B*d*n*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) -
2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) - b*B*d*n*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] -
Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/((b*c - a*d)^3*g^2*i^2)
```

fricas [A] time = 0.66, size = 450, normalized size = 1.65

$$\frac{Ab^2c^2 - Aa^2d^2 + (Bb^2d^2nx^2 + Babcdn + (Bb^2cd + Babd^2)nx) \log\left(\frac{bx+a}{dx+c}\right)^2 + (Bb^2c^2 - 2Babcd + Ba^2d^2)n + 2(A + B \log\left(\frac{bx+a}{dx+c}\right)) \log\left(\frac{bx+a}{dx+c}\right)}{(b^4c^3d - 3abcd)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^2/(d*i*x+c*i)^2,x, algorithm="fricas")
```

```
[Out] -(A*b^2*c^2 - A*a^2*d^2 + (B*b^2*d^2*n*x^2 + B*a*b*c*d*n + (B*b^2*c*d + B*a*b*d^2)*n*x)*log((b*x + a)/(d*x + c))^2 + (B*b^2*c^2 - 2*B*a*b*c*d + B*a^2*d^2)*n + 2*(A*b^2*c*d - A*a*b*d^2)*x + (B*b^2*c^2 - B*a^2*d^2 + 2*(B*b^2*c*d - B*a*b*d^2)*x + 2*(B*b^2*d^2*x^2 + B*a*b*c*d + (B*b^2*c*d + B*a*b*d^2)*x)*log((b*x + a)/(d*x + c))*log(e) + (2*A*b^2*d^2*x^2 + 2*A*a*b*c*d + (B*b^2*c^2 - B*a^2*d^2)*n + 2*(A*b^2*c*d + A*a*b*d^2 + (B*b^2*c*d - B*a*b*d^2)*x)*log((b*x + a)/(d*x + c)))/((b^4*c^3*d - 3*a*b^3*c^2*d^2 + 3*a^2*b^2*c*d^3 - a^3*b*d^4)*g^2*i^2*x^2 + (b^4*c^4 - 2*a*b^3*c^3*d + 2*a^3*b*c*d^3 - a^4*d^4)*g^2*i^2*x + (a*b^3*c^4 - 3*a^2*b^2*c^3*d + 3*a^3*b*c^2*d^2 - a^4*c*d^3)*g^2*i^2)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^2/(d*i*x+c*i)^2,x, algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{B \ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right) + A}{(bgx + ag)^2 (dix + ci)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^2/(d*i*x+c*i)^2,x)

[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^2/(d*i*x+c*i)^2,x)

maxima [B] time = 1.48, size = 862, normalized size = 3.16

$$-B \left(\frac{2bdx + bc + ad}{(b^3c^2d - 2ab^2cd^2 + a^2bd^3)g^2i^2x^2 + (b^3c^3 - ab^2c^2d - a^2bcd^2 + a^3d^3)g^2i^2x + (ab^2c^3 - 2a^2bc^2d + a^3cd^2)g^2i^2} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^2/(d*i*x+c*i)^2,x, algorithm="maxima")

[Out]
$$-B \left(\frac{(2*b*d*x + b*c + a*d)/((b^3*c^2*d - 2*a*b^2*c*d^2 + a^2*b*d^3)*g^2*i^2*x^2 + (b^3*c^3 - a*b^2*c^2*d - a^2*b*c*d^2 + a^3*d^3)*g^2*i^2*x + (a*b^2*c^3 - 2*a^2*b*c^2*d + a^3*c*d^2)*g^2*i^2)}{(b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^2*i^2} + 2*b*d*log(b*x + a)/((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^2*i^2) - 2*b*d*log(d*x + c)/((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^2*i^2) \right) * log(e*(b*x/(d*x + c) + a/(d*x + c))^n) - (b^2*c^2 - 2*a*b*c*d + a^2*d^2 - (b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a*b*d^2)*x)*log(b*x + a)^2 + 2*(b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a*b*d^2)*x)*log(b*x + a)*log(d*x + c) - (b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a*b*d^2)*x)*log(d*x + c)^2)*B*n/(a*b^3*c^4*g^2*i^2 - 3*a^2*b^2*c^3*d*g^2*i^2 + 3*a^3*b*c^2*d^2*g^2*i^2 - a^4*c*d^3*g^2*i^2 + (b^4*c^3*d*g^2*i^2 - 3*a*b^3*c^2*d^2*g^2*i^2 + 3*a^2*b^2*c*d^3*g^2*i^2 - a^3*b*d^4*g^2*i^2)*x^2 + (b^4*c^4*g^2*i^2 - 2*a*b^3*c^3*d*g^2*i^2 + 2*a^3*b*c*d^3*g^2*i^2 - a^4*d^4*g^2*i^2)*x) - A*((2*b*d*x + b*c + a*d)/((b^3*c^2*d - 2*a*b^2*c*d^2 + a^2*b*d^3)*g^2*i^2*x^2 + (b^3*c^3 - a*b^2*c^2*d - a^2*b*c*d^2 + a^3*d^3)*g^2*i^2*x + (a*b^2*c^3 - 2*a^2*b*c^2*d + a^3*c*d^2)*g^2*i^2) + 2*b*d*log(b*x + a)/((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^2*i^2) - 2*b*d*log(d*x + c)/((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^2*i^2))$$

mupad [B] time = 5.46, size = 432, normalized size = 1.58

$$Bbd \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)^2 - \frac{A b c}{g^2 i^2 n (a d - b c)^3} - \frac{A a d}{g^2 i^2 (a d - b c)^2 (a + b x) (c + d x)} + \frac{B a}{g^2 i^2 (a d - b c)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))/((a*g + b*g*x)^2*(c*i + d*i*x)^2),x)

```
[Out] (B*b*d*log(e*((a + b*x)/(c + d*x))^n)^2)/(g^2*i^2*n*(a*d - b*c)^3) - (A*a*d
)/(g^2*i^2*(a*d - b*c)^2*(a + b*x)*(c + d*x)) - (A*b*c)/(g^2*i^2*(a*d - b*c
)^2*(a + b*x)*(c + d*x)) - (A*b*d*atan((a*d*1i + b*c*1i + b*d*x*2i)/(a*d -
b*c))*4i)/(g^2*i^2*(a*d - b*c)^3) + (B*a*d*n)/(g^2*i^2*(a*d - b*c)^2*(a + b
*x)*(c + d*x)) - (B*b*c*n)/(g^2*i^2*(a*d - b*c)^2*(a + b*x)*(c + d*x)) - (2
*A*b*d*x)/(g^2*i^2*(a*d - b*c)^2*(a + b*x)*(c + d*x)) - (B*a*d*log(e*((a +
b*x)/(c + d*x))^n))/(g^2*i^2*(a*d - b*c)^2*(a + b*x)*(c + d*x)) - (B*b*c*lo
g(e*((a + b*x)/(c + d*x))^n))/(g^2*i^2*(a*d - b*c)^2*(a + b*x)*(c + d*x)) -
(2*B*b*d*x*log(e*((a + b*x)/(c + d*x))^n))/(g^2*i^2*(a*d - b*c)^2*(a + b*x
)*(c + d*x))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)**2/(d*i*x+c*i)**2,x)
```

[Out] Timed out

$$3.149 \quad \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(ag+bgx)^3(ci+dix)^2} dx$$

Optimal. Leaf size=380

$$\frac{b^3(c+dx)^2 \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right)}{2g^3i^2(a+bx)^2(bc-ad)^4} + \frac{3b^2d(c+dx) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right)}{g^3i^2(a+bx)(bc-ad)^4} - \frac{d^3(a+bx) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right)}{g^3i^2(c+dx)(bc-ad)^4}$$

[Out] $B*d^3*n*(b*x+a)/(-a*d+b*c)^4/g^3/i^2/(d*x+c)+3*b^2*B*d*n*(d*x+c)/(-a*d+b*c)^4/g^3/i^2/(b*x+a)-1/4*b^3*B*n*(d*x+c)^2/(-a*d+b*c)^4/g^3/i^2/(b*x+a)^2-d^3*(b*x+a)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^4/g^3/i^2/(d*x+c)+3*b^2*d*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^4/g^3/i^2/(b*x+a)-1/2*b^3*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^4/g^3/i^2/(b*x+a)^2+3*b*d^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))*\ln((b*x+a)/(d*x+c))/(-a*d+b*c)^4/g^3/i^2-3/2*b*B*d^2*n*\ln((b*x+a)/(d*x+c))^2/(-a*d+b*c)^4/g^3/i^2$

Rubi [C] time = 1.09, antiderivative size = 656, normalized size of antiderivative = 1.73, number of steps used = 30, number of rules used = 11, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.256$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{3bBd^2n \text{PolyLog}\left(2, -\frac{d(a+bx)}{bc-ad}\right)}{g^3i^2(bc-ad)^4} + \frac{3bBd^2n \text{PolyLog}\left(2, \frac{b(c+dx)}{bc-ad}\right)}{g^3i^2(bc-ad)^4} + \frac{3bd^2 \log(a+bx) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right)}{g^3i^2(bc-ad)^4} + \frac{d^2 \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right)}{g^3i^2}$$

Antiderivative was successfully verified.

[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)^3*(c*i + d*i*x)^2), x]

[Out] $-(b*B*n)/(4*(b*c - a*d)^2*g^3*i^2*(a + b*x)^2) + (5*b*B*d*n)/(2*(b*c - a*d)^3*g^3*i^2*(a + b*x)) - (B*d^2*n)/((b*c - a*d)^3*g^3*i^2*(c + d*x)) + (3*b*B*d^2*n*Log[a + b*x])/(2*(b*c - a*d)^4*g^3*i^2) - (3*b*B*d^2*n*Log[a + b*x]^2)/(2*(b*c - a*d)^4*g^3*i^2) - (b*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(2*(b*c - a*d)^2*g^3*i^2*(a + b*x)^2) + (2*b*d*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)^3*g^3*i^2*(a + b*x)) + (d^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)^3*g^3*i^2*(c + d*x)) + (3*b*d^2*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)^4*g^3*i^2) - (3*b*B*d^2*n*Log[c + d*x])/(2*(b*c - a*d)^4*g^3*i^2) + (3*b*B*d^2*n*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/((b*c - a*d)^4*g^3*i^2) - (3*b*d^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x])/((b*c - a*d)^4*g^3*i^2) - (3*b*B*d^2*n*Log[c + d*x]^2)/(2*(b*c - a*d)^4*g^3*i^2) + (3*b*B*d^2*n*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^4*g^3*i^2) + (3*b*B*d^2*n$

PolyLog[2, -((d(a + b*x))/(b*c - a*d))]/((b*c - a*d)^4*g^3*i^2) + (3*b*B
*d^2*n*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]/((b*c - a*d)^4*g^3*i^2)

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 44

Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &&
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])

Rule 2301

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]/(x_), x_Symbol] := -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
, x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]

Rule 2394

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n])/g, x] - Dist[(b*e^n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol]
:> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol]
:> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e,
Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)),
Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /;
FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol]
:> With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /;
FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(149c + 149dx)^2(ag + bgx)^3} dx &= \int \left(\frac{b^2\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{22201(bc - ad)^2g^3(a + bx)^3} - \frac{2b^2d\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{22201(bc - ad)^3g^3(a + bx)^2} + \frac{3b^2d^2\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{22201(bc - ad)^4g^3(a + bx)} \right) dx \\
&= \frac{(3b^2d^2) \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{a+bx} dx}{22201(bc - ad)^4g^3} - \frac{(3bd^3) \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{c+dx} dx}{22201(bc - ad)^4g^3} - \frac{(2b^2d) \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{a+bx} dx}{22201(bc - ad)^4g^3} \\
&= -\frac{b\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{44402(bc - ad)^2g^3(a + bx)^2} + \frac{2bd\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{22201(bc - ad)^3g^3(a + bx)} + \frac{d^2\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{22201(bc - ad)^4g^3(a + bx)} \\
&= -\frac{b\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{44402(bc - ad)^2g^3(a + bx)^2} + \frac{2bd\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{22201(bc - ad)^3g^3(a + bx)} + \frac{d^2\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{22201(bc - ad)^4g^3(a + bx)} \\
&= -\frac{b\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{44402(bc - ad)^2g^3(a + bx)^2} + \frac{2bd\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{22201(bc - ad)^3g^3(a + bx)} + \frac{d^2\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{22201(bc - ad)^4g^3(a + bx)} \\
&= -\frac{bBn}{88804(bc - ad)^2g^3(a + bx)^2} + \frac{5bBdn}{44402(bc - ad)^3g^3(a + bx)} - \frac{Bd^2}{22201(bc - ad)^4g^3(a + bx)} \\
&= -\frac{bBn}{88804(bc - ad)^2g^3(a + bx)^2} + \frac{5bBdn}{44402(bc - ad)^3g^3(a + bx)} - \frac{Bd^2}{22201(bc - ad)^4g^3(a + bx)} \\
&= -\frac{bBn}{88804(bc - ad)^2g^3(a + bx)^2} + \frac{5bBdn}{44402(bc - ad)^3g^3(a + bx)} - \frac{Bd^2}{22201(bc - ad)^4g^3(a + bx)}
\end{aligned}$$

Mathematica [C] time = 0.76, size = 478, normalized size = 1.26

$$\frac{12bd^2 \log(a + bx) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right) + \frac{4d^2(bc-ad) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right)}{c+dx} - 12bd^2 \log(c + dx) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right)}{(a + bx)^3(c + dx)^2}$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)^3*(c*i + d*i*x)^2), x]

```
[Out] (-((b*B*(b*c - a*d)^2*n)/(a + b*x)^2) + (8*b^2*B*c*d*n)/(a + b*x) - (8*a*b*B*d^2*n)/(a + b*x) + (2*b*B*d*(b*c - a*d)*n)/(a + b*x) - (4*b*B*c*d^2*n)/(c + d*x) + (4*a*B*d^3*n)/(c + d*x) + 6*b*B*d^2*n*Log[a + b*x] - (2*b*(b*c - a*d)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a + b*x)^2 + (8*b*d*(b*c - a*d)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a + b*x) + (4*d^2*(b*c - a*d)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c + d*x) + 12*b*d^2*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 6*b*B*d^2*n*Log[c + d*x] - 12*b*d^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] - 6*b*B*d^2*n*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d])) - 2*PolyLog[2, (d*(a + b*x))/(-b*c) + a*d]) + 6*b*B*d^2*n*((2*Log[(d*(a + b*x))/(-b*c) + a*d]) - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(4*(b*c - a*d)^4*g^3*i^2)
```

fricas [B] time = 0.66, size = 946, normalized size = 2.49

$$\frac{2Ab^3c^3 - 12Aab^2c^2d + 6Aa^2bcd^2 + 4Aa^3d^3 - 6(2Ab^3cd^2 - 2Aab^2d^3 + (Bb^3cd^2 - Bab^2d^3)n)x^2 - 6(Bb^3d^3n)}{\dots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^3/(d*i*x+c*i)^2,x, algorithm="fricas")
```

```
[Out] -1/4*(2*A*b^3*c^3 - 12*A*a*b^2*c^2*d + 6*A*a^2*b*c*d^2 + 4*A*a^3*d^3 - 6*(2*A*b^3*c*d^2 - 2*A*a*b^2*d^3 + (B*b^3*c*d^2 - B*a*b^2*d^3)*n)*x^2 - 6*(B*b^3*d^3*n*x^3 + B*a^2*b*c*d^2*n + (B*b^3*c*d^2 + 2*B*a*b^2*d^3)*n*x^2 + (2*B*a*b^2*c*d^2 + B*a^2*b*d^3)*n*x)*log((b*x + a)/(d*x + c))^2 + (B*b^3*c^3 - 12*B*a*b^2*c^2*d + 15*B*a^2*b*c*d^2 - 4*B*a^3*d^3)*n - 3*(2*A*b^3*c^2*d + 4*A*a*b^2*c*d^2 - 6*A*a^2*b*d^3 + (3*B*b^3*c^2*d - 2*B*a*b^2*c*d^2 - B*a^2*b*d^3)*n)*x + 2*(B*b^3*c^3 - 6*B*a*b^2*c^2*d + 3*B*a^2*b*c*d^2 + 2*B*a^3*d^3 - 6*(B*b^3*c*d^2 - B*a*b^2*d^3)*x^2 - 3*(B*b^3*c^2*d + 2*B*a*b^2*c*d^2 - 3*B*a^2*b*d^3)*x - 6*(B*b^3*d^3*x^3 + B*a^2*b*c*d^2 + (B*b^3*c*d^2 + 2*B*a*b^2*d^3)*x^2 + (2*B*a*b^2*c*d^2 + B*a^2*b*d^3)*x)*log((b*x + a)/(d*x + c))*log(e) - 2*(6*A*a^2*b*c*d^2 + 3*(B*b^3*d^3*n + 2*A*b^3*d^3)*x^3 + 3*(3*B*b^3*c*d^2*n + 2*A*b^3*c*d^2 + 4*A*a*b^2*d^3)*x^2 - (B*b^3*c^3 - 6*B*a*b^2*c^2*d + 2*B*a^3*d^3)*n + 3*(4*A*a*b^2*c*d^2 + 2*A*a^2*b*d^3 + (B*b^3*c^2*d + 4*B*a*b^2*c*d^2 - 2*B*a^2*b*d^3)*n)*x)*log((b*x + a)/(d*x + c)))/((b^6*c^4*d - 4*a*b^5*c^3*d^2 + 6*a^2*b^4*c^2*d^3 - 4*a^3*b^3*c*d^4 + a^4*b^2*d^5)*g^3*i^2*x^3 + (b^6*c^5 - 2*a*b^5*c^4*d - 2*a^2*b^4*c^3*d^2 + 8*a^3*b^3*c^2*d^3 - 7*a^4*b^2*c*d^4 + 2*a^5*b*d^5)*g^3*i^2*x^2 + (2*a*b^5*c^5 - 7*a^2*b^4*c^4*d + 8*a^3*b^3*c^3*d^2 - 2*a^4*b^2*c^2*d^3 - 2*a^5*b*c*d^4 + a^6*d^5)*g^3*i^2*x + (a^2*b^4*c^5 - 4*a^3*b^3*c^4*d + 6*a^4*b^2*c^3*d^2 - 4*a^5*b*c^2*d^3 + a^6*c*d^4)*g^3*i^2)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^3/(d*i*x+c*i)^2,x, algorithm="giac")

[Out] Timed out

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A}{(bgx + ag)^3 (dix + ci)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^3/(d*i*x+c*i)^2,x)

[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^3/(d*i*x+c*i)^2,x)

maxima [B] time = 2.40, size = 1724, normalized size = 4.54

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^3/(d*i*x+c*i)^2,x, algorithm="maxima")

[Out] 1/2*B*((6*b^2*d^2*x^2 - b^2*c^2 + 5*a*b*c*d + 2*a^2*d^2 + 3*(b^2*c*d + 3*a*b*d^2)*x)/((b^5*c^3*d - 3*a*b^4*c^2*d^2 + 3*a^2*b^3*c*d^3 - a^3*b^2*d^4)*g^3*i^2*x^3 + (b^5*c^4 - a*b^4*c^3*d - 3*a^2*b^3*c^2*d^2 + 5*a^3*b^2*c*d^3 - 2*a^4*b*d^4)*g^3*i^2*x^2 + (2*a*b^4*c^4 - 5*a^2*b^3*c^3*d + 3*a^3*b^2*c^2*d^2 + a^4*b*c*d^3 - a^5*d^4)*g^3*i^2*x + (a^2*b^3*c^4 - 3*a^3*b^2*c^3*d + 3*a^4*b*c^2*d^2 - a^5*c*d^3)*g^3*i^2) + 6*b*d^2*log(b*x + a)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^3*i^2) - 6*b*d^2*log(d*x + c)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^3*i^2))*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) - 1/4*(b^3*c^3 - 12*a*b^2*c^2*d + 15*a^2*b*c*d^2 - 4*a^3*d^3 - 6*(b^3*c*d^2 - a*b^2*d^3)*x^2 + 6*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x)*log(b*x + a)^2 + 6*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x)*log(d*x + c)^2 - 3*(3*b^3*c^2*d - 2*a*b^2*c*d^2 - a^2*b*d^3)*x - 6*(b^3*d^3*x^3 + a^2*b*c

```

*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x)*log(b
*x + a) + 6*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2
*a*b^2*c*d^2 + a^2*b*d^3)*x - 2*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2
*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x)*log(b*x + a))*log(d*x + c)
)*B^n/(a^2*b^4*c^5*g^3*i^2 - 4*a^3*b^3*c^4*d*g^3*i^2 + 6*a^4*b^2*c^3*d^2*g^
3*i^2 - 4*a^5*b*c^2*d^3*g^3*i^2 + a^6*c*d^4*g^3*i^2 + (b^6*c^4*d*g^3*i^2 -
4*a*b^5*c^3*d^2*g^3*i^2 + 6*a^2*b^4*c^2*d^3*g^3*i^2 - 4*a^3*b^3*c*d^4*g^3*i
^2 + a^4*b^2*d^5*g^3*i^2)*x^3 + (b^6*c^5*g^3*i^2 - 2*a*b^5*c^4*d*g^3*i^2 -
2*a^2*b^4*c^3*d^2*g^3*i^2 + 8*a^3*b^3*c^2*d^3*g^3*i^2 - 7*a^4*b^2*c*d^4*g^3
*i^2 + 2*a^5*b*d^5*g^3*i^2)*x^2 + (2*a*b^5*c^5*g^3*i^2 - 7*a^2*b^4*c^4*d*g^
3*i^2 + 8*a^3*b^3*c^3*d^2*g^3*i^2 - 2*a^4*b^2*c^2*d^3*g^3*i^2 - 2*a^5*b*c*d
^4*g^3*i^2 + a^6*d^5*g^3*i^2)*x) + 1/2*A*((6*b^2*d^2*x^2 - b^2*c^2 + 5*a*b*c
*d + 2*a^2*d^2 + 3*(b^2*c*d + 3*a*b*d^2)*x)/((b^5*c^3*d - 3*a*b^4*c^2*d^2
+ 3*a^2*b^3*c*d^3 - a^3*b^2*d^4)*g^3*i^2*x^3 + (b^5*c^4 - a*b^4*c^3*d - 3*a
^2*b^3*c^2*d^2 + 5*a^3*b^2*c*d^3 - 2*a^4*b*d^4)*g^3*i^2*x^2 + (2*a*b^4*c^4
- 5*a^2*b^3*c^3*d + 3*a^3*b^2*c^2*d^2 + a^4*b*c*d^3 - a^5*d^4)*g^3*i^2*x +
(a^2*b^3*c^4 - 3*a^3*b^2*c^3*d + 3*a^4*b*c^2*d^2 - a^5*c*d^3)*g^3*i^2) + 6*
b*d^2*log(b*x + a)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*
c*d^3 + a^4*d^4)*g^3*i^2) - 6*b*d^2*log(d*x + c)/((b^4*c^4 - 4*a*b^3*c^3*d
+ 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^3*i^2))

```

mupad [B] time = 7.38, size = 1016, normalized size = 2.67

$$\frac{3 B b d^2 \ln \left(e \left(\frac{a+b x}{c+d x} \right)^n \right)^2}{2 g^3 i^2 n (a d-b c)^4} - \frac{4 A a^2 d^2-2 A b^2 c^2-4 B a^2 d^2 n-B b^2 c^2 n+10 A a b c d}{2(a d-b c)} x \left(2 a^4 d^3 g^3 i^2-6 a^2 b^2 c^2 d g^3 i^2+4 a b^3 c^3 g^3 i^2 \right)+x^2 \left(4 a^3 b d^3 g^3 i^2-6 a^2 b^2 c d^2 g^3 i^2 \right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))/((a*g + b*g*x)^3*(c*i + d*i*x)^2),x)
```

```
[Out] (3*B*b*d^2*log(e*((a + b*x)/(c + d*x))^n)^2)/(2*g^3*i^2*n*(a*d - b*c)^4) -
((4*A*a^2*d^2 - 2*A*b^2*c^2 - 4*B*a^2*d^2*n - B*b^2*c^2*n + 10*A*a*b*c*d +
11*B*a*b*c*d*n)/(2*(a*d - b*c)) + (3*x^2*(2*A*b^2*d^2 + B*b^2*d^2*n))/(a*d
- b*c) + (3*x*(6*A*a*b*d^2 + 2*A*b^2*c*d + B*a*b*d^2*n + 3*B*b^2*c*d*n))/(2
*(a*d - b*c)))/(x*(2*a^4*d^3*g^3*i^2 + 4*a*b^3*c^3*g^3*i^2 - 6*a^2*b^2*c^2*
d*g^3*i^2) + x^2*(2*b^4*c^3*g^3*i^2 + 4*a^3*b*d^3*g^3*i^2 - 6*a^2*b^2*c*d^2
*g^3*i^2) + x^3*(2*a^2*b^2*d^3*g^3*i^2 + 2*b^4*c^2*d*g^3*i^2 - 4*a*b^3*c*d^
2*g^3*i^2) + 2*a^2*b^2*c^3*g^3*i^2 + 2*a^4*c*d^2*g^3*i^2 - 4*a^3*b*c^2*d*g^
3*i^2) - (b*d^2*atan((b*d^2*(2*A + B*n))*((a^4*d^4*g^3*i^2 - b^4*c^4*g^3*i^2
+ 2*a*b^3*c^3*d*g^3*i^2 - 2*a^3*b*c*d^3*g^3*i^2)/(a^3*d^3*g^3*i^2 - b^3*c^
3*g^3*i^2 + 3*a*b^2*c^2*d*g^3*i^2 - 3*a^2*b*c*d^2*g^3*i^2) + 2*b*d*x)*(a^3*
```

$$\frac{d^3 g^3 i^2 - b^3 c^3 g^3 i^2 + 3 a b^2 c^2 d g^3 i^2 - 3 a^2 b c d^2 g^3 i^2}{(g^3 i^2 (6 A b d^2 + 3 B b d^2 n) (a d - b c)^4) (2 A + B n)^3 i} \frac{(g^3 i^2 (a d - b c)^4 - \log(e((a + b x)/(c + d x))^n) ((B(2 a d + b c) / (2 (a^2 d^2 + b^2 c^2 - 2 a b c d)) + (3 B b d x) / (2 (a^2 d^2 + b^2 c^2 - 2 a b c d))))}{(x (a^2 d g^3 i^2 + 2 a b c g^3 i^2) + x^2 (b^2 c g^3 i^2 + 2 a b d g^3 i^2) + a^2 c g^3 i^2 + b^2 d g^3 i^2 x^3) + (3 B b d^2 (b g^3 i^2 2 n x^2 (a d - b c) + (a c g^3 i^2 n (a d - b c)) / d + (g^3 i^2 n x (a d + b c) (a d - b c)) / d)) / (g^3 i^2 n (a d - b c)^4 (x (a^2 d g^3 i^2 + 2 a b c g^3 i^2) + x^2 (b^2 c g^3 i^2 + 2 a b d g^3 i^2) + a^2 c g^3 i^2 + b^2 d g^3 i^2 x^3))$$

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))**n))/(b*g*x+a*g)**3/(d*i*x+c*i)**2,x)

[Out] Timed out

$$3.150 \quad \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(ag+bgx)^4(ci+dix)^2} dx$$

Optimal. Leaf size=477

$$\frac{b^4(c+dx)^3 \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right)}{3g^4i^2(a+bx)^3(bc-ad)^5} + \frac{2b^3d(c+dx)^2 \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right)}{g^4i^2(a+bx)^2(bc-ad)^5} - \frac{6b^2d^2(c+dx) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right)}{g^4i^2(a+bx)(bc-ad)^5}$$

[Out] $-B*d^4*n*(b*x+a)/(-a*d+b*c)^5/g^4/i^2/(d*x+c)-6*b^2*B*d^2*n*(d*x+c)/(-a*d+b*c)^5/g^4/i^2/(b*x+a)+b^3*B*d*n*(d*x+c)^2/(-a*d+b*c)^5/g^4/i^2/(b*x+a)^2-1/9*b^4*B*n*(d*x+c)^3/(-a*d+b*c)^5/g^4/i^2/(b*x+a)^3+d^4*(b*x+a)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^5/g^4/i^2/(d*x+c)-6*b^2*d^2*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^5/g^4/i^2/(b*x+a)+2*b^3*d*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^5/g^4/i^2/(b*x+a)^2-1/3*b^4*(d*x+c)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^5/g^4/i^2/(b*x+a)^3-4*b*d^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))*\ln((b*x+a)/(d*x+c))/(-a*d+b*c)^5/g^4/i^2+2*b*B*d^3*n*\ln((b*x+a)/(d*x+c))^2/(-a*d+b*c)^5/g^4/i^2$

Rubi [C] time = 1.36, antiderivative size = 735, normalized size of antiderivative = 1.54, number of steps used = 34, number of rules used = 11, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.256$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{4bBd^3n \text{PolyLog}\left(2, -\frac{d(a+bx)}{bc-ad}\right)}{g^4i^2(bc-ad)^5} - \frac{4bBd^3n \text{PolyLog}\left(2, \frac{b(c+dx)}{bc-ad}\right)}{g^4i^2(bc-ad)^5} - \frac{4bd^3 \log(a+bx) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right)}{g^4i^2(bc-ad)^5} - \frac{d^3 \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right)}{g^4i^2(bc-ad)^5}$$

Antiderivative was successfully verified.

[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)^4*(c*i + d*i*x)^2), x]

[Out] $-(b*B*n)/(9*(b*c-a*d)^2*g^4*i^2*(a+b*x)^3) + (2*b*B*d*n)/(3*(b*c-a*d)^3*g^4*i^2*(a+b*x)^2) - (13*b*B*d^2*n)/(3*(b*c-a*d)^4*g^4*i^2*(a+b*x)) + (B*d^3*n)/((b*c-a*d)^4*g^4*i^2*(c+d*x)) - (10*b*B*d^3*n*Log[a+b*x])/((3*(b*c-a*d)^5*g^4*i^2) + (2*b*B*d^3*n*Log[a+b*x]^2)/((b*c-a*d)^5*g^4*i^2) - (b*(A+B*Log[e*((a+b*x)/(c+d*x))^n]))/(3*(b*c-a*d)^2*g^4*i^2*(a+b*x)^3) + (b*d*(A+B*Log[e*((a+b*x)/(c+d*x))^n]))/((b*c-a*d)^3*g^4*i^2*(a+b*x)^2) - (3*b*d^2*(A+B*Log[e*((a+b*x)/(c+d*x))^n]))/((b*c-a*d)^4*g^4*i^2*(a+b*x)) - (d^3*(A+B*Log[e*((a+b*x)/(c+d*x))^n]))/((b*c-a*d)^4*g^4*i^2*(c+d*x)) - (4*b*d^3*Log[a+b*x]*(A+B*Log[e*((a+b*x)/(c+d*x))^n]))/((b*c-a*d)^5*g^4*i^2) + (10*b*B*d^3*n*Log[c+d*x])/((3*(b*c-a*d)^5*g^4*i^2) - (4*b*B*d^3*n*Log[-((d*(a+b*x))/(b*c$

$$\begin{aligned}
& - a*d)) * \text{Log}[c + d*x] / ((b*c - a*d)^5 * g^{4*i^2}) + (4*b*d^3 * (A + B * \text{Log}[e * ((a \\
& + b*x) / (c + d*x))^n]) * \text{Log}[c + d*x] / ((b*c - a*d)^5 * g^{4*i^2}) + (2*b*B*d^3 * n * \\
& \text{Log}[c + d*x]^2) / ((b*c - a*d)^5 * g^{4*i^2}) - (4*b*B*d^3 * n * \text{Log}[a + b*x] * \text{Log}[(b * \\
& (c + d*x)) / (b*c - a*d)]) / ((b*c - a*d)^5 * g^{4*i^2}) - (4*b*B*d^3 * n * \text{PolyLog}[2, \\
& -((d*(a + b*x)) / (b*c - a*d))]) / ((b*c - a*d)^5 * g^{4*i^2}) - (4*b*B*d^3 * n * \text{PolyL} \\
& \text{og}[2, (b*(c + d*x)) / (b*c - a*d)]) / ((b*c - a*d)^5 * g^{4*i^2})
\end{aligned}$$

Rule 12

$$\text{Int}[(a_*) * (u_), x_Symbol] \text{ :> } \text{Dist}[a, \text{Int}[u, x], x] \text{ /; } \text{FreeQ}[a, x] \ \&\& \ !\text{Match} \\
\text{Q}[u, (b_*) * (v_) \text{ /; } \text{FreeQ}[b, x]$$

Rule 44

$$\text{Int}[((a_*) + (b_*) * (x_*)^m) * ((c_*) + (d_*) * (x_*)^n), x_Symbol] \text{ :> } \text{Int}[\\
\text{ExpandIntegrand}[(a + b*x)^m * (c + d*x)^n, x], x] \text{ /; } \text{FreeQ}[\{a, b, c, d\}, x] \ \&\& \\
\& \ \text{NeQ}[b*c - a*d, 0] \ \&\& \ \text{ILtQ}[m, 0] \ \&\& \ \text{IntegerQ}[n] \ \&\& \ !(\text{IGtQ}[n, 0] \ \&\& \ \text{LtQ}[m \\
+ n + 2, 0])$$

Rule 2301

$$\text{Int}[(a_*) + \text{Log}[(c_*) * (x_*)^n] * (b_*)] / (x_), x_Symbol] \text{ :> } \text{Simp}[(a + b * \text{Lo} \\
\text{g}[c*x^n])^2 / (2*b*n), x] \text{ /; } \text{FreeQ}[\{a, b, c, n\}, x]$$

Rule 2390

$$\text{Int}[(a_*) + \text{Log}[(c_*) * ((d_*) + (e_*) * (x_*)^n) * (b_*)^p] * ((f_*) + (g_*) \\
) * (x_*)^q], x_Symbol] \text{ :> } \text{Dist}[1/e, \text{Subst}[\text{Int}[(f*x)/d]^q * (a + b * \text{Log}[c*x^ \\
n])^p, x], x, d + e*x], x] \text{ /; } \text{FreeQ}[\{a, b, c, d, e, f, g, n, p, q\}, x] \ \&\& \ \text{Eq} \\
\text{Q}[e*f - d*g, 0]$$

Rule 2391

$$\text{Int}[\text{Log}[(c_*) * ((d_*) + (e_*) * (x_*)^n)] / (x_), x_Symbol] \text{ :> } -\text{Simp}[\text{PolyLog}[2 \\
, -(c*e*x^n)] / n, x] \text{ /; } \text{FreeQ}[\{c, d, e, n\}, x] \ \&\& \ \text{EqQ}[c*d, 1]$$

Rule 2393

$$\text{Int}[(a_*) + \text{Log}[(c_*) * ((d_*) + (e_*) * (x_*)^n) * (b_*)] / ((f_*) + (g_*) * (x_*)^n), x_ \\
\text{Symbol}] \text{ :> } \text{Dist}[1/g, \text{Subst}[\text{Int}[(a + b * \text{Log}[1 + (c*e*x)/g]] / x, x], x, f + g*x \\
], x] \text{ /; } \text{FreeQ}[\{a, b, c, d, e, f, g\}, x] \ \&\& \ \text{NeQ}[e*f - d*g, 0] \ \&\& \ \text{EqQ}[g + c * \\
(e*f - d*g), 0]$$

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(150c + 150dx)^2(ag + bgx)^4} dx &= \int \left(\frac{b^2\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{22500(bc - ad)^2g^4(a + bx)^4} - \frac{b^2d\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{11250(bc - ad)^3g^4(a + bx)^3} + \frac{b^2d^2\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{7500(bc - ad)^4g^4(a + bx)^2} \right. \\
&= -\frac{(b^2d^3) \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{a+bx} dx}{5625(bc - ad)^5g^4} + \frac{(bd^4) \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{c+dx} dx}{5625(bc - ad)^5g^4} + \frac{(b^2d^2) \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{a+bx} dx}{7500(bc - ad)^4g^4} \\
&= -\frac{b\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{67500(bc - ad)^2g^4(a + bx)^3} + \frac{bd\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{22500(bc - ad)^3g^4(a + bx)^2} - \frac{bd^2\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{7500(bc - ad)^4g^4(a + bx)} \\
&= -\frac{b\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{67500(bc - ad)^2g^4(a + bx)^3} + \frac{bd\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{22500(bc - ad)^3g^4(a + bx)^2} - \frac{bd^2\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{7500(bc - ad)^4g^4(a + bx)} \\
&= -\frac{b\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{67500(bc - ad)^2g^4(a + bx)^3} + \frac{bd\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{22500(bc - ad)^3g^4(a + bx)^2} - \frac{bd^2\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{7500(bc - ad)^4g^4(a + bx)} \\
&= -\frac{bBn}{202500(bc - ad)^2g^4(a + bx)^3} + \frac{bBdn}{33750(bc - ad)^3g^4(a + bx)^2} - \frac{13bBd^2n}{67500(bc - ad)^4g^4(a + bx)} \\
&= -\frac{bBn}{202500(bc - ad)^2g^4(a + bx)^3} + \frac{bBdn}{33750(bc - ad)^3g^4(a + bx)^2} - \frac{13bBd^2n}{67500(bc - ad)^4g^4(a + bx)} \\
&= -\frac{bBn}{202500(bc - ad)^2g^4(a + bx)^3} + \frac{bBdn}{33750(bc - ad)^3g^4(a + bx)^2} - \frac{13bBd^2n}{67500(bc - ad)^4g^4(a + bx)}
\end{aligned}$$

Mathematica [C] time = 1.54, size = 549, normalized size = 1.15

$$\frac{36bd^3 \log(a + bx) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right) - \frac{9d^3(ad-bc) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right)}{c+dx} - 36bd^3 \log(c + dx) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right)}{(150c + 150dx)^2(ag + bgx)^4}$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)^4*(c*i + d*i*x)^2), x]

```
[Out] -1/9*((b*B*(b*c - a*d)^3*n)/(a + b*x)^3 - (6*b*B*d*(b*c - a*d)^2*n)/(a + b*x)^2 + (27*b^2*B*c*d^2*n)/(a + b*x) - (27*a*b*B*d^3*n)/(a + b*x) + (12*b*B*d^2*(b*c - a*d)*n)/(a + b*x) - (9*b*B*c*d^3*n)/(c + d*x) + (9*a*B*d^4*n)/(c + d*x) + 30*b*B*d^3*n*Log[a + b*x] + (3*b*(b*c - a*d)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a + b*x)^3 - (9*b*d*(b*c - a*d)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a + b*x)^2 + (27*b*d^2*(b*c - a*d)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c + d*x) + 36*b*d^3*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 30*b*B*d^3*n*Log[c + d*x] - 36*b*d^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] - 18*b*B*d^3*n*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d])) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + 18*b*B*d^3*n*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/((b*c - a*d)^5*g^4*i^2)
```

fricas [B] time = 1.01, size = 1458, normalized size = 3.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^4/(d*i*x+c*i)^2,x, algorithm="fricas")
```

```
[Out] -1/9*(3*A*b^4*c^4 - 18*A*a*b^3*c^3*d + 54*A*a^2*b^2*c^2*d^2 - 30*A*a^3*b*c*d^3 - 9*A*a^4*d^4 + 6*(6*A*b^4*c*d^3 - 6*A*a*b^3*d^4 + 5*(B*b^4*c*d^3 - B*a*b^3*d^4)*n)*x^3 + 3*(6*A*b^4*c^2*d^2 + 24*A*a*b^3*c*d^3 - 30*A*a^2*b^2*d^4 + (11*B*b^4*c^2*d^2 + 8*B*a*b^3*c*d^3 - 19*B*a^2*b^2*d^4)*n)*x^2 + 18*(B*b^4*d^4*n*x^4 + B*a^3*b*c*d^3*n + (B*b^4*c*d^3 + 3*B*a*b^3*d^4)*n*x^3 + 3*(B*a*b^3*c*d^3 + B*a^2*b^2*d^4)*n*x^2 + (3*B*a^2*b^2*c*d^3 + B*a^3*b*d^4)*n*x)*log((b*x + a)/(d*x + c))^2 + (B*b^4*c^4 - 9*B*a*b^3*c^3*d + 54*B*a^2*b^2*c^2*d^2 - 55*B*a^3*b*c*d^3 + 9*B*a^4*d^4)*n - (6*A*b^4*c^3*d - 54*A*a*b^3*c^2*d^2 - 18*A*a^2*b^2*c*d^3 + 66*A*a^3*b*d^4 + (5*B*b^4*c^3*d - 81*B*a*b^3*c^2*d^2 + 57*B*a^2*b^2*c*d^3 + 19*B*a^3*b*d^4)*n)*x + 3*(B*b^4*c^4 - 6*B*a*b^3*c^3*d + 18*B*a^2*b^2*c^2*d^2 - 10*B*a^3*b*c*d^3 - 3*B*a^4*d^4 + 12*(B*b^4*c*d^3 - B*a*b^3*d^4)*x^3 + 6*(B*b^4*c^2*d^2 + 4*B*a*b^3*c*d^3 - 5*B*a^2*b^2*d^4)*x^2 - 2*(B*b^4*c^3*d - 9*B*a*b^3*c^2*d^2 - 3*B*a^2*b^2*c*d^3 + 11*B*a^3*b*d^4)*x + 12*(B*b^4*d^4*x^4 + B*a^3*b*c*d^3 + (B*b^4*c*d^3 + 3*B*a*b^3*d^4)*x^3 + 3*(B*a*b^3*c*d^3 + B*a^2*b^2*d^4)*x^2 + (3*B*a^2*b^2*c*d^3 + B*a^3*b*d^4)*x)*log((b*x + a)/(d*x + c))*log(e) + 3*(12*A*a^3*b*c*d^3 + 2*(5*B*b^4*d^4*n + 6*A*b^4*d^4)*x^4 + 2*(6*A*b^4*c*d^3 + 18*A*a*b^3*d^4 + (11*B*b^4*c*d^3 + 9*B*a*b^3*d^4)*n)*x^3 + 6*(6*A*a*b^3*c*d^3 + 6*A*a^2*b^2*d^4 + (B*b^4*c^2*d^2 + 9*B*a*b^3*c*d^3)*n)*x^2 + (B*b^4*c^4 - 6*B*a*b^3*c^3*d + 18*B*a^2*b^2*c^2*d^2 - 3*B*a^4*d^4)*n + 2*(18*A*a^2*b^2*c*d^3 + 6*A*a^3*b*d^4 - (B*b^4*c^3*d - 9*B*a*b^3*c^2*d^2 - 18*B*a^2*b^2*c*d^3 + 6*B*a^3*b*d^4)*n)*x)*log((b*x + a)/(d*x + c)))/((b^8*c^5*d - 5*a*b^7*c^4*d^2 + 10*a^2*b
```

$$\begin{aligned} &^6c^3d^3 - 10a^3b^5c^2d^4 + 5a^4b^4c^2d^5 - a^5b^3d^6)g^4i^2x^4 \\ &+ (b^8c^6 - 2a^2b^7c^5d - 5a^2b^6c^4d^2 + 20a^3b^5c^3d^3 - 25a^4b^4c^2d^4 \\ &+ 14a^5b^3c^2d^5 - 3a^6b^2d^6)g^4i^2x^3 + 3(a^2b^7c^6 - 4a^2b^6c^5d \\ &+ 5a^3b^5c^4d^2 - 5a^5b^3c^2d^4 + 4a^6b^2c^2d^5 - a^7b^2d^6)g^4i^2x^2 \\ &+ (3a^2b^6c^6 - 14a^3b^5c^5d + 25a^4b^4c^4d^2 - 20a^5b^3c^3d^3 + 5a^6b^2c^2d^4 \\ &+ 2a^7b^2c^2d^5 - a^8d^6)g^4i^2x + (a^3b^5c^6 - 5a^4b^4c^5d + 10a^5b^3c^4d^2 - 10a^6b^2c^3d^3 \\ &+ 5a^7b^2c^2d^4 - a^8c^2d^5)g^4i^2 \end{aligned}$$

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^4/(d*i*x+c*i)^2,x, algorithm="giac")

[Out] Timed out

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A}{(bgx + ag)^4 (dix + ci)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^4/(d*i*x+c*i)^2,x)

[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^4/(d*i*x+c*i)^2,x)

maxima [B] time = 3.46, size = 2563, normalized size = 5.37

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^4/(d*i*x+c*i)^2,x, algorithm="maxima")

[Out]
$$\begin{aligned} &-1/3B*((12b^3d^3x^3 + b^3c^3 - 5a^2b^2c^2d + 13a^2b^2c^2d^2 + 3a^3d^3 \\ &+ 6(b^3cd^2 + 5a^2b^2d^3)x^2 - 2(b^3c^2d - 8a^2b^2c^2d^2 - 11a^2b^2d^3)x) / ((b^7c^4d - 4a^2b^6c^3d^2 + 6a^2b^5c^2d^3 - 4a^3b^4c^2d^4 \\ &+ a^4b^3d^5)g^4i^2x^4 + (b^7c^5 - a^2b^6c^4d - 6a^2b^5c^3d^2 + 14a^3b^4c^2d^3 - 11a^4b^3c^2d^4 + 3a^5b^2d^5)g^4i^2x^3 + 3 \end{aligned}$$

$$\begin{aligned}
&*(a^5b^2c^5 - 3a^2b^5c^4d + 2a^3b^4c^3d^2 + 2a^4b^3c^2d^3 - 3a^5b^2c^4d^4 + a^6b^5c^4d^5)*g^4i^2x^2 + (3a^2b^5c^5 - 11a^3b^4c^4d + 14a^4b^3c^3d^2 - 6a^5b^2c^2d^3 - a^6b^5c^4d^4 + a^7d^5)*g^4i^2x \\
&+ (a^3b^4c^5 - 4a^4b^3c^4d + 6a^5b^2c^3d^2 - 4a^6b^5c^2d^3 + a^7c^4d^4)*g^4i^2 + 12b^3d^3 \log(bx + a) / ((b^5c^5 - 5a^2b^4c^4d + 10a^2b^3c^3d^2 - 10a^3b^2c^2d^3 + 5a^4b^5c^4d^4 - a^5d^5)*g^4i^2) - 12 \\
&*b^3d^3 \log(dx + c) / ((b^5c^5 - 5a^2b^4c^4d + 10a^2b^3c^3d^2 - 10a^3b^2c^2d^3 + 5a^4b^5c^4d^4 - a^5d^5)*g^4i^2)) * \log(e*(bx/(dx + c) + a/(dx + c))^n) - 1/9*(b^4c^4 - 9a^2b^3c^3d + 54a^2b^2c^2d^2 - 55a^3b^5c^4d^4 + 9a^4d^4 + 30*(b^4c^4d^3 - a^2b^3d^4)*x^3 + 3*(11b^4c^2d^2 + 8a^2b^3c^4d^3 - 19a^2b^2d^4)*x^2 - 18*(b^4d^4*x^4 + a^3b^5c^4d^3 + (b^4c^4d^3 + 3a^2b^3d^4)*x^3 + 3*(a^2b^2d^4)*x^2 + (3a^2b^2c^4d^3 + a^3b^5d^4)*x)*\log(bx + a)^2 - 18*(b^4d^4*x^4 + a^3b^5c^4d^3 + (b^4c^4d^3 + 3a^2b^3d^4)*x^3 + 3*(a^2b^2d^4)*x^2 + (3a^2b^2c^4d^3 + a^3b^5d^4)*x)*\log(dx + c)^2 - (5b^4c^3d - 81a^2b^3c^2d^2 + 57a^2b^2c^4d^3 + 19a^3b^5d^4)*x + 30*(b^4d^4*x^4 + a^3b^5c^4d^3 + (b^4c^4d^3 + 3a^2b^3d^4)*x^3 + 3*(a^2b^2d^4)*x^2 + (3a^2b^2c^4d^3 + a^3b^5d^4)*x)*\log(bx + a) - 6*(5b^4d^4*x^4 + 5a^3b^5c^4d^3 + 5*(b^4c^4d^3 + 3a^2b^3d^4)*x^3 + 15*(a^2b^2d^4)*x^2 + 5*(3a^2b^2c^4d^3 + a^3b^5d^4)*x - 6*(b^4d^4*x^4 + a^3b^5c^4d^3 + (b^4c^4d^3 + 3a^2b^3d^4)*x^3 + 3*(a^2b^2d^4)*x^2 + (3a^2b^2c^4d^3 + a^3b^5d^4)*x)*\log(bx + a))*\log(dx + c))*B^n/(a^3b^5c^6g^4i^2 - 5a^4b^4c^5d^5g^4i^2 + 10a^5b^3c^4d^2g^4i^2 - 10a^6b^2c^3d^3g^4i^2 + 5a^7b^5c^2d^4g^4i^2 - a^8c^5d^5g^4i^2 + (b^8c^5d^5g^4i^2 - 5a^2b^7c^4d^2g^4i^2 + 10a^2b^6c^3d^3g^4i^2 - 10a^3b^5c^2d^4g^4i^2 + 5a^4b^4c^5d^5g^4i^2 - a^5b^3d^6g^4i^2)*x^4 + (b^8c^6g^4i^2 - 2a^2b^7c^5d^5g^4i^2 - 5a^2b^6c^4d^2g^4i^2 + 20a^3b^5c^3d^3g^4i^2 - 25a^4b^4c^2d^4g^4i^2 + 14a^5b^3c^5d^5g^4i^2 - 3a^6b^2d^6g^4i^2)*x^3 + 3*(a^2b^7c^6g^4i^2 - 4a^2b^6c^5d^5g^4i^2 + 5a^3b^5c^4d^2g^4i^2 - 5a^5b^3c^2d^4g^4i^2 + 4a^6b^2c^5d^5g^4i^2 - a^7b^6d^6g^4i^2)*x^2 + (3a^2b^6c^6g^4i^2 - 14a^3b^5c^5d^5g^4i^2 + 25a^4b^4c^4d^2g^4i^2 - 20a^5b^3c^3d^3g^4i^2 + 5a^6b^2c^2d^4g^4i^2 + 2a^7b^5c^5d^5g^4i^2 - a^8d^6g^4i^2)*x) - 1/3*A*((12b^3d^3*x^3 + b^3c^3 - 5a^2b^2c^2d + 13a^2b^5c^2d^2 + 3a^3d^3 + 6*(b^3c^2d^2 + 5a^2b^2d^3)*x^2 - 2*(b^3c^2d - 8a^2b^2c^2d^2 - 11a^2b^5d^3)*x) / ((b^7c^4d - 4a^2b^6c^3d^2 + 6a^2b^5c^2d^3 - 4a^3b^4c^4d + a^4b^3d^5)*g^4i^2*x^4 + (b^7c^5 - a^2b^6c^4d - 6a^2b^5c^3d^2 + 14a^3b^4c^2d^3 - 11a^4b^3c^4d + 3a^5b^2d^5)*g^4i^2*x^3 + 3*(a^2b^6c^5 - 3a^2b^5c^4d + 2a^3b^4c^3d^2 + 2a^4b^3c^2d^3 - 3a^5b^2c^4d + a^6b^5d^5)*g^4i^2*x^2 + (3a^2b^5c^5 - 11a^3b^4c^4d + 14a^4b^3c^3d^2 - 6a^5b^2c^2d^3 - a^6b^5c^4d + a^7d^5)*g^4i^2*x + (a^3b^4c^5 - 4a^4b^3c^4d + 6a^5b^2c^3d^2 - 4a^6b^5c^2d^3 + a^7c^4d^4)*g^4i^2) + 12b^3d^3 \log(bx + a) / ((b^5c^5 - 5a^2b^4c^4d + 10a^2b^3c^3d^2 - 10a^3b^2c^2d^3 + 5a^4b^5c^4d^4 - a^5d^5)*g^4i^2) - 12b^3d^3 \log(dx + c) / ((b^5c^5 - 5a^2b^4c^4d + 10a^2b^3c^3d^2 - 10a^3b^2c^2d^3 + 5a^4b^5c^4d^4 - a^5d^5)*g^4i^2)
\end{aligned}$$

4 - a⁵*d⁵)*g⁴*i²)

mupad [B] time = 9.93, size = 1665, normalized size = 3.49

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))/((a*g + b*g*x)^4*(c*i + d*i*x)^2),x)

[Out] (2*B*b*d^3*log(e*((a + b*x)/(c + d*x))^n)^2)/(g^4*i^2*n*(a*d - b*c)^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d) - log(e*((a + b*x)/(c + d*x))^n)*(((B*(3*a*d + b*c))/(3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (4*B*b*d*x)/(3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)))/(x^3*(b^3*c*g^4*i^2 + 3*a*b^2*d*g^4*i^2) + x^2*(3*a*b^2*c*g^4*i^2 + 3*a^2*b*d*g^4*i^2) + x*(a^3*d*g^4*i^2 + 3*a^2*b*c*g^4*i^2) + a^3*c*g^4*i^2 + b^3*d*g^4*i^2*x^4) + (4*B*b*d^3*(x*((a*d + b*c)*((a*g^4*i^2*n*(a*d - b*c))/(2*d) + (g^4*i^2*n*(a*d - b*c)*(2*a*d - b*c))/(2*d^2)) + (a*b*c*g^4*i^2*n*(a*d - b*c))/d) + x^2*(b*d*((a*g^4*i^2*n*(a*d - b*c))/(2*d) + (g^4*i^2*n*(a*d - b*c)*(2*a*d - b*c))/(2*d^2)) + (b*g^4*i^2*n*(a*d + b*c)*(a*d - b*c))/d) + a*c*((a*g^4*i^2*n*(a*d - b*c))/(2*d) + (g^4*i^2*n*(a*d - b*c)*(2*a*d - b*c))/(2*d^2)) + b^2*g^4*i^2*n*x^3*(a*d - b*c))/(g^4*i^2*n*(a*d - b*c)^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)*(x^3*(b^3*c*g^4*i^2 + 3*a*b^2*d*g^4*i^2) + x^2*(3*a*b^2*c*g^4*i^2 + 3*a^2*b*d*g^4*i^2) + x*(a^3*d*g^4*i^2 + 3*a^2*b*c*g^4*i^2) + a^3*c*g^4*i^2 + b^3*d*g^4*i^2*x^4)) - (b*d^3*atan((b*d^3*((a^5*d^5*g^4*i^2 + b^5*c^5*g^4*i^2 - 3*a*b^4*c^4*d*g^4*i^2 - 3*a^4*b*c*d^4*g^4*i^2 + 2*a^2*b^3*c^3*d^2*g^4*i^2 + 2*a^3*b^2*c^2*d^3*g^4*i^2)/(a^4*d^4*g^4*i^2 + b^4*c^4*g^4*i^2 - 4*a*b^3*c^3*d*g^4*i^2 - 4*a^3*b*c*d^3*g^4*i^2 + 6*a^2*b^2*c^2*d^2*g^4*i^2) + 2*b*d*x)*(6*A + 5*B*n)*(a^4*d^4*g^4*i^2 + b^4*c^4*g^4*i^2 - 4*a*b^3*c^3*d*g^4*i^2 - 4*a^3*b*c*d^3*g^4*i^2 + 6*a^2*b^2*c^2*d^2*g^4*i^2)*2i)/(g^4*i^2*(12*A*b*d^3 + 10*B*b*d^3*n)*(a*d - b*c)^5)*(6*A + 5*B*n)*4i)/(3*g^4*i^2*(a*d - b*c)^5) - ((9*A*a^3*d^3 + 3*A*b^3*c^3 - 9*B*a^3*d^3*n + B*b^3*c^3*n - 15*A*a*b^2*c^2*d + 39*A*a^2*b*c*d^2 - 8*B*a*b^2*c^2*d*n + 46*B*a^2*b*c*d^2*n)/(3*(a*d - b*c)) + (2*x^3*(6*A*b^3*d^3 + 5*B*b^3*d^3*n))/(a*d - b*c) + (x*(66*A*a^2*b*d^3 - 6*A*b^3*c^2*d + 48*A*a*b^2*c*d^2 + 19*B*a^2*b*d^3*n - 5*B*b^3*c^2*d*n + 76*B*a*b^2*c*d^2*n))/(3*(a*d - b*c)) + (x^2*(30*A*a*b^2*d^3 + 6*A*b^3*c*d^2 + 19*B*a*b^2*d^3*n + 11*B*b^3*c*d^2*n))/(a*d - b*c))/(x*(3*a^6*d^4*g^4*i^2 - 9*a^2*b^4*c^4*g^4*i^2 + 24*a^3*b^3*c^3*d*g^4*i^2 - 18*a^4*b^2*c^2*d^2*g^4*i^2) - x^2*(9*a*b^5*c^4*g^4*i^2 - 9*a^5*b*d^4*g^4*i^2 - 18*a^2*b^4*c^3*d*g^4*i^2 + 18*a^4*b^2*c*d^3*g^4*i^2) - x^3*(3*b^6*c^4*g^4*i^2 - 9*a^4*b^2*d^4*g^4*i^2 + 24*a^3*b^3*c*d^3*g^4*i^2 - 18*a^2*b^4*c^2*d^2*g^4*i^2) + x^4*(3*a^3*b^3*d^4*g^4*i^2 - 3*b^6*c^3*d*g^4*i^2 + 9*a*b^5*c^2*d^2*g^4*i^2 - 9*a^2*b^4*c*d^3*g^4*i^2) - 3*a^3*b^3*c^4*g^4*i^2 + 3*a^6*c*d^3*g^4*i^2 + 9*a^4*b^2*c^3*d*g^4*i^2 - 9*a^5*b*c^2*d^2*g^4*i^2)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))**n))/(b*g*x+a*g)**4/(d*i*x+c*i)**2,x)

[Out] Timed out

$$3.151 \quad \int \frac{(ag+bgx)^3 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ci+dix)^3} dx$$

Optimal. Leaf size=382

$$\frac{b^2 g^3 (bc - ad) \log \left(\frac{bc - ad}{b(c + dx)} \right) \left(3B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) + 3A + Bn \right)}{d^4 i^3} + \frac{b g^3 (a + bx) (3A + Bn) (bc - ad)}{d^3 i^3 (c + dx)} + \frac{g^3 (a + bx)^2 (bc - ad)}{d^4 i^3}$$

[Out] $-3/4*B*(-a*d+b*c)*g^{3*n}*(b*x+a)^2/d^2/i^3/(d*x+c)^{2-3*b*B*(-a*d+b*c)*g^{3*n}*(b*x+a)/d^3/i^3/(d*x+c)+b*(-a*d+b*c)*g^{3*(B*n+3*A)}*(b*x+a)/d^3/i^3/(d*x+c)+3*b*B*(-a*d+b*c)*g^{3*(b*x+a)*\ln(e*((b*x+a)/(d*x+c))^n)/d^3/i^3/(d*x+c)+g^{3*(b*x+a)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/d/i^3/(d*x+c)^{2+1/2*(-a*d+b*c)*g^{3*(b*x+a)^2*(3*A+B*n+3*B*\ln(e*((b*x+a)/(d*x+c))^n))/d^2/i^3/(d*x+c)^{2+b^2*(-a*d+b*c)*g^{3*(3*A+B*n+3*B*\ln(e*((b*x+a)/(d*x+c))^n))*\ln((-a*d+b*c)/b/(d*x+c))/d^4/i^3+3*b^2*B*(-a*d+b*c)*g^{3*n}*polylog(2,d*(b*x+a)/b/(d*x+c))/d^4/i^3}$

Rubi [A] time = 0.75, antiderivative size = 461, normalized size of antiderivative = 1.21, number of steps used = 21, number of rules used = 13, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.302$, Rules used = {2528, 2486, 31, 2525, 12, 44, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$\frac{3b^2 B g^3 n (bc - ad) \text{PolyLog} \left(2, \frac{b(c+dx)}{bc-ad} \right)}{d^4 i^3} - \frac{3b^2 g^3 (bc - ad) \log(c + dx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{d^4 i^3} - \frac{3b g^3 (bc - ad)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{d^4 i^3 (c + dx)}$$

Antiderivative was successfully verified.

[In] Int[((a*g + b*g*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c*i + d*i*x)^3,x]

[Out] $(A*b^3*g^3*x)/(d^3*i^3) - (B*(b*c - a*d)^3*g^3*n)/(4*d^4*i^3*(c + d*x)^2) + (5*b*B*(b*c - a*d)^2*g^3*n)/(2*d^4*i^3*(c + d*x)) + (5*b^2*B*(b*c - a*d)*g^3*n*Log[a + b*x])/(2*d^4*i^3) + (b^2*B*g^3*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n])/(d^3*i^3) + ((b*c - a*d)^3*g^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(2*d^4*i^3*(c + d*x)^2) - (3*b*(b*c - a*d)^2*g^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(d^4*i^3*(c + d*x)) - (7*b^2*B*(b*c - a*d)*g^3*n*Log[c + d*x])/(2*d^4*i^3) + (3*b^2*B*(b*c - a*d)*g^3*n*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(d^4*i^3) - (3*b^2*(b*c - a*d)*g^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x])/(d^4*i^3) - (3*b^2*B*(b*c - a*d)*g^3*n*Log[c + d*x]^2)/(2*d^4*i^3) + (3*b^2*B*(b*c - a*d)*g^3*n*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(d^4*i^3)$

Rule 12

$\text{Int}[(a_*)(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] \text{ /; FreeQ}[a, x] \ \&\& \ !\text{MatchQ}[u, (b_*)(v_)] \text{ /; FreeQ}[b, x]$

Rule 31

$\text{Int}[((a_) + (b_*)(x_))^{(-1)}, x_Symbol] \rightarrow \text{Simp}[\text{Log}[\text{RemoveContent}[a + b*x, x]]/b, x] \text{ /; FreeQ}[\{a, b\}, x]$

Rule 44

$\text{Int}[((a_) + (b_*)(x_))^{(m_)}*((c_) + (d_*)(x_))^{(n_)}, x_Symbol] \rightarrow \text{Int}[\text{ExpandIntegrand}[(a + b*x)^m*(c + d*x)^n, x], x] \text{ /; FreeQ}[\{a, b, c, d\}, x] \ \&\& \ \text{NeQ}[b*c - a*d, 0] \ \&\& \ \text{ILtQ}[m, 0] \ \&\& \ \text{IntegerQ}[n] \ \&\& \ !(\text{IGtQ}[n, 0] \ \&\& \ \text{LtQ}[m + n + 2, 0])$

Rule 2301

$\text{Int}[((a_.) + \text{Log}[(c_*)(x_)^{(n_.)}]*(b_.)))/(x_), x_Symbol] \rightarrow \text{Simp}[(a + b*\text{Log}[c*x^n])^2/(2*b*n), x] \text{ /; FreeQ}[\{a, b, c, n\}, x]$

Rule 2390

$\text{Int}[((a_.) + \text{Log}[(c_*)((d_) + (e_*)(x_))^{(n_.)}]*(b_.))^{(p_.)}*((f_) + (g_.)(x_))^{(q_.)}, x_Symbol] \rightarrow \text{Dist}[1/e, \text{Subst}[\text{Int}[(f*x)/d]^q*(a + b*\text{Log}[c*x^n])^p, x], x, d + e*x], x] \text{ /; FreeQ}[\{a, b, c, d, e, f, g, n, p, q\}, x] \ \&\& \ \text{EqQ}[e*f - d*g, 0]$

Rule 2391

$\text{Int}[\text{Log}[(c_*)((d_) + (e_*)(x_))^{(n_.)}]]/(x_), x_Symbol] \rightarrow -\text{Simp}[\text{PolyLog}[2, -(c*e*x^n)]/n, x] \text{ /; FreeQ}[\{c, d, e, n\}, x] \ \&\& \ \text{EqQ}[c*d, 1]$

Rule 2393

$\text{Int}[((a_.) + \text{Log}[(c_*)((d_) + (e_*)(x_))]*(b_.)))/((f_.) + (g_.)(x_)), x_Symbol] \rightarrow \text{Dist}[1/g, \text{Subst}[\text{Int}[(a + b*\text{Log}[1 + (c*e*x)/g])/x, x], x, f + g*x], x] \text{ /; FreeQ}[\{a, b, c, d, e, f, g\}, x] \ \&\& \ \text{NeQ}[e*f - d*g, 0] \ \&\& \ \text{EqQ}[g + c*(e*f - d*g), 0]$

Rule 2394

$\text{Int}[((a_.) + \text{Log}[(c_*)((d_) + (e_*)(x_))^{(n_.)}]*(b_.)))/((f_.) + (g_.)(x_)), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[(e*(f + g*x))/(e*f - d*g)]*(a + b*\text{Log}[c*(d + e*x)^n]))/g, x] - \text{Dist}[(b*e^n)/g, \text{Int}[\text{Log}[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)]$

, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2418

Int[((a_.) + Log[(c_.)*((d_.) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]

Rule 2486

Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)]^(r_.)]^(s_.), x_Symbol] := Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]

Rule 2524

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]

Rule 2525

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]

Rule 2528

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]

Rubi steps

$$\begin{aligned}
\int \frac{(ag + bgx)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(151c + 151dx)^3} dx &= \int \left(\frac{b^3 g^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{3442951d^3} + \frac{(-bc + ad)^3 g^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{3442951d^3 (c + dx)^3} \right) dx \\
&= \frac{(b^3 g^3) \int \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) dx}{3442951d^3} - \frac{(3b^2(bc - ad)g^3) \int \frac{A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{c+dx} dx}{3442951d^3} \\
&= \frac{Ab^3 g^3 x}{3442951d^3} + \frac{(bc - ad)^3 g^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{6885902d^4 (c + dx)^2} - \frac{3b(bc - ad)^2 g^3 \int \frac{A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{c+dx} dx}{3442951d^3} \\
&= \frac{Ab^3 g^3 x}{3442951d^3} + \frac{b^2 B g^3 (a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{3442951d^3} + \frac{(bc - ad)^3 g^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{6885902d^4} \\
&= \frac{Ab^3 g^3 x}{3442951d^3} + \frac{b^2 B g^3 (a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{3442951d^3} + \frac{(bc - ad)^3 g^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{6885902d^4} \\
&= \frac{Ab^3 g^3 x}{3442951d^3} - \frac{B(bc - ad)^3 g^3 n}{13771804d^4 (c + dx)^2} + \frac{5bB(bc - ad)^2 g^3 n}{6885902d^4 (c + dx)} + \frac{5b^2 B g^3 n}{6885902d^4} \\
&= \frac{Ab^3 g^3 x}{3442951d^3} - \frac{B(bc - ad)^3 g^3 n}{13771804d^4 (c + dx)^2} + \frac{5bB(bc - ad)^2 g^3 n}{6885902d^4 (c + dx)} + \frac{5b^2 B g^3 n}{6885902d^4} \\
&= \frac{Ab^3 g^3 x}{3442951d^3} - \frac{B(bc - ad)^3 g^3 n}{13771804d^4 (c + dx)^2} + \frac{5bB(bc - ad)^2 g^3 n}{6885902d^4 (c + dx)} + \frac{5b^2 B g^3 n}{6885902d^4}
\end{aligned}$$

Mathematica [A] time = 0.45, size = 334, normalized size = 0.87

$$g^3 \left(-12b^2(bc - ad) \log(c + dx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right) - \frac{12b(bc-ad)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{c+dx} + \frac{2(bc-ad)^3 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{(c+dx)^2} \right)$$

Antiderivative was successfully verified.

[In] Integrate[((a*g + b*g*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c*i + d*i*x)^3,x]

[Out] $(g^3(4Ab^3d^2x - (B(b^3c - a^3d)^3n)/(c + dx)^2 + (10b^2B(b^3c - a^3d)^2n)/(c + dx) + 10b^2B(b^3c - a^3d)n \cdot \text{Log}[a + bx] + 4b^2Bd(a + bx) \cdot \text{Log}[e((a + bx)/(c + dx))^n] + (2(b^3c - a^3d)^3(A + B \cdot \text{Log}[e((a + bx)/(c + dx))^n]))/(c + dx)^2 - (12b(b^3c - a^3d)^2(A + B \cdot \text{Log}[e((a + bx)/(c + dx))^n]))/(c + dx) - 14b^2B(b^3c - a^3d)n \cdot \text{Log}[c + dx] - 12b^2(b^3c - a^3d)(A + B \cdot \text{Log}[e((a + bx)/(c + dx))^n]) \cdot \text{Log}[c + dx] + 6b^2B(b^3c - a^3d)n \cdot ((2 \cdot \text{Log}[d(a + bx)]/(-(b^3c) + a^3d)] - \text{Log}[c + dx]) \cdot \text{Log}[c + dx] + 2 \cdot \text{PolyLog}[2, (b^3(c + dx)/(b^3c - a^3d))]))/(4d^4i^3)$

fricas [F] time = 0.69, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{Ab^3g^3x^3 + 3Aab^2g^3x^2 + 3Aa^2bg^3x + Aa^3g^3 + (Bb^3g^3x^3 + 3Bab^2g^3x^2 + 3Ba^2bg^3x + Ba^3g^3) \log \left(e \left(\frac{bx+a}{dx+c} \right)^n \right)}{d^3i^3x^3 + 3cd^2i^3x^2 + 3c^2di^3x + c^3i^3} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((b*g*x+a*g)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^3,x, algorithm="fricas")`

[Out] `integral((A*b^3*g^3*x^3 + 3*A*a*b^2*g^3*x^2 + 3*A*a^2*b*g^3*x + A*a^3*g^3 + (B*b^3*g^3*x^3 + 3*B*a*b^2*g^3*x^2 + 3*B*a^2*b*g^3*x + B*a^3*g^3)*log(e((b*x + a)/(d*x + c))^n))/(d^3*i^3*x^3 + 3*c*d^2*i^3*x^2 + 3*c^2*d*i^3*x + c^3*i^3), x)`

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((b*g*x+a*g)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^3,x, algorithm="giac")`

[Out] Timed out

maple [F] time = 0.46, size = 0, normalized size = 0.00

$$\int \frac{(bgx + ag)^3 \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)}{(dix + ci)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((b*g*x+a*g)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(d*i*x+c*i)^3,x)`

[Out] $\int (b*gx+ag)^3*(B*\ln(e*((b*x+a)/(d*x+c))^n)+A)/(d*i*x+c*i)^3,x$

maxima [B] time = 5.52, size = 2894, normalized size = 7.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{integrate}((b*gx+ag)^3*(A+B*\log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^3,x, \text{algorithm}="maxima")$

[Out] $\frac{3}{4}B*a^2*b*g^3*n*((b*c^2 - 3*a*c*d + 2*(b*c*d - 2*a*d^2)*x)/((b*c*d^4 - a*d^5)*i^3*x^2 + 2*(b*c^2*d^3 - a*c*d^4)*i^3*x + (b*c^3*d^2 - a*c^2*d^3)*i^3) + 2*(b^2*c - 2*a*b*d)*\log(b*x + a)/((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)*i^3) - 2*(b^2*c - 2*a*b*d)*\log(d*x + c)/((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)*i^3) + 1/4*B*a^3*g^3*n*((2*b*d*x + 3*b*c - a*d)/((b*c*d^3 - a*d^4)*i^3*x^2 + 2*(b*c^2*d^2 - a*c*d^3)*i^3*x + (b*c^3*d - a*c^2*d^2)*i^3) + 2*b^2*\log(b*x + a)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3) - 2*b^2*\log(d*x + c)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3) - 1/2*A*b^3*g^3*((6*c^2*d*x + 5*c^3)/(d^6*i^3*x^2 + 2*c*d^5*i^3*x + c^2*d^4*i^3) - 2*x/(d^3*i^3) + 6*c*\log(d*x + c)/(d^4*i^3)) + 3/2*A*a*b^2*g^3*((4*c*d*x + 3*c^2)/(d^5*i^3*x^2 + 2*c*d^4*i^3*x + c^2*d^3*i^3) + 2*\log(d*x + c)/(d^3*i^3)) - 3/2*(2*d*x + c)*B*a^2*b*g^3*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(d^4*i^3*x^2 + 2*c*d^3*i^3*x + c^2*d^2*i^3) - 3/2*(2*d*x + c)*A*a^2*b*g^3/(d^4*i^3*x^2 + 2*c*d^3*i^3*x + c^2*d^2*i^3) - 1/2*B*a^3*g^3*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(d^3*i^3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3) - 1/2*A*a^3*g^3/(d^3*i^3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3) + 1/2*(6*a^3*b^2*d^3*g^3*\log(e) - (7*g^3*n + 6*g^3*\log(e))*b^5*c^3 + (19*g^3*n + 18*g^3*\log(e))*a*b^4*c^2*d - 2*(7*g^3*n + 9*g^3*\log(e))*a^2*b^3*c*d^2)*B*\log(d*x + c)/(b^2*c^2*d^4*i^3 - 2*a*b*c*d^5*i^3 + a^2*d^6*i^3) + 1/4*(4*(b^5*c^2*d^3*g^3*\log(e) - 2*a*b^4*c*d^4*g^3*\log(e) + a^2*b^3*d^5*g^3*\log(e))*B*x^3 + 8*(b^5*c^3*d^2*g^3*\log(e) - 2*a*b^4*c^2*d^3*g^3*\log(e) + a^2*b^3*c*d^4*g^3*\log(e))*B*x^2 + 2*((5*g^3*n - 4*g^3*\log(e))*b^5*c^4*d - 20*(g^3*n - g^3*\log(e))*a*b^4*c^3*d^2 + (27*g^3*n - 28*g^3*\log(e))*a^2*b^3*c^2*d^3 - 12*(g^3*n - g^3*\log(e))*a^3*b^2*c*d^4)*B*x + 12*((b^5*c^3*d^2*g^3*n - 3*a*b^4*c^2*d^3*g^3*n + 3*a^2*b^3*c*d^4*g^3*n - a^3*b^2*d^5*g^3*n)*B*x^2 + 2*(b^5*c^4*d*g^3*n - 3*a*b^4*c^3*d^2*g^3*n + 3*a^2*b^3*c^2*d^3*g^3*n - a^3*b^2*c*d^4*g^3*n)*B*x + (b^5*c^5*g^3*n - 3*a*b^4*c^4*d*g^3*n + 3*a^2*b^3*c^3*d^2*g^3*n - a^3*b^2*c^2*d^3*g^3*n)*B)*\log(b*x + a)*\log(d*x + c) - 6*((b^5*c^3*d^2*g^3*n - 3*a*b^4*c^2*d^3*g^3*n + 3*a^2*b^3*c*d^4*g^3*n - a^3*b^2*d^5*g^3*n)*B*x^2 + 2*(b^5*c^4*d*g^3*n - 3*a*b^4*c^3*d^2*g^3*n - 3*a^2*b^3*c^2*d^3*g^3*n - a^3*b^2*c*d^4*g^3*n)*B*x + (b^5*c^5*g^3*n - 3*a*b^4*c^4*d*g^3*n + 3*a^2*b^3*c^3*d^2*g^3*n - a^3*b^2*c^2*d^3*g^3*n)*B)*\log(d*x + c)^2 + ((9*g^3*n - 10*g^3*\log(e))*b^5*c^5 - (35*g^3*n - 38*g^3*\log(e))*a*b^4*c^4*d + (47*g^3*n - 46*g^3*\log(e))*a^2*b^3*c^3*d^2 - 3*(7*g^3*n - 6*g^3*\log(e))*a^3*b^2*c^2*d^3)*B + 2*((5*b^5*c^3*d^2*g^3*n - 13*a*b^4*c^2*d^3*g^3*n + 8*a^2*b^3*c*d^4*g^3*n + 2*a^3*b^2*d^5*g^3*n)*B*x^2 + 2*(5*b^5*c$

$$\begin{aligned}
& ^4d*g^3*n - 13*a*b^4*c^3*d^2*g^3*n + 8*a^2*b^3*c^2*d^3*g^3*n + 2*a^3*b^2*c \\
& *d^4*g^3*n)*B*x + (5*b^5*c^5*g^3*n - 13*a*b^4*c^4*d*g^3*n + 8*a^2*b^3*c^3*d \\
& ^2*g^3*n + 2*a^3*b^2*c^2*d^3*g^3*n)*B)*\log(b*x + a) + 2*(2*(b^5*c^2*d^3*g^3 \\
& - 2*a*b^4*c*d^4*g^3 + a^2*b^3*d^5*g^3)*B*x^3 + 4*(b^5*c^3*d^2*g^3 - 2*a*b^ \\
& 4*c^2*d^3*g^3 + a^2*b^3*c*d^4*g^3)*B*x^2 - 4*(b^5*c^4*d*g^3 - 5*a*b^4*c^3*d \\
& ^2*g^3 + 7*a^2*b^3*c^2*d^3*g^3 - 3*a^3*b^2*c*d^4*g^3)*B*x - (5*b^5*c^5*g^3 \\
& - 19*a*b^4*c^4*d*g^3 + 23*a^2*b^3*c^3*d^2*g^3 - 9*a^3*b^2*c^2*d^3*g^3)*B - \\
& 6*((b^5*c^3*d^2*g^3 - 3*a*b^4*c^2*d^3*g^3 + 3*a^2*b^3*c*d^4*g^3 - a^3*b^2*d^ \\
& ^5*g^3)*B*x^2 + 2*(b^5*c^4*d*g^3 - 3*a*b^4*c^3*d^2*g^3 + 3*a^2*b^3*c^2*d^3* \\
& g^3 - a^3*b^2*c*d^4*g^3)*B*x + (b^5*c^5*g^3 - 3*a*b^4*c^4*d*g^3 + 3*a^2*b^3 \\
& *c^3*d^2*g^3 - a^3*b^2*c^2*d^3*g^3)*B)*\log(d*x + c))*\log((b*x + a)^n) - 2*(\\
& 2*(b^5*c^2*d^3*g^3 - 2*a*b^4*c*d^4*g^3 + a^2*b^3*d^5*g^3)*B*x^3 + 4*(b^5*c^ \\
& 3*d^2*g^3 - 2*a*b^4*c^2*d^3*g^3 + a^2*b^3*c*d^4*g^3)*B*x^2 - 4*(b^5*c^4*d*g \\
& ^3 - 5*a*b^4*c^3*d^2*g^3 + 7*a^2*b^3*c^2*d^3*g^3 - 3*a^3*b^2*c*d^4*g^3)*B*x \\
& - (5*b^5*c^5*g^3 - 19*a*b^4*c^4*d*g^3 + 23*a^2*b^3*c^3*d^2*g^3 - 9*a^3*b^2 \\
& *c^2*d^3*g^3)*B - 6*((b^5*c^3*d^2*g^3 - 3*a*b^4*c^2*d^3*g^3 + 3*a^2*b^3*c*d \\
& ^4*g^3 - a^3*b^2*d^5*g^3)*B*x^2 + 2*(b^5*c^4*d*g^3 - 3*a*b^4*c^3*d^2*g^3 + \\
& 3*a^2*b^3*c^2*d^3*g^3 - a^3*b^2*c*d^4*g^3)*B*x + (b^5*c^5*g^3 - 3*a*b^4*c^4 \\
& *d*g^3 + 3*a^2*b^3*c^3*d^2*g^3 - a^3*b^2*c^2*d^3*g^3)*B)*\log(d*x + c))*\log(\\
& (d*x + c)^n)/(b^2*c^4*d^4*i^3 - 2*a*b*c^3*d^5*i^3 + a^2*c^2*d^6*i^3 + (b^2 \\
& *c^2*d^6*i^3 - 2*a*b*c*d^7*i^3 + a^2*d^8*i^3)*x^2 + 2*(b^2*c^3*d^5*i^3 - 2* \\
& a*b*c^2*d^6*i^3 + a^2*c*d^7*i^3)*x) - 3*(b^3*c*g^3*n - a*b^2*d*g^3*n)*(\log(\\
& b*x + a)*\log((b*d*x + a*d)/(b*c - a*d) + 1) + \operatorname{dilog}(-(b*d*x + a*d)/(b*c - a \\
& *d)))*B/(d^4*i^3)
\end{aligned}$$

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ag + b gx)^3 \left(A + B \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ci + dix)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((a*g + b*g*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(c*i + d*i*x)^3,x)

[Out] int(((a*g + b*g*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(c*i + d*i*x)^3, x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)**3*(A+B*ln(e*((b*x+a)/(d*x+c))**n))/(d*i*x+c*i)**3,x)

[Out] Timed out

$$3.152 \quad \int \frac{(ag+bgx)^2 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ci+dx)^3} dx$$

Optimal. Leaf size=263

$$\frac{b^2 g^2 \log \left(\frac{bc-ad}{b(c+dx)} \right) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{d^3 i^3} - \frac{g^2 (a+bx)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{2di^3 (c+dx)^2} - \frac{Abg^2 (a+bx)}{d^2 i^3 (c+dx)} - \frac{b^2 Bg^2 n \text{Li}_2 \left(\frac{d(a+bx)}{b(c+dx)} \right)}{d^3 i^3}$$

[Out] $\frac{1}{4} B g^2 n (b x+a)^2 / d / i^3 / (d x+c)^2 - A b g^2 (b x+a) / d^2 / i^3 / (d x+c) + b B g^2 n (b x+a) / d^2 / i^3 / (d x+c) - b B g^2 (b x+a) \ln \left(e \left(\frac{b x+a}{d x+c} \right)^n \right) / d^2 / i^3 / (d x+c) - 1/2 g^2 (b x+a)^2 (A+B \ln \left(e \left(\frac{b x+a}{d x+c} \right)^n \right)) / d / i^3 / (d x+c)^2 - b^2 g^2 (A+B \ln \left(e \left(\frac{b x+a}{d x+c} \right)^n \right)) \ln \left(\frac{-a d+b c}{b (d x+c)} \right) / d^3 / i^3 - b^2 B g^2 n \text{polylog} \left(2, d (b x+a) / b (d x+c) \right) / d^3 / i^3$

Rubi [A] time = 0.60, antiderivative size = 356, normalized size of antiderivative = 1.35, number of steps used = 18, number of rules used = 11, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.256$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$-\frac{b^2 Bg^2 n \text{PolyLog} \left(2, \frac{b(c+dx)}{bc-ad} \right)}{d^3 i^3} + \frac{b^2 g^2 \log(c+dx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{d^3 i^3} + \frac{2bg^2(bc-ad) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{d^3 i^3 (c+dx)}$$

Antiderivative was successfully verified.

[In] $\text{Int} \left[\left((a g + b g x)^2 (A + B \text{Log} [e ((a + b x) / (c + d x))^n]) \right) / (c i + d i x)^3, x \right]$

[Out] $\frac{B (b c - a d)^2 g^2 n}{4 d^3 i^3 (c + d x)^2} - \frac{3 b B (b c - a d) g^2 n}{(2 d^3 i^3 (c + d x) - (3 b^2 B g^2 n \text{Log} [a + b x]) / (2 d^3 i^3) - ((b c - a d)^2 g^2 (A + B \text{Log} [e ((a + b x) / (c + d x))^n]) / (2 d^3 i^3 (c + d x)^2) + (2 b (b c - a d) g^2 (A + B \text{Log} [e ((a + b x) / (c + d x))^n]) / (d^3 i^3 (c + d x)) + (3 b^2 B g^2 n \text{Log} [c + d x]) / (2 d^3 i^3) - (b^2 B g^2 n \text{Log} [-(d (a + b x) / (b c - a d))] \text{Log} [c + d x]) / (d^3 i^3) + (b^2 g^2 (A + B \text{Log} [e ((a + b x) / (c + d x))^n]) \text{Log} [c + d x]) / (d^3 i^3) + (b^2 B g^2 n \text{Log} [c + d x]^2) / (2 d^3 i^3) - (b^2 B g^2 n \text{PolyLog} [2, (b (c + d x) / (b c - a d))] / (d^3 i^3))$

Rule 12

$\text{Int} [(a_*) (u_*), x_Symbol] := \text{Dist} [a, \text{Int} [u, x], x] /; \text{FreeQ} [a, x] \ \&\& \ !\text{Match} \text{Q} [u, (b_*) (v_*) /; \text{FreeQ} [b, x]]$

Rule 44

```
Int[((a_) + (b_)*(x_)^(m_))*((c_) + (d_)*(x_)^(n_)), x_Symbol] := Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)/(x_), x_Symbol] := Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_)^(n_))])*(b_)^(p_)*((f_) + (g_
)*(x_)^(q_)), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_)*((d_) + (e_)*(x_)^(n_))]/(x_), x_Symbol] := -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))])*(b_)/((f_) + (g_)*(x_)), x_
Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_)^(n_))])*(b_)/((f_) + (g_)*(x_
)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_)^(n_))])*(b_)^(p_)*(RFx_), x_Sy
mbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol]
:> Simp[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol]
:> With[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(ag + bgx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(152c + 152dx)^3} dx &= \int \left(\frac{(-bc + ad)^2 g^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{3511808d^2(c + dx)^3} - \frac{b(bc - ad)g^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{1755904d^2(c + dx)^2} \right) dx \\
&= \frac{(b^2 g^2) \int \frac{A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{c+dx} dx}{3511808d^2} - \frac{(b(bc - ad)g^2) \int \frac{A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{(c+dx)^2} dx}{1755904d^2} \\
&= -\frac{(bc - ad)^2 g^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{7023616d^3(c + dx)^2} + \frac{b(bc - ad)g^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{1755904d^3(c + dx)} \\
&= -\frac{(bc - ad)^2 g^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{7023616d^3(c + dx)^2} + \frac{b(bc - ad)g^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{1755904d^3(c + dx)} \\
&= -\frac{(bc - ad)^2 g^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{7023616d^3(c + dx)^2} + \frac{b(bc - ad)g^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{1755904d^3(c + dx)} \\
&= \frac{B(bc - ad)^2 g^2 n}{14047232d^3(c + dx)^2} - \frac{3bB(bc - ad)g^2 n}{7023616d^3(c + dx)} - \frac{3b^2 B g^2 n \log(a + bx)}{7023616d^3} \\
&= \frac{B(bc - ad)^2 g^2 n}{14047232d^3(c + dx)^2} - \frac{3bB(bc - ad)g^2 n}{7023616d^3(c + dx)} - \frac{3b^2 B g^2 n \log(a + bx)}{7023616d^3} \\
&= \frac{B(bc - ad)^2 g^2 n}{14047232d^3(c + dx)^2} - \frac{3bB(bc - ad)g^2 n}{7023616d^3(c + dx)} - \frac{3b^2 B g^2 n \log(a + bx)}{7023616d^3}
\end{aligned}$$

Mathematica [A] time = 0.34, size = 259, normalized size = 0.98

$$g^2 \left(4b^2 \log(c + dx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right) + \frac{8b(bc-ad) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{c+dx} - \frac{2(bc-ad)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{(c+dx)^2} - 2b^2 B n \left(2L \right) \right)$$

Antiderivative was successfully verified.

[In] Integrate[((a*g + b*g*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c*i + d*i*x)^3,x]

[Out] $(g^2*((B*(b*c - a*d)^{2*n})/(c + d*x)^2 - (6*b*B*(b*c - a*d)*n)/(c + d*x) - 6*b^2*B*n*\text{Log}[a + b*x] - (2*(b*c - a*d)^{2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(c + d*x)^2 + (8*b*(b*c - a*d)*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(c + d*x) + 6*b^2*B*n*\text{Log}[c + d*x] + 4*b^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])* \text{Log}[c + d*x] - 2*b^2*B*n*((2*\text{Log}[(d*(a + b*x))/(-(b*c) + a*d)] - \text{Log}[c + d*x])* \text{Log}[c + d*x] + 2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])))/(4*d^{3*i^3})$

fricas [F] time = 0.75, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{Ab^2g^2x^2 + 2Aabg^2x + Aa^2g^2 + (Bb^2g^2x^2 + 2Babg^2x + Ba^2g^2) \log \left(e \left(\frac{bx+a}{dx+c} \right)^n \right)}{d^3i^3x^3 + 3cd^2i^3x^2 + 3c^2di^3x + c^3i^3}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((b*g*x+a*g)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^3,x, algorithm="fricas")`

[Out] `integral((A*b^2*g^2*x^2 + 2*A*a*b*g^2*x + A*a^2*g^2 + (B*b^2*g^2*x^2 + 2*B*a*b*g^2*x + B*a^2*g^2)*log(e*((b*x + a)/(d*x + c))^n))/(d^3*i^3*x^3 + 3*c*d^2*i^3*x^2 + 3*c^2*d*i^3*x + c^3*i^3), x)`

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((b*g*x+a*g)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^3,x, algorithm="giac")`

[Out] Timed out

maple [F] time = 0.44, size = 0, normalized size = 0.00

$$\int \frac{(bgx + ag)^2 \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)}{(dix + ci)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((b*g*x+a*g)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(d*i*x+c*i)^3,x)`

[Out] `int((b*g*x+a*g)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(d*i*x+c*i)^3,x)`

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^3,x, algorithm="maxima")

[Out] $\frac{1}{2}B*a*b*g^2*n*((b*c^2 - 3*a*c*d + 2*(b*c*d - 2*a*d^2)*x)/((b*c*d^4 - a*d^5)*i^3*x^2 + 2*(b*c^2*d^3 - a*c*d^4)*i^3*x + (b*c^3*d^2 - a*c^2*d^3)*i^3) + 2*(b^2*c - 2*a*b*d)*\log(b*x + a)/((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)*i^3) - 2*(b^2*c - 2*a*b*d)*\log(d*x + c)/((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)*i^3) + 1/4*B*a^2*g^2*n*((2*b*d*x + 3*b*c - a*d)/((b*c*d^3 - a*d^4)*i^3*x^2 + 2*(b*c^2*d^2 - a*c*d^3)*i^3*x + (b*c^3*d - a*c^2*d^2)*i^3) + 2*b^2*\log(b*x + a)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3) - 2*b^2*\log(d*x + c)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3) + 1/2*A*b^2*g^2*((4*c*d*x + 3*c^2)/(d^5*i^3*x^2 + 2*c*d^4*i^3*x + c^2*d^3*i^3) + 2*\log(d*x + c)/(d^3*i^3)) - 1/2*B*b^2*g^2*((2*(d^2*n*x^2 + 2*c*d*n*x + c^2*n)*\log(b*x + a)*\log(d*x + c) - (d^2*n*x^2 + 2*c*d*n*x + c^2*n)*\log(d*x + c)^2 - (4*c*d*x + 3*c^2 + 2*(d^2*x^2 + 2*c*d*x + c^2)*\log(d*x + c))*\log((b*x + a)^n) + (4*c*d*x + 3*c^2 + 2*(d^2*x^2 + 2*c*d*x + c^2)*\log(d*x + c))*\log((d*x + c)^n))/(d^5*i^3*x^2 + 2*c*d^4*i^3*x + c^2*d^3*i^3) - 2*\integrate(1/2*(2*b*d^3*x^3*\log(e) + 2*a*d^3*x^2*\log(e) - 3*b*c^3*n + 3*a*c^2*d*n - 4*(b*c^2*d*n - a*c*d^2*n)*x + 2*(b*d^3*n*x^3 + a*c^2*d*n + (2*b*c*d^2*n + a*d^3*n)*x^2 + (b*c^2*d*n + 2*a*c*d^2*n)*x)*\log(b*x + a)/(b*d^6*i^3*x^4 + a*c^3*d^3*i^3 + (3*b*c*d^5*i^3 + a*d^6*i^3)*x^3 + 3*(b*c^2*d^4*i^3 + a*c*d^5*i^3)*x^2 + (b*c^3*d^3*i^3 + 3*a*c^2*d^4*i^3)*x), x) - (2*d*x + c)*B*a*b*g^2*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(d^4*i^3*x^2 + 2*c*d^3*i^3*x + c^2*d^2*i^3) - 1/2*B*a^2*g^2*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(d^3*i^3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3) - 1/2*A*a^2*g^2/(d^3*i^3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3)$

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ag + bgx)^2 \left(A + B \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ci + dix)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((a*g + b*g*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(c*i + d*i*x)^3,x)

[Out] int(((a*g + b*g*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(c*i + d*i*x)^3, x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n))/(d*i*x+c*i)**3,x)

[Out] Timed out

$$3.153 \quad \int \frac{(ag+bgx) \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ci+dx)^3} dx$$

Optimal. Leaf size=89

$$\frac{g(a+bx)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{2i^3(c+dx)^2(bc-ad)} - \frac{Bgn(a+bx)^2}{4i^3(c+dx)^2(bc-ad)}$$

[Out] $-1/4*B*g*n*(b*x+a)^2/(-a*d+b*c)/i^3/(d*x+c)^2+1/2*g*(b*x+a)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)/i^3/(d*x+c)^2$

Rubi [B] time = 0.32, antiderivative size = 201, normalized size of antiderivative = 2.26, number of steps used = 10, number of rules used = 4, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}} = 0.098$, Rules used = {2528, 2525, 12, 44}

$$-\frac{bg \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{d^2 i^3 (c+dx)} + \frac{g(bc-ad) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{2d^2 i^3 (c+dx)^2} + \frac{b^2 Bgn \log(a+bx)}{2d^2 i^3 (bc-ad)} - \frac{b^2 Bgn \log(c+dx)}{2d^2 i^3 (bc-ad)} - \frac{Bgn}{4d^2}$$

Antiderivative was successfully verified.

[In] Int[((a*g + b*g*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c*i + d*i*x)^3, x]

[Out] $-(B*(b*c - a*d)*g*n)/(4*d^2*i^3*(c + d*x)^2) + (b*B*g*n)/(2*d^2*i^3*(c + d*x)) + (b^2*B*g*n*Log[a + b*x])/(2*d^2*(b*c - a*d)*i^3) + ((b*c - a*d)*g*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(2*d^2*i^3*(c + d*x)^2) - (b*g*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(d^2*i^3*(c + d*x)) - (b^2*B*g*n*Log[c + d*x])/(2*d^2*(b*c - a*d)*i^3)$

Rule 12

Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 44

Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])

Rule 2525

```

Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFX^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*
a + b*Log[c*RFX^p])^(n - 1)*D[RFX, x])/RFX, x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFX, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]

```

Rule 2528

```

Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*RFX^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFX, x] && RationalFunci
onQ[RGx, x] && IGtQ[n, 0]

```

Rubi steps

$$\begin{aligned}
\int \frac{(ag + bgx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(153c + 153dx)^3} dx &= \int \left(\frac{(-bc + ad)g \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{3581577d(c + dx)^3} + \frac{bg \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{3581577d(c + dx)^2} \right) dx \\
&= \frac{(bg) \int \frac{A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{(c+dx)^2} dx}{3581577d} - \frac{((bc - ad)g) \int \frac{A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{(c+dx)^3} dx}{3581577d} \\
&= \frac{(bc - ad)g \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{7163154d^2(c + dx)^2} - \frac{bg \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{3581577d^2(c + dx)} + \dots \\
&= \frac{(bc - ad)g \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{7163154d^2(c + dx)^2} - \frac{bg \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{3581577d^2(c + dx)} + \dots \\
&= \frac{(bc - ad)g \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{7163154d^2(c + dx)^2} - \frac{bg \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{3581577d^2(c + dx)} + \dots \\
&= -\frac{B(bc - ad)gn}{14326308d^2(c + dx)^2} + \frac{bBgn}{7163154d^2(c + dx)} + \frac{b^2Bgn \log(a + bx)}{7163154d^2(bc - ad)}
\end{aligned}$$

Mathematica [B] time = 0.16, size = 215, normalized size = 2.42

$$8 \left(-\frac{b \left(B \log \left(e^{\left(\frac{a+bx}{c+dx} \right)^n} \right) + A \right)}{d^2(c+dx)} + \frac{(bc-ad) \left(B \log \left(e^{\left(\frac{a+bx}{c+dx} \right)^n} \right) + A \right)}{2d^2(c+dx)^2} - \frac{Bn \left(\frac{2b^2 \log(a+bx)}{bc-ad} - \frac{2b^2 \log(c+dx)}{bc-ad} + \frac{bc-ad}{(c+dx)^2} + \frac{2b}{c+dx} \right)}{4d^2} + \frac{bBn \left(\frac{b \log(a+bx)}{bc-ad} - \frac{b \log(c+dx)}{bc-ad} + \frac{bc-ad}{(c+dx)^2} + \frac{2b}{c+dx} \right)}{d^2} \right) \frac{1}{i^3}$$

Antiderivative was successfully verified.

[In] Integrate[((a*g + b*g*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c*i + d*i*x)^3,x]

[Out] (g*((b*c - a*d)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(2*d^2*(c + d*x)^2) - (b*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(d^2*(c + d*x)) + (b*B*n*((c + d*x)^(-1) + (b*Log[a + b*x])/(b*c - a*d) - (b*Log[c + d*x])/(b*c - a*d)))/d^2 - (B*n*((b*c - a*d)/(c + d*x)^2 + (2*b)/(c + d*x) + (2*b^2*Log[a + b*x])/(b*c - a*d) - (2*b^2*Log[c + d*x])/(b*c - a*d)))/(4*d^2))/i^3

fricas [B] time = 0.94, size = 250, normalized size = 2.81

$$\frac{(Bb^2c^2 - Ba^2d^2)gn - 2(Ab^2c^2 - Aa^2d^2)g + 2((Bb^2cd - Babd^2)gn - 2(Ab^2cd - Aabd^2)g)x - 2(2(Bb^2cd - Babd^2)gn - 2(Ab^2cd - Aabd^2)g)}{4((bcd^4 - ad^5)i^3x^2 + 2(bc^2d^3 - acd^4)i^3x + \dots)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^3,x, algorithm="fricas")

[Out] 1/4*((B*b^2*c^2 - B*a^2*d^2)*g*n - 2*(A*b^2*c^2 - A*a^2*d^2)*g + 2*((B*b^2*c*d - B*a*b*d^2)*g*n - 2*(A*b^2*c*d - A*a*b*d^2)*g)*x - 2*(2*(B*b^2*c*d - B*a*b*d^2)*g*x + (B*b^2*c^2 - B*a^2*d^2)*g)*log(e) + 2*(B*b^2*d^2*g*n*x^2 + 2*B*a*b*d^2*g*n*x + B*a^2*d^2*g*n)*log((b*x + a)/(d*x + c)))/((b*c*d^4 - a*d^5)*i^3*x^2 + 2*(b*c^2*d^3 - a*c*d^4)*i^3*x + (b*c^3*d^2 - a*c^2*d^3)*i^3)

giac [A] time = 9.47, size = 97, normalized size = 1.09

$$\frac{1}{4} \left(\frac{2(bx+a)^2 Bgin \log\left(\frac{bx+a}{dx+c}\right)}{(dx+c)^2} - \frac{(Bgin - 2Agi - 2Bgi)(bx+a)^2}{(dx+c)^2} \right) \left(\frac{bc}{(bc-ad)^2} - \frac{ad}{(bc-ad)^2} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^3,x, algorithm="giac")

[Out] $\frac{1}{4}*(2*(b*x + a)^2*B*g*i*n*\log((b*x + a)/(d*x + c))/(d*x + c)^2 - (B*g*i*n - 2*A*g*i - 2*B*g*i)*(b*x + a)^2/(d*x + c)^2)*(b*c/(b*c - a*d)^2 - a*d/(b*c - a*d)^2)$

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int \frac{(bgx + ag) \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)}{(dix + ci)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((b*g*x+a*g)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(d*i*x+c*i)^3,x)`

[Out] `int((b*g*x+a*g)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(d*i*x+c*i)^3,x)`

maxima [B] time = 1.53, size = 578, normalized size = 6.49

$$\frac{1}{4} B b g n \left(\frac{bc^2 - 3acd + 2(bcd - 2ad^2)x}{(bcd^4 - ad^5)i^3x^2 + 2(bc^2d^3 - acd^4)i^3x + (bc^3d^2 - ac^2d^3)i^3} + \frac{2(b^2c - 2abd) \log(bx + a)}{(b^2c^2d^2 - 2abcd^3 + a^2d^4)i^3} - \frac{2(b^2c - 2abd)}{(b^2c^2d^2 - 2abcd^3 + a^2d^4)i^3} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((b*g*x+a*g)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^3,x, algorithm="maxima")`

[Out] $\frac{1}{4}B*b*g*n*((b*c^2 - 3*a*c*d + 2*(b*c*d - 2*a*d^2)*x)/((b*c*d^4 - a*d^5)*i^3*x^2 + 2*(b*c^2*d^3 - a*c*d^4)*i^3*x + (b*c^3*d^2 - a*c^2*d^3)*i^3) + 2*(b^2*c - 2*a*b*d)*\log(b*x + a)/((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)*i^3) - 2*(b^2*c - 2*a*b*d)*\log(d*x + c)/((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)*i^3) + 1/4*B*a*g*n*((2*b*d*x + 3*b*c - a*d)/((b*c*d^3 - a*d^4)*i^3*x^2 + 2*(b*c^2*d^2 - a*c*d^3)*i^3*x + (b*c^3*d - a*c^2*d^2)*i^3) + 2*b^2*\log(b*x + a)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3) - 2*b^2*\log(d*x + c)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3) - 1/2*(2*d*x + c)*B*b*g*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(d^4*i^3*x^2 + 2*c*d^3*i^3*x + c^2*d^2*i^3) - 1/2*(2*d*x + c)*A*b*g/(d^4*i^3*x^2 + 2*c*d^3*i^3*x + c^2*d^2*i^3) - 1/2*B*a*g*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(d^3*i^3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3) - 1/2*A*a*g/(d^3*i^3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3)$

mupad [B] time = 5.49, size = 205, normalized size = 2.30

$$\frac{x(2Abdg - Bbdgn) + Aadg + Abcg - \frac{Badgn}{2} - \frac{Bbcgn}{2}}{2c^2d^2i^3 + 4cd^3i^3x + 2d^4i^3x^2} - \frac{\ln\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\left(\frac{Bag}{2d} + \frac{Bbcg}{2d^2} + \frac{Bbgx}{d}\right)}{c^2i^3 + 2cdi^3x + d^2i^3x^2} + \frac{Bb^2gna}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(c*i + d*i*x)^3,
x)
```

```
[Out] (B*b^2*g*n*atan((b*c*2i + b*d*x*2i)/(a*d - b*c) + 1i)*1i)/(d^2*i^3*(a*d - b
*c)) - (log(e*((a + b*x)/(c + d*x))^n)*((B*a*g)/(2*d) + (B*b*c*g)/(2*d^2) +
(B*b*g*x)/d))/(c^2*i^3 + d^2*i^3*x^2 + 2*c*d*i^3*x) - (x*(2*A*b*d*g - B*b*
d*g*n) + A*a*d*g + A*b*c*g - (B*a*d*g*n)/2 - (B*b*c*g*n)/2)/(2*c^2*d^2*i^3
+ 2*d^4*i^3*x^2 + 4*c*d^3*i^3*x)
```

```
sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00
```

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*ln(e*((b*x+a)/(d*x+c))^n)))/(d*i*x+c*i)**3,x)
```

```
[Out] Exception raised: NotImplementedError
```

$$3.154 \quad \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(ci+dx)^3} dx$$

Optimal. Leaf size=151

$$-\frac{B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A}{2di^3(c+dx)^2} + \frac{b^2Bn \log(a+bx)}{2di^3(bc-ad)^2} - \frac{b^2Bn \log(c+dx)}{2di^3(bc-ad)^2} + \frac{bBn}{2di^3(c+dx)(bc-ad)} + \frac{Bn}{4di^3(c+dx)^2}$$

[Out] $1/4*B*n/d/i^3/(d*x+c)^2+1/2*b*B*n/d/(-a*d+b*c)/i^3/(d*x+c)+1/2*b^2*B*n*\ln(b*x+a)/d/(-a*d+b*c)^2/i^3+1/2*(-A-B*\ln(e*((b*x+a)/(d*x+c))^n))/d/i^3/(d*x+c)^2-1/2*b^2*B*n*\ln(d*x+c)/d/(-a*d+b*c)^2/i^3$

Rubi [A] time = 0.10, antiderivative size = 151, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {2525, 12, 44}

$$-\frac{B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A}{2di^3(c+dx)^2} + \frac{b^2Bn \log(a+bx)}{2di^3(bc-ad)^2} - \frac{b^2Bn \log(c+dx)}{2di^3(bc-ad)^2} + \frac{bBn}{2di^3(c+dx)(bc-ad)} + \frac{Bn}{4di^3(c+dx)^2}$$

Antiderivative was successfully verified.

[In] `Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/(c*i + d*i*x)^3, x]`

[Out] $(B*n)/(4*d*i^3*(c + d*x)^2) + (b*B*n)/(2*d*(b*c - a*d)*i^3*(c + d*x)) + (b^2*B*n*Log[a + b*x])/(2*d*(b*c - a*d)^2*i^3) - (A + B*Log[e*((a + b*x)/(c + d*x))^n])/(2*d*i^3*(c + d*x)^2) - (b^2*B*n*Log[c + d*x])/(2*d*(b*c - a*d)^2*i^3)$

Rule 12

`Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]`

Rule 44

`Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] & & NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])`

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_.))^(m_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rubi steps

$$\begin{aligned} \int \frac{A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(154c + 154dx)^3} dx &= -\frac{A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{7304528d(c + dx)^2} + \frac{(Bn) \int \frac{bc-ad}{23716(a+bx)(c+dx)^3} dx}{308d} \\ &= -\frac{A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{7304528d(c + dx)^2} + \frac{(B(bc - ad)n) \int \frac{1}{(a+bx)(c+dx)^3} dx}{7304528d} \\ &= -\frac{A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{7304528d(c + dx)^2} + \frac{(B(bc - ad)n) \int \left(\frac{b^3}{(bc-ad)^3(a+bx)} - \frac{d}{(bc-ad)(c+dx)^3} - \frac{bd}{(bc-ad)^2}\right) dx}{7304528d} \\ &= \frac{Bn}{14609056d(c + dx)^2} + \frac{bBn}{7304528d(bc - ad)(c + dx)} + \frac{b^2Bn \log(a + bx)}{7304528d(bc - ad)^2} - \frac{A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{7304528d} \end{aligned}$$

Mathematica [A] time = 0.14, size = 115, normalized size = 0.76

$$\frac{\frac{Bn(2b^2(c+dx)^2 \log(a+bx) + (bc-ad)(-ad+3bc+2bdx) - 2b^2(c+dx)^2 \log(c+dx))}{(bc-ad)^2} - 2\left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A\right)}{4di^3(c + dx)^2}$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/(c*i + d*i*x)^3,x]

[Out] (-2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + (B*n*((b*c - a*d)*(3*b*c - a*d + 2*b*d*x) + 2*b^2*(c + d*x)^2*Log[a + b*x] - 2*b^2*(c + d*x)^2*Log[c + d*x]))/(b*c - a*d)^2)/(4*d*i^3*(c + d*x)^2)

fricas [A] time = 0.91, size = 266, normalized size = 1.76

$$\frac{2Ab^2c^2 - 4Aabcd + 2Aa^2d^2 - 2(Bb^2cd - Babd^2)nx - (3Bb^2c^2 - 4Babcd + Ba^2d^2)n + 2(Bb^2c^2 - 2Babcd + 2Ab^2cd^2 - 2abcd^3 + a^2d^5)i^3x^2 + 2(b^2c^3d^2 - 2abc^2d^3 + a^2cd^4)i^3x}{4\left(\left(b^2c^2d^3 - 2abcd^4 + a^2d^5\right)i^3x^2 + 2\left(b^2c^3d^2 - 2abc^2d^3 + a^2cd^4\right)i^3x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^3,x, algorithm="fricas")

[Out]
$$-1/4*(2*A*b^2*c^2 - 4*A*a*b*c*d + 2*A*a^2*d^2 - 2*(B*b^2*c*d - B*a*b*d^2)*n *x - (3*B*b^2*c^2 - 4*B*a*b*c*d + B*a^2*d^2)*n + 2*(B*b^2*c^2 - 2*B*a*b*c*d + B*a^2*d^2)*\log(e) - 2*(B*b^2*d^2*n*x^2 + 2*B*b^2*c*d*n*x + (2*B*a*b*c*d - B*a^2*d^2)*n)*\log((b*x + a)/(d*x + c)))/((b^2*c^2*d^3 - 2*a*b*c*d^4 + a^2*d^5)*i^3*x^2 + 2*(b^2*c^3*d^2 - 2*a*b*c^2*d^3 + a^2*c*d^4)*i^3*x + (b^2*c^4*d - 2*a*b*c^3*d^2 + a^2*c^2*d^3)*i^3)$$

giac [A] time = 1.65, size = 187, normalized size = 1.24

$$\frac{1}{4} \left(2 \left(\frac{2(bx+a)Bbin}{(bc-ad)(dx+c)} - \frac{(bx+a)^2 Bdin}{(bc-ad)(dx+c)^2} \right) \log\left(\frac{bx+a}{dx+c}\right) + \frac{(Bdin - 2Adi - 2Bdi)(bx+a)^2}{(bc-ad)(dx+c)^2} - \frac{4(Bbin - Abi - 1)}{(bc-ad)(dx+c)} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^3,x, algorithm="giac")

[Out]
$$1/4*(2*(2*(b*x + a)*B*b*i*n/((b*c - a*d)*(d*x + c)) - (b*x + a)^2*B*d*i*n/((b*c - a*d)*(d*x + c)^2))*\log((b*x + a)/(d*x + c)) + (B*d*i*n - 2*A*d*i - 2*B*d*i)*(b*x + a)^2/((b*c - a*d)*(d*x + c)^2) - 4*(B*b*i*n - A*b*i - B*b*i)*(b*x + a)/((b*c - a*d)*(d*x + c))*(b*c/(b*c - a*d)^2 - a*d/(b*c - a*d)^2)$$

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int \frac{B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A}{(dix + ci)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(d*i*x+c*i)^3,x)

[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(d*i*x+c*i)^3,x)

maxima [A] time = 1.46, size = 259, normalized size = 1.72

$$\frac{1}{4} Bn \left(\frac{2bdx + 3bc - ad}{(bcd^3 - ad^4)i^3x^2 + 2(bc^2d^2 - acd^3)i^3x + (bc^3d - ac^2d^2)i^3} + \frac{2b^2 \log(bx + a)}{(b^2c^2d - 2abcd^2 + a^2d^3)i^3} - \frac{2b^2 \log(dx + c)}{(b^2c^2d - 2abcd^2 + a^2d^3)i^3} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^3,x, algorithm="maxima")

[Out] $\frac{1}{4}Bn \frac{(2bdx + 3bc - ad)}{((b^2d^3 - ad^4)i^3x^2 + 2(b^2cd^2 - acd^3)i^3x + (b^3d - ac^2d^2)i^3) + 2b^2 \log(bx + a) / ((b^2c^2d - 2ab^2cd^2 + a^2d^3)i^3) - 2b^2 \log(dx + c) / ((b^2c^2d - 2ab^2cd^2 + a^2d^3)i^3)} - \frac{1}{2}B \log(e(bx/(dx+c) + a/(dx+c))^n) / (d^3i^3x^2 + 2cd^2i^3x + c^2di^3) - \frac{1}{2}A / (d^3i^3x^2 + 2cd^2i^3x + c^2di^3)$

mupad [B] time = 4.97, size = 221, normalized size = 1.46

$$\frac{Bb^2n \operatorname{atanh}\left(\frac{2a^2d^3i^3 - 2b^2c^2di^3}{2di^3(ad-bc)^2} + \frac{2bdx}{ad-bc}\right)}{di^3(ad-bc)^2} - \frac{B \ln\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{2d(c^2i^3 + 2cdi^3x + d^2i^3x^2)} - \frac{\frac{2Aad - 2Abc - Badn + 3Bbcn}{2(ad-bc)} + \frac{Bbdnx}{ad-bc}}{2c^2di^3 + 4cd^2i^3x + 2d^3i^3x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))/(c*i + d*i*x)^3,x)

[Out] $(Bb^2n \operatorname{atanh}((2a^2d^3i^3 - 2b^2c^2di^3)/(2di^3(ad-bc)^2) + (2bdx)/(ad-bc)))/(d^3i^3(ad-bc)^2) - (B \log(e((a + b*x)/(c + d*x))^n))/(2d(c^2i^3 + d^2i^3x^2 + 2cdi^3x)) - ((2Aad - 2Ab^2c - B^2adn + 3B^2bcn)/(2(ad-bc)) + (B^2bdn)/(ad-bc))/(2c^2di^3 + 2d^3i^3x^2 + 4cd^2i^3x)$

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)**3,x)

[Out] Exception raised: NotImplementedError

$$3.155 \quad \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(ag+bgx)(ci+dix)^3} dx$$

Optimal. Leaf size=254

$$\frac{b^2 \log\left(\frac{a+bx}{c+dx}\right) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A\right)}{gi^3(bc-ad)^3} + \frac{d^2(a+bx)^2 \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A\right)}{2gi^3(c+dx)^2(bc-ad)^3} - \frac{2bd(a+bx) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A\right)}{gi^3(c+dx)(bc-ad)^3}$$

[Out] $-1/4*B*n*(4*b-d*(b*x+a)/(d*x+c))^2/(-a*d+b*c)^3/g/i^3+1/2*d^2*(b*x+a)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^3/g/i^3/(d*x+c)^2-2*b*d*(b*x+a)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^3/g/i^3/(d*x+c)+b^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))*\ln((b*x+a)/(d*x+c))/(-a*d+b*c)^3/g/i^3-1/2*b^2*B*n*\ln((b*x+a)/(d*x+c))^2/(-a*d+b*c)^3/g/i^3$

Rubi [C] time = 0.87, antiderivative size = 557, normalized size of antiderivative = 2.19, number of steps used = 26, number of rules used = 11, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.256$, Rules used = {2528, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 12, 44}

$$\frac{b^2 B n \text{PolyLog}\left(2, -\frac{d(a+bx)}{bc-ad}\right)}{gi^3(bc-ad)^3} + \frac{b^2 B n \text{PolyLog}\left(2, \frac{b(c+dx)}{bc-ad}\right)}{gi^3(bc-ad)^3} + \frac{b^2 \log(a+bx) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A\right)}{gi^3(bc-ad)^3} - \frac{b^2 \log(c+dx)}{gi^3}$$

Antiderivative was successfully verified.

[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)*(c*i + d*i*x)^3), x]

[Out] $-(B*n)/(4*(b*c - a*d)*g*i^3*(c + d*x)^2) - (3*b*B*n)/(2*(b*c - a*d)^2*g*i^3*(c + d*x)) - (3*b^2*B*n*Log[a + b*x])/(2*(b*c - a*d)^3*g*i^3) - (b^2*B*n*Log[a + b*x]^2)/(2*(b*c - a*d)^3*g*i^3) + (A + B*Log[e*((a + b*x)/(c + d*x))^n])/(2*(b*c - a*d)*g*i^3*(c + d*x)^2) + (b*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)^2*g*i^3*(c + d*x)) + (b^2*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)^3*g*i^3) + (3*b^2*B*n*Log[c + d*x])/(2*(b*c - a*d)^3*g*i^3) + (b^2*B*n*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/((b*c - a*d)^3*g*i^3) - (b^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x])/((b*c - a*d)^3*g*i^3) - (b^2*B*n*Log[c + d*x]^2)/(2*(b*c - a*d)^3*g*i^3) + (b^2*B*n*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g*i^3) + (b^2*B*n*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^3*g*i^3) + (b^2*B*n*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g*i^3)$

Rule 12

$\text{Int}[(a_*)(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \ \&\& \ !\text{MatchQ}[u, (b_*)(v_)] /; \text{FreeQ}[b, x]$

Rule 44

$\text{Int}[(a_*) + (b_*)(x_)]^{(m_*)} * ((c_*) + (d_*)(x_))^{(n_*)}, x_Symbol] \rightarrow \text{Int}[\text{ExpandIntegrand}[(a + b*x)^m * (c + d*x)^n, x], x] /; \text{FreeQ}[\{a, b, c, d\}, x] \ \&\& \ \text{NeQ}[b*c - a*d, 0] \ \&\& \ \text{ILtQ}[m, 0] \ \&\& \ \text{IntegerQ}[n] \ \&\& \ !(\text{IGtQ}[n, 0] \ \&\& \ \text{LtQ}[m + n + 2, 0])$

Rule 2301

$\text{Int}[(a_*) + \text{Log}[(c_*)(x_)]^{(n_*)} * (b_*)] / (x_), x_Symbol] \rightarrow \text{Simp}[(a + b*\text{Log}[c*x^n])^2 / (2*b*n), x] /; \text{FreeQ}[\{a, b, c, n\}, x]$

Rule 2390

$\text{Int}[(a_*) + \text{Log}[(c_*) * ((d_*) + (e_*)(x_))^{(n_*)}] * (b_*)]^{(p_*)} * ((f_*) + (g_*)(x_))^{(q_*)}, x_Symbol] \rightarrow \text{Dist}[1/e, \text{Subst}[\text{Int}[(f*x)/d]^q * (a + b*\text{Log}[c*x^n])^p, x], x, d + e*x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g, n, p, q\}, x] \ \&\& \ \text{EqQ}[e*f - d*g, 0]$

Rule 2391

$\text{Int}[\text{Log}[(c_*) * ((d_*) + (e_*)(x_))^{(n_*)})] / (x_), x_Symbol] \rightarrow -\text{Simp}[\text{PolyLog}[2, -(c*e*x^n)]/n, x] /; \text{FreeQ}[\{c, d, e, n\}, x] \ \&\& \ \text{EqQ}[c*d, 1]$

Rule 2393

$\text{Int}[(a_*) + \text{Log}[(c_*) * ((d_*) + (e_*)(x_))] * (b_*)] / ((f_*) + (g_*)(x_)), x_Symbol] \rightarrow \text{Dist}[1/g, \text{Subst}[\text{Int}[(a + b*\text{Log}[1 + (c*e*x)/g]]/x, x], x, f + g*x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g\}, x] \ \&\& \ \text{NeQ}[e*f - d*g, 0] \ \&\& \ \text{EqQ}[g + c*(e*f - d*g), 0]$

Rule 2394

$\text{Int}[(a_*) + \text{Log}[(c_*) * ((d_*) + (e_*)(x_))^{(n_*)}] * (b_*)] / ((f_*) + (g_*)(x_)), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[(e*(f + g*x)) / (e*f - d*g)] * (a + b*\text{Log}[c*(d + e*x)^n]) / g, x] - \text{Dist}[(b*e^n)/g, \text{Int}[\text{Log}[(e*(f + g*x)) / (e*f - d*g)] / (d + e*x), x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g, n\}, x] \ \&\& \ \text{NeQ}[e*f - d*g, 0]$

Rule 2418

$\text{Int}[(a_*) + \text{Log}[(c_*) * ((d_*) + (e_*)(x_))^{(n_*)}] * (b_*)]^{(p_*)} * (\text{RFx}_), x_Symbol] \rightarrow \text{With}[\{u = \text{ExpandIntegrand}[(a + b*\text{Log}[c*(d + e*x)^n])^p, \text{RFx}, x]\},$

```
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
Rfx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunci
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(155c + 155dx)^3(ag + bgx)} dx &= \int \left(\frac{b^3 \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{3723875(bc - ad)^3g(a + bx)} - \frac{d \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{3723875(bc - ad)g(c + dx)^3} - \frac{bd \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{3723875(bc - ad)^2g(c + dx)^2} \right) dx \\
&= \frac{b^3 \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{a+bx} dx}{3723875(bc - ad)^3g} - \frac{(b^2d) \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{c+dx} dx}{3723875(bc - ad)^3g} - \frac{(bd) \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(c+dx)^2} dx}{3723875(bc - ad)^2g} \\
&= \frac{A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{7447750(bc - ad)g(c + dx)^2} + \frac{b \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{3723875(bc - ad)^2g(c + dx)} + \frac{b^2 \log(a + bx)}{3723875(bc - ad)^2g} \\
&= \frac{A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{7447750(bc - ad)g(c + dx)^2} + \frac{b \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{3723875(bc - ad)^2g(c + dx)} + \frac{b^2 \log(a + bx)}{3723875(bc - ad)^2g} \\
&= \frac{A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{7447750(bc - ad)g(c + dx)^2} + \frac{b \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{3723875(bc - ad)^2g(c + dx)} + \frac{b^2 \log(a + bx)}{3723875(bc - ad)^2g} \\
&= -\frac{Bn}{14895500(bc - ad)g(c + dx)^2} - \frac{3bBn}{7447750(bc - ad)^2g(c + dx)} - \frac{3b^2Bn \log(a + bx)}{7447750(bc - ad)^2g} \\
&= -\frac{Bn}{14895500(bc - ad)g(c + dx)^2} - \frac{3bBn}{7447750(bc - ad)^2g(c + dx)} - \frac{3b^2Bn \log(a + bx)}{7447750(bc - ad)^2g} \\
&= -\frac{Bn}{14895500(bc - ad)g(c + dx)^2} - \frac{3bBn}{7447750(bc - ad)^2g(c + dx)} - \frac{3b^2Bn \log(a + bx)}{7447750(bc - ad)^2g}
\end{aligned}$$

Mathematica [C] time = 0.42, size = 434, normalized size = 1.71

$$4b^2(c + dx)^2 \log(a + bx) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right) - 4b^2(c + dx)^2 \log(c + dx) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right) + 2(bc - ad) \log(a + bx) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right)$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)*(c*i + d*i*x)^3), x]

```
[Out] (2*(b*c - a*d)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 4*b*(b*c - a*d)*(c + d*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 4*b^2*(c + d*x)^2*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 4*b^2*(c + d*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] - 4*b*B*n*(c + d*x)*(b*c - a*d + b*(c + d*x)*Log[a + b*x] - b*(c + d*x)*Log[c + d*x]) - B*n*((b*c - a*d)^2 + 2*b*(b*c - a*d)*(c + d*x) + 2*b^2*(c + d*x)^2*Log[a + b*x] - 2*b^2*(c + d*x)^2*Log[c + d*x]) - 2*b^2*B*n*(c + d*x)^2*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + 2*b^2*B*n*(c + d*x)^2*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))/(4*(b*c - a*d)^3*g*i^3*(c + d*x)^2)
```

fricas [A] time = 0.92, size = 487, normalized size = 1.92

$$\frac{6Ab^2c^2 - 8Aabcd + 2Aa^2d^2 + 2(Bb^2d^2nx^2 + 2Bb^2cdnx + Bb^2c^2n) \log\left(\frac{bx+a}{dx+c}\right)^2 - (7Bb^2c^2 - 8Babcd + Ba^2d^2)n}{(b^3c^5 - 3a^2b^2c^4d + 3a^2b^2c^3d^2 - a^3c^2d^3)g^3i^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)/(d*i*x+c*i)^3,x, algorithm="fricas")
```

```
[Out] 1/4*(6*A*b^2*c^2 - 8*A*a*b*c*d + 2*A*a^2*d^2 + 2*(B*b^2*d^2*n*x^2 + 2*B*b^2*c*d*n*x + B*b^2*c^2*n)*log((b*x + a)/(d*x + c))^2 - (7*B*b^2*c^2 - 8*B*a*b*c*d + B*a^2*d^2)*n + 2*(2*A*b^2*c*d - 2*A*a*b*d^2 - 3*(B*b^2*c*d - B*a*b*d^2)*n)*x + 2*(3*B*b^2*c^2 - 4*B*a*b*c*d + B*a^2*d^2 + 2*(B*b^2*c*d - B*a*b*d^2)*x + 2*(B*b^2*d^2*x^2 + 2*B*b^2*c*d*x + B*b^2*c^2)*log((b*x + a)/(d*x + c)))*log(e) + 2*(2*A*b^2*c^2 - (3*B*b^2*d^2*n - 2*A*b^2*d^2)*x^2 - (4*B*a*b*c*d - B*a^2*d^2)*n + 2*(2*A*b^2*c*d - (2*B*b^2*c*d + B*a*b*d^2)*n)*x)*log((b*x + a)/(d*x + c)))/((b^3*c^3*d^2 - 3*a*b^2*c^2*d^3 + 3*a^2*b*c*d^4 - a^3*d^5)*g*i^3*x^2 + 2*(b^3*c^4*d - 3*a*b^2*c^3*d^2 + 3*a^2*b*c^2*d^3 - a^3*c*d^4)*g*i^3*x + (b^3*c^5 - 3*a*b^2*c^4*d + 3*a^2*b*c^3*d^2 - a^3*c^2*d^3)*g*i^3)
```

giac [A] time = 4.01, size = 370, normalized size = 1.46

$$\frac{1}{4} \left(\frac{2Bb^2in \log\left(\frac{bx+a}{dx+c}\right)^2}{b^2c^2g - 2abcdg + a^2d^2g} - 2 \left(\frac{4(bx+a)Bbdin}{(b^2c^2g - 2abcdg + a^2d^2g)(dx+c)} - \frac{(bx+a)^2Bd^2in}{(b^2c^2g - 2abcdg + a^2d^2g)(dx+c)^2} \right) \log\left(\frac{bx+a}{dx+c}\right) \right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)/(d*i*x+c*i)^3,x, algorithm="giac")
```

```
[Out] 1/4*(2*B*b^2*i*n*log((b*x + a)/(d*x + c))^2/(b^2*c^2*g - 2*a*b*c*d*g + a^2*d^2*g) - 2*(4*(b*x + a)*B*b*d*i*n/((b^2*c^2*g - 2*a*b*c*d*g + a^2*d^2*g)*(d*x + c)) - (b*x + a)^2*B*d^2*i*n/((b^2*c^2*g - 2*a*b*c*d*g + a^2*d^2*g)*(d*x + c)^2))*log((b*x + a)/(d*x + c)) - 4*(A*b^2 + B*b^2)*log((b*x + a)/(d*x + c))/(b^2*c^2*g*i - 2*a*b*c*d*g*i + a^2*d^2*g*i) - (B*d^2*i*n - 2*A*d^2*i - 2*B*d^2*i)*(b*x + a)^2/((b^2*c^2*g - 2*a*b*c*d*g + a^2*d^2*g)*(d*x + c)^2) + 8*(B*b*d*i*n - A*b*d*i - B*b*d*i)*(b*x + a)/((b^2*c^2*g - 2*a*b*c*d*g + a^2*d^2*g)*(d*x + c))*(b*c/(b*c - a*d)^2 - a*d/(b*c - a*d)^2)
```

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A}{(bgx + ag)(dix + ci)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)/(d*i*x+c*i)^3,x)
```

```
[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)/(d*i*x+c*i)^3,x)
```

maxima [B] time = 1.98, size = 888, normalized size = 3.50

$$\frac{1}{2} B \left(\frac{2 b d x + 3 b c - a d}{(b^2 c^2 d^2 - 2 a b c d^3 + a^2 d^4) g i^3 x^2 + 2 (b^2 c^3 d - 2 a b c^2 d^2 + a^2 c d^3) g i^3 x + (b^2 c^4 - 2 a b c^3 d + a^2 c^2 d^2) g i^3} \right) + \frac{1}{b^3 c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)/(d*i*x+c*i)^3,x, algorithm="maxima")
```

```
[Out] 1/2*B*((2*b*d*x + 3*b*c - a*d)/((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)*g*i^3*x^2 + 2*(b^2*c^3*d - 2*a*b*c^2*d^2 + a^2*c*d^3)*g*i^3*x + (b^2*c^4 - 2*a*b*c^3*d + a^2*c^2*d^2)*g*i^3) + 2*b^2*log(b*x + a)/((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g*i^3) - 2*b^2*log(d*x + c)/((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g*i^3))*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) - 1/4*(7*b^2*c^2 - 8*a*b*c*d + a^2*d^2 + 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a)^2 + 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(d*x + c)^2 + 6*(b^2*c*d - a*b*d^2)*x + 6*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a) - 2*(3*b^2*d^2*x^2 + 6*b^2*c*d*x + 3*b^2*c^2 + 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a))*log(d*x + c))*B*n/(b^3*c^5*g*i^3 - 3*a*b^2*c^4*d*g*i^3 + 3*a^2*b*c^3*d^2*g*i^3 - a^3*c^2*d^3*g*i^3 + (b^3*c^3*d^2*g*i^3 - 3*a*b^2*c^2*d^3*g*i^3 + 3*a^2*b*c*d^4*g*i^3 - a^3*d^5*g*i^3)*x^2 + 2*(b^3*c^4*d*g*i^3 - 3*a*b^2*c^3*d^2*g*i^3 + 3*a^2*b*c^2*d^3*g*i^3 - a^3*c*d^4*g*i^3)*x) + 1/2*A*((2*b*d*x + 3*b*c - a*d)/((b^2*c^2*d^2 - 2*a*b*c
```

```
*d^3 + a^2*d^4)*g*i^3*x^2 + 2*(b^2*c^3*d - 2*a*b*c^2*d^2 + a^2*c*d^3)*g*i^3
*x + (b^2*c^4 - 2*a*b*c^3*d + a^2*c^2*d^2)*g*i^3) + 2*b^2*log(b*x + a)/((b^
3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g*i^3) - 2*b^2*log(d*x + c
)/((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g*i^3))
```

mupad [B] time = 6.65, size = 573, normalized size = 2.26

$$\frac{B b^2 \ln\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) \left(\frac{c g i^3 n (a d - b c)}{2 b} - \frac{g i^3 n (a d - b c) (a d - 2 b c)}{2 b^2} + \frac{d g i^3 n x (a d - b c)}{b}\right)}{g i^3 n (a d - b c) \left(a^2 d^2 - 2 a b c d + b^2 c^2\right) \left(g c^2 i^3 + 2 g c d i^3 x + g d^2 i^3 x^2\right)} - \frac{B b^2 \ln\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^2}{2 g i^3 n (a d - b c) \left(a^2 d^2 - 2 a b c d + b^2 c^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))/((a*g + b*g*x)*(c*i + d*i*x)^3),
x)
```

```
[Out] (b^2*atan((b^2*(A - (3*B*n)/2)*(2*a^3*d^3*g*i^3 + 2*b^3*c^3*g*i^3 - 2*a*b^2
*c^2*d*g*i^3 - 2*a^2*b*c*d^2*g*i^3)*1i)/(g*i^3*(2*A*b^2 - 3*B*b^2*n)*(a*d -
b*c)^3) + (b^3*d*x*(A - (3*B*n)/2)*(a^2*d^2*g*i^3 + b^2*c^2*g*i^3 - 2*a*b*
c*d*g*i^3)*4i)/(g*i^3*(2*A*b^2 - 3*B*b^2*n)*(a*d - b*c)^3))*(A - (3*B*n)/2
*2i)/(g*i^3*(a*d - b*c)^3) - ((2*A*a*d - 6*A*b*c - B*a*d*n + 7*B*b*c*n)/(2*
(a*d - b*c)) - (b*x*(2*A*d - 3*B*d*n))/(a*d - b*c))/(x^2*(2*a*d^3*g*i^3 - 2
*b*c*d^2*g*i^3) + x*(4*a*c*d^2*g*i^3 - 4*b*c^2*d*g*i^3) - 2*b*c^3*g*i^3 + 2
*a*c^2*d*g*i^3) - (B*b^2*log(e*((a + b*x)/(c + d*x))^n)^2)/(2*g*i^3*n*(a*d
- b*c)*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (B*b^2*log(e*((a + b*x)/(c + d*x)
)^n)*((c*g*i^3*n*(a*d - b*c))/(2*b) - (g*i^3*n*(a*d - b*c)*(a*d - 2*b*c))/(
2*b^2) + (d*g*i^3*n*x*(a*d - b*c)/b))/(g*i^3*n*(a*d - b*c)*(a^2*d^2 + b^2*
c^2 - 2*a*b*c*d)*(c^2*g*i^3 + d^2*g*i^3*x^2 + 2*c*d*g*i^3*x))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)/(d*i*x+c*i)**3,x)
```

```
[Out] Timed out
```


$$3.156 \quad \int \frac{A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{(ag+bgx)^2(ci+dix)^3} dx$$

Optimal. Leaf size=381

$$\frac{b^3(c+dx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{g^2 i^3 (a+bx)(bc-ad)^4} - \frac{3b^2 d \log \left(\frac{a+bx}{c+dx} \right) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{g^2 i^3 (bc-ad)^4} - \frac{d^3 (a+bx)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{2g^2 i^3 (c+dx)^2 (bc-ad)^4} +$$

[Out] $1/4 * B * d^3 * n * (b * x + a)^2 / (-a * d + b * c)^4 / g^2 / i^3 / (d * x + c)^2 - 3 * b * B * d^2 * n * (b * x + a) / (-a * d + b * c)^4 / g^2 / i^3 / (d * x + c) - b^3 * B * n * (d * x + c) / (-a * d + b * c)^4 / g^2 / i^3 / (b * x + a) - 1/2 * d^3 * (b * x + a)^2 * (A + B * \ln(e * ((b * x + a) / (d * x + c))^n)) / (-a * d + b * c)^4 / g^2 / i^3 / (d * x + c)^2 + 3 * b * d^2 * (b * x + a) * (A + B * \ln(e * ((b * x + a) / (d * x + c))^n)) / (-a * d + b * c)^4 / g^2 / i^3 / (d * x + c) - b^3 * (d * x + c) * (A + B * \ln(e * ((b * x + a) / (d * x + c))^n)) / (-a * d + b * c)^4 / g^2 / i^3 / (b * x + a) - 3 * b^2 * d * (A + B * \ln(e * ((b * x + a) / (d * x + c))^n)) * \ln((b * x + a) / (d * x + c)) / (-a * d + b * c)^4 / g^2 / i^3 + 3/2 * b^2 * B * d * n * \ln((b * x + a) / (d * x + c))^2 / (-a * d + b * c)^4 / g^2 / i^3$

Rubi [C] time = 1.08, antiderivative size = 657, normalized size of antiderivative = 1.72, number of steps used = 30, number of rules used = 11, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.256$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{3b^2 B d n \text{PolyLog} \left(2, -\frac{d(a+bx)}{bc-ad} \right)}{g^2 i^3 (bc-ad)^4} - \frac{3b^2 B d n \text{PolyLog} \left(2, \frac{b(c+dx)}{bc-ad} \right)}{g^2 i^3 (bc-ad)^4} - \frac{3b^2 d \log(a+bx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{g^2 i^3 (bc-ad)^4} - \frac{b^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{g^2 i^3 (bc-ad)^4}$$

Antiderivative was successfully verified.

[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)^2*(c*i + d*i*x)^3), x]

[Out] $-((b^2 * B * n) / ((b * c - a * d)^3 * g^2 * i^3 * (a + b * x))) + (B * d * n) / (4 * (b * c - a * d)^2 * g^2 * i^3 * (c + d * x)^2) + (5 * b * B * d * n) / (2 * (b * c - a * d)^3 * g^2 * i^3 * (c + d * x)) + (3 * b^2 * B * d * n * \text{Log}[a + b * x]) / (2 * (b * c - a * d)^4 * g^2 * i^3) + (3 * b^2 * B * d * n * \text{Log}[a + b * x]^2) / (2 * (b * c - a * d)^4 * g^2 * i^3) - (b^2 * (A + B * \text{Log}[e * ((a + b * x) / (c + d * x))^n])) / ((b * c - a * d)^3 * g^2 * i^3 * (a + b * x)) - (d * (A + B * \text{Log}[e * ((a + b * x) / (c + d * x))^n])) / (2 * (b * c - a * d)^2 * g^2 * i^3 * (c + d * x)^2) - (2 * b * d * (A + B * \text{Log}[e * ((a + b * x) / (c + d * x))^n])) / ((b * c - a * d)^3 * g^2 * i^3 * (c + d * x)) - (3 * b^2 * d * \text{Log}[a + b * x] * (A + B * \text{Log}[e * ((a + b * x) / (c + d * x))^n])) / ((b * c - a * d)^4 * g^2 * i^3) - (3 * b^2 * B * d * n * \text{Log}[c + d * x]) / (2 * (b * c - a * d)^4 * g^2 * i^3) - (3 * b^2 * B * d * n * \text{Log}[-((d * (a + b * x)) / (b * c - a * d))] * \text{Log}[c + d * x]) / ((b * c - a * d)^4 * g^2 * i^3) + (3 * b^2 * d * (A + B * \text{Log}[e * ((a + b * x) / (c + d * x))^n]) * \text{Log}[c + d * x]) / ((b * c - a * d)^4 * g^2 * i^3) + (3 * b^2 * B * d * n * \text{Log}[c + d * x]^2) / (2 * (b * c - a * d)^4 * g^2 * i^3) - (3 * b^2 * B * d * n * \text{Log}[a + b * x] * \text{Log}[(b * (c + d * x)) / (b * c - a * d)]) / ((b * c - a * d)^4 * g^2 * i^3) - (3 * b^2 * B * d$

$n \cdot \text{PolyLog}[2, -((d(a + b x))/(b c - a d))]/((b c - a d)^4 g^{2 i^3}) - (3 b^2 B d n \cdot \text{PolyLog}[2, (b(c + d x))/(b c - a d)]/((b c - a d)^4 g^{2 i^3})$

Rule 12

$\text{Int}[(a_*)(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \&\& \text{!MatchQ}[u, (b_*)(v_)] /; \text{FreeQ}[b, x]$

Rule 44

$\text{Int}[(a_*) + (b_*)(x_)^{(m_*)} * ((c_*) + (d_*)(x_)^{(n_*)}), x_Symbol] \rightarrow \text{Int}[\text{ExpandIntegrand}[(a + b x)^m (c + d x)^n, x], x] /; \text{FreeQ}\{a, b, c, d, x\} \&\& \text{NeQ}[b c - a d, 0] \&\& \text{ILtQ}[m, 0] \&\& \text{IntegerQ}[n] \&\& \text{!(IGtQ}[n, 0] \&\& \text{LtQ}[m + n + 2, 0])$

Rule 2301

$\text{Int}[(a_*) + \text{Log}[(c_*)(x_)^{(n_*)}] * (b_*) / (x_), x_Symbol] \rightarrow \text{Simp}[(a + b \text{Log}[c x^n])^2 / (2 b n), x] /; \text{FreeQ}\{a, b, c, n, x\}$

Rule 2390

$\text{Int}[(a_*) + \text{Log}[(c_*) * ((d_*) + (e_*)(x_)^{(n_*)})] * (b_*)^{(p_*)} * ((f_*) + (g_*)(x_)^{(q_*)}), x_Symbol] \rightarrow \text{Dist}[1/e, \text{Subst}[\text{Int}[(f x)/d]^q * (a + b \text{Log}[c x^n])^p, x], x, d + e x], x] /; \text{FreeQ}\{a, b, c, d, e, f, g, n, p, q, x\} \&\& \text{EqQ}[e f - d g, 0]$

Rule 2391

$\text{Int}[\text{Log}[(c_*) * ((d_*) + (e_*)(x_)^{(n_*)})] / (x_), x_Symbol] \rightarrow -\text{Simp}[\text{PolyLog}[2, -(c e x^n)]/n, x] /; \text{FreeQ}\{c, d, e, n, x\} \&\& \text{EqQ}[c d, 1]$

Rule 2393

$\text{Int}[(a_*) + \text{Log}[(c_*) * ((d_*) + (e_*)(x_))] * (b_*) / ((f_*) + (g_*)(x_)), x_Symbol] \rightarrow \text{Dist}[1/g, \text{Subst}[\text{Int}[(a + b \text{Log}[1 + (c e x)/g]]/x, x], x, f + g x], x] /; \text{FreeQ}\{a, b, c, d, e, f, g, x\} \&\& \text{NeQ}[e f - d g, 0] \&\& \text{EqQ}[g + c(e f - d g), 0]$

Rule 2394

$\text{Int}[(a_*) + \text{Log}[(c_*) * ((d_*) + (e_*)(x_)^{(n_*)})] * (b_*) / ((f_*) + (g_*)(x_)), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[(e(f + g x))/(e f - d g)] * (a + b \text{Log}[c(d + e x)^n]))/g, x] - \text{Dist}[(b e^n)/g, \text{Int}[\text{Log}[(e(f + g x))/(e f - d g)]/(d + e x)], x], x] /; \text{FreeQ}\{a, b, c, d, e, f, g, n, x\} \&\& \text{NeQ}[e f - d g, 0]$

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol]
:> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol]
:> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e,
Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)),
Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /;
FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol]
:> With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /;
FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(156c + 156dx)^3(ag + bgx)^2} dx &= \int \left(\frac{b^3\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{3796416(bc - ad)^3g^2(a + bx)^2} - \frac{b^3d\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{1265472(bc - ad)^4g^2(a + bx)} + \frac{d^2\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{3796416(bc - ad)^3g^2(c + dx)^2} \right) dx \\
&= -\frac{(b^3d) \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{a+bx} dx}{1265472(bc - ad)^4g^2} + \frac{(b^2d^2) \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{c+dx} dx}{1265472(bc - ad)^4g^2} + \frac{b^3 \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(a+bx)^2} dx}{3796416(bc - ad)^3g^2} \\
&= -\frac{b^2\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{3796416(bc - ad)^3g^2(a + bx)} - \frac{d\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{7592832(bc - ad)^2g^2(c + dx)^2} - \frac{bd\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{18982080} \\
&= -\frac{b^2\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{3796416(bc - ad)^3g^2(a + bx)} - \frac{d\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{7592832(bc - ad)^2g^2(c + dx)^2} - \frac{bd\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{18982080} \\
&= -\frac{b^2\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{3796416(bc - ad)^3g^2(a + bx)} - \frac{d\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{7592832(bc - ad)^2g^2(c + dx)^2} - \frac{bd\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{18982080} \\
&= -\frac{b^2Bn}{3796416(bc - ad)^3g^2(a + bx)} + \frac{Bdn}{15185664(bc - ad)^2g^2(c + dx)^2} + \frac{Bdn}{75928320} \\
&= -\frac{b^2Bn}{3796416(bc - ad)^3g^2(a + bx)} + \frac{Bdn}{15185664(bc - ad)^2g^2(c + dx)^2} + \frac{Bdn}{75928320} \\
&= -\frac{b^2Bn}{3796416(bc - ad)^3g^2(a + bx)} + \frac{Bdn}{15185664(bc - ad)^2g^2(c + dx)^2} + \frac{Bdn}{75928320}
\end{aligned}$$

Mathematica [C] time = 0.79, size = 477, normalized size = 1.25

$$\frac{-12b^2d \log(a + bx) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right) - \frac{4b^2(bc-ad) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right)}{a+bx} + 12b^2d \log(c + dx) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right)}{(156c + 156dx)^3(ag + bgx)^2}$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)^2*(c*i + d*i*x)^3), x]

```
[Out] ((-4*b^3*B*c*n)/(a + b*x) + (4*a*b^2*B*d*n)/(a + b*x) + (B*d*(b*c - a*d)^2*n)/(c + d*x)^2 + (8*b^2*B*c*d*n)/(c + d*x) - (8*a*b*B*d^2*n)/(c + d*x) + (2*b*B*d*(b*c - a*d)*n)/(c + d*x) + 6*b^2*B*d*n*Log[a + b*x] - (4*b^2*(b*c - a*d)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a + b*x) - (2*d*(b*c - a*d)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c + d*x)^2 - (8*b*d*(b*c - a*d)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c + d*x) - 12*b^2*d*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 6*b^2*B*d*n*Log[c + d*x] + 12*b^2*d*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] + 6*b^2*B*d*n*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d])) - 2*PolyLog[2, (d*(a + b*x))/(-b*c) + a*d]) - 6*b^2*B*d*n*((2*Log[(d*(a + b*x))/(-b*c) + a*d]) - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)))/(4*(b*c - a*d)^4*g^2*i^3)
```

fricas [B] time = 0.98, size = 949, normalized size = 2.49

$$4Ab^3c^3 + 6Aab^2c^2d - 12Aa^2bcd^2 + 2Aa^3d^3 + 6(2Ab^3cd^2 - 2Aab^2d^3 - (Bb^3cd^2 - Bab^2d^3)n)x^2 + 6(Bb^3d^3n$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^2/(d*i*x+c*i)^3,x, a
algorithm="fricas")
```

```
[Out] -1/4*(4*A*b^3*c^3 + 6*A*a*b^2*c^2*d - 12*A*a^2*b*c*d^2 + 2*A*a^3*d^3 + 6*(2
*A*b^3*c*d^2 - 2*A*a*b^2*d^3 - (B*b^3*c*d^2 - B*a*b^2*d^3)*n)*x^2 + 6*(B*b^
3*d^3*n*x^3 + B*a*b^2*c^2*d*n + (2*B*b^3*c*d^2 + B*a*b^2*d^3)*n*x^2 + (B*b^
3*c^2*d + 2*B*a*b^2*c*d^2)*n*x)*log((b*x + a)/(d*x + c))^2 + (4*B*b^3*c^3 -
15*B*a*b^2*c^2*d + 12*B*a^2*b*c*d^2 - B*a^3*d^3)*n + 3*(6*A*b^3*c^2*d - 4*
A*a*b^2*c*d^2 - 2*A*a^2*b*d^3 - (B*b^3*c^2*d + 2*B*a*b^2*c*d^2 - 3*B*a^2*b*
d^3)*n)*x + 2*(2*B*b^3*c^3 + 3*B*a*b^2*c^2*d - 6*B*a^2*b*c*d^2 + B*a^3*d^3
+ 6*(B*b^3*c*d^2 - B*a*b^2*d^3)*x^2 + 3*(3*B*b^3*c^2*d - 2*B*a*b^2*c*d^2 -
B*a^2*b*d^3)*x + 6*(B*b^3*d^3*x^3 + B*a*b^2*c^2*d + (2*B*b^3*c*d^2 + B*a*b^
2*d^3)*x^2 + (B*b^3*c^2*d + 2*B*a*b^2*c*d^2)*x)*log((b*x + a)/(d*x + c))*l
og(e) + 2*(6*A*a*b^2*c^2*d - 3*(B*b^3*d^3*n - 2*A*b^3*d^3)*x^3 - 3*(3*B*a*b
^2*d^3*n - 4*A*b^3*c*d^2 - 2*A*a*b^2*d^3)*x^2 + (2*B*b^3*c^3 - 6*B*a^2*b*c*
d^2 + B*a^3*d^3)*n + 3*(2*A*b^3*c^2*d + 4*A*a*b^2*c*d^2 + (2*B*b^3*c^2*d -
4*B*a*b^2*c*d^2 - B*a^2*b*d^3)*n)*x)*log((b*x + a)/(d*x + c)))/((b^5*c^4*d^
2 - 4*a*b^4*c^3*d^3 + 6*a^2*b^3*c^2*d^4 - 4*a^3*b^2*c*d^5 + a^4*b*d^6)*g^2*
i^3*x^3 + (2*b^5*c^5*d - 7*a*b^4*c^4*d^2 + 8*a^2*b^3*c^3*d^3 - 2*a^3*b^2*c^
2*d^4 - 2*a^4*b*c*d^5 + a^5*d^6)*g^2*i^3*x^2 + (b^5*c^6 - 2*a*b^4*c^5*d - 2
*a^2*b^3*c^4*d^2 + 8*a^3*b^2*c^3*d^3 - 7*a^4*b*c^2*d^4 + 2*a^5*c*d^5)*g^2*i
^3*x + (a*b^4*c^6 - 4*a^2*b^3*c^5*d + 6*a^3*b^2*c^4*d^2 - 4*a^4*b*c^3*d^3 +
a^5*c^2*d^4)*g^2*i^3)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^2/(d*i*x+c*i)^3,x, algorithm="giac")

[Out] Timed out

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A}{(bgx + ag)^2 (dix + ci)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^2/(d*i*x+c*i)^3,x)

[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^2/(d*i*x+c*i)^3,x)

maxima [B] time = 2.76, size = 1724, normalized size = 4.52

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^2/(d*i*x+c*i)^3,x, algorithm="maxima")

[Out]
$$-1/2*B*((6*b^2*d^2*x^2 + 2*b^2*c^2 + 5*a*b*c*d - a^2*d^2 + 3*(3*b^2*c*d + a*b*d^2)*x)/((b^4*c^3*d^2 - 3*a*b^3*c^2*d^3 + 3*a^2*b^2*c^2*d^3 + a^3*b*d^5)*g^2*i^3*x^3 + (2*b^4*c^4*d - 5*a*b^3*c^3*d^2 + 3*a^2*b^2*c^2*d^3 + a^3*b*c*d^4 - a^4*d^5)*g^2*i^3*x^2 + (b^4*c^5 - a*b^3*c^4*d - 3*a^2*b^2*c^3*d^2 + 5*a^3*b*c^2*d^3 - 2*a^4*c*d^4)*g^2*i^3*x + (a*b^3*c^5 - 3*a^2*b^2*c^4*d + 3*a^3*b*c^3*d^2 - a^4*c^2*d^3)*g^2*i^3) + 6*b^2*d*log(b*x + a)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^2*i^3) - 6*b^2*d*log(d*x + c)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^2*i^3)*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) - 1/4*(4*b^3*c^3 - 15*a*b^2*c^2*d + 12*a^2*b*c*d^2 - a^3*d^3 - 6*(b^3*c*d^2 - a*b^2*d^3)*x^2 - 6*(b^3*d^3*x^3 + a*b^2*c^2*d + (2*b^3*c*d^2 + a*b^2*d^3)*x^2 + (b^3*c^2*d + 2*a*b^2*c*d^2)*x)*log(b*x + a)^2 - 6*(b^3*d^3*x^3 + a*b^2*c^2*d + (2*b^3*c*d^2 + a*b^2*d^3)*x^2 + (b^3*c^2*d + 2*a*b^2*c*d^2)*x)*log(d*x + c)^2 - 3*(b^3*c^2*d + 2*a*b^2*c*d^2 - 3*a^2*b*d^3)*x - 6*(b^3*d^3*x^3 + a*b^2*c^2*d$$

$$\begin{aligned}
& c^2*d + (2*b^3*c*d^2 + a*b^2*d^3)*x^2 + (b^3*c^2*d + 2*a*b^2*c*d^2)*x)*\log(\\
& b*x + a) + 6*(b^3*d^3*x^3 + a*b^2*c^2*d + (2*b^3*c*d^2 + a*b^2*d^3)*x^2 + (\\
& b^3*c^2*d + 2*a*b^2*c*d^2)*x + 2*(b^3*d^3*x^3 + a*b^2*c^2*d + (2*b^3*c*d^2 \\
& + a*b^2*d^3)*x^2 + (b^3*c^2*d + 2*a*b^2*c*d^2)*x)*\log(b*x + a))*\log(d*x + c \\
&))*B^n/(a*b^4*c^6*g^2*i^3 - 4*a^2*b^3*c^5*d*g^2*i^3 + 6*a^3*b^2*c^4*d^2*g^2 \\
& *i^3 - 4*a^4*b*c^3*d^3*g^2*i^3 + a^5*c^2*d^4*g^2*i^3 + (b^5*c^4*d^2*g^2*i^3 \\
& - 4*a*b^4*c^3*d^3*g^2*i^3 + 6*a^2*b^3*c^2*d^4*g^2*i^3 - 4*a^3*b^2*c*d^5*g^2 \\
& *i^3 + a^4*b*d^6*g^2*i^3)*x^3 + (2*b^5*c^5*d*g^2*i^3 - 7*a*b^4*c^4*d^2*g^2 \\
& *i^3 + 8*a^2*b^3*c^3*d^3*g^2*i^3 - 2*a^3*b^2*c^2*d^4*g^2*i^3 - 2*a^4*b*c*d^5 \\
& *g^2*i^3 + a^5*d^6*g^2*i^3)*x^2 + (b^5*c^6*g^2*i^3 - 2*a*b^4*c^5*d*g^2*i^3 \\
& - 2*a^2*b^3*c^4*d^2*g^2*i^3 + 8*a^3*b^2*c^3*d^3*g^2*i^3 - 7*a^4*b*c^2*d^4* \\
& g^2*i^3 + 2*a^5*c*d^5*g^2*i^3)*x) - 1/2*A*((6*b^2*d^2*x^2 + 2*b^2*c^2 + 5*a \\
& *b*c*d - a^2*d^2 + 3*(3*b^2*c*d + a*b*d^2)*x)/((b^4*c^3*d^2 - 3*a*b^3*c^2*d \\
& ^3 + 3*a^2*b^2*c*d^4 - a^3*b*d^5)*g^2*i^3*x^3 + (2*b^4*c^4*d - 5*a*b^3*c^3* \\
& d^2 + 3*a^2*b^2*c^2*d^3 + a^3*b*c*d^4 - a^4*d^5)*g^2*i^3*x^2 + (b^4*c^5 - a \\
& *b^3*c^4*d - 3*a^2*b^2*c^3*d^2 + 5*a^3*b*c^2*d^3 - 2*a^4*c*d^4)*g^2*i^3*x + \\
& (a*b^3*c^5 - 3*a^2*b^2*c^4*d + 3*a^3*b*c^3*d^2 - a^4*c^2*d^3)*g^2*i^3) + 6 \\
& *b^2*d*\log(b*x + a)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b \\
& *c*d^3 + a^4*d^4)*g^2*i^3) - 6*b^2*d*\log(d*x + c)/((b^4*c^4 - 4*a*b^3*c^3*d \\
& + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^2*i^3))
\end{aligned}$$

mupad [B] time = 7.53, size = 1018, normalized size = 2.67

$$\frac{4Ab^2c^2 - 2Aa^2d^2 + Ba^2d^2n + 4Bb^2c^2n + 10Aabcd - 11Babcdn}{2(ad-bc)} + \frac{3x^2(2Ab^2d^2 - 2Aa^2d^2 + Ba^2d^2n + 4Bb^2c^2n + 10Aabcd - 11Babcdn)}{ad-bc}$$

$$x(4a^3cd^3g^2i^3 - 6a^2bc^2d^2g^2i^3 + 2b^3c^4g^2i^3) + x^2(2a^3d^4g^2i^3 - 6ab^2c^2d^2g^2i^3 + 4b^3c^3dg^2i^3) + x^3(2a^4c^5g^2i^3 - 6a^3b^2c^4d^2g^2i^3 + 8a^2b^3c^3d^3g^2i^3 - 2a^3b^2c^2d^4g^2i^3 - 2a^4b^2c^3d^5g^2i^3 + a^5d^6g^2i^3)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))/((a*g + b*g*x)^2*(c*i + d*i*x)^3), x)

[Out] ((4*A*b^2*c^2 - 2*A*a^2*d^2 + B*a^2*d^2*n + 4*B*b^2*c^2*n + 10*A*a*b*c*d - 11*B*a*b*c*d*n)/(2*(a*d - b*c)) + (3*x^2*(2*A*b^2*d^2 - B*b^2*d^2*n))/(a*d - b*c) + (3*x*(2*A*a*b*d^2 + 6*A*b^2*c*d - 3*B*a*b*d^2*n - B*b^2*c*d*n))/(2*(a*d - b*c)))/(x*(2*b^3*c^4*g^2*i^3 + 4*a^3*c*d^3*g^2*i^3 - 6*a^2*b*c^2*d^2*g^2*i^3) + x^2*(2*a^3*d^4*g^2*i^3 + 4*b^3*c^3*d^2*g^2*i^3 - 6*a*b^2*c^2*d^2*g^2*i^3) + x^3*(2*b^3*c^2*d^2*g^2*i^3 + 2*a^2*b*d^4*g^2*i^3 - 4*a*b^2*c*d^3*g^2*i^3) + 2*a^3*c^2*d^2*g^2*i^3 + 2*a*b^2*c^4*g^2*i^3 - 4*a^2*b*c^3*d^5*g^2*i^3) - log(e*((a + b*x)/(c + d*x))^n)*(((B*(a*d + 2*b*c))/(2*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (3*B*b*d*x)/(2*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)))/(x*(b*c^2*g^2*i^3 + 2*a*c*d*g^2*i^3) + x^2*(a*d^2*g^2*i^3 + 2*b*c*d*g^2*i^3) + a*c^2*g^2*i^3 + b*d^2*g^2*i^3*x^3) - (3*B*b^2*d*(d*g^2*i^3*n*x^2*(a*d - b*c)))

$$c) + (a*c*g^{2*i^3*n*(a*d - b*c)})/b + (g^{2*i^3*n*x*(a*d + b*c)*(a*d - b*c)})/b)/(g^{2*i^3*n*(a*d - b*c)^4*(x*(b*c^2*g^{2*i^3} + 2*a*c*d*g^{2*i^3}) + x^2*(a*d^2*g^{2*i^3} + 2*b*c*d*g^{2*i^3}) + a*c^2*g^{2*i^3} + b*d^2*g^{2*i^3}*x^3))) + (b^2*d*atan((b^2*d*(2*A - B*n)*((a^4*d^4*g^{2*i^3} - b^4*c^4*g^{2*i^3} + 2*a*b^3*c^3*d*g^{2*i^3} - 2*a^3*b*c*d^3*g^{2*i^3})/(a^3*d^3*g^{2*i^3} - b^3*c^3*g^{2*i^3} + 3*a*b^2*c^2*d*g^{2*i^3} - 3*a^2*b*c*d^2*g^{2*i^3}) + 2*b*d*x)*(a^3*d^3*g^{2*i^3} - b^3*c^3*g^{2*i^3} + 3*a*b^2*c^2*d*g^{2*i^3} - 3*a^2*b*c*d^2*g^{2*i^3})*3i)/(g^{2*i^3*(6*A*b^2*d - 3*B*b^2*d*n)*(a*d - b*c)^4})*(2*A - B*n)*3i)/(g^{2*i^3*(a*d - b*c)^4} - (3*B*b^2*d*log(e*((a + b*x)/(c + d*x))^n)^2)/(2*g^{2*i^3*n*(a*d - b*c)^4}))$$

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c)**n)))/(b*g*x+a*g)**2/(d*i*x+c*i)**3,x)

[Out] Timed out

$$3.157 \quad \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(ag+bgx)^3(ci+dix)^3} dx$$

Optimal. Leaf size=483

$$\frac{b^4(c+dx)^2 \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right)}{2g^3i^3(a+bx)^2(bc-ad)^5} + \frac{4b^3d(c+dx) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right)}{g^3i^3(a+bx)(bc-ad)^5} + \frac{6b^2d^2 \log\left(\frac{a+bx}{c+dx}\right) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right)}{g^3i^3(bc-ad)^5}$$

[Out] $-1/4*B*d^4*n*(b*x+a)^2/(-a*d+b*c)^5/g^3/i^3/(d*x+c)^2+4*b*B*d^3*n*(b*x+a)/(-a*d+b*c)^5/g^3/i^3/(d*x+c)+4*b^3*B*d*n*(d*x+c)/(-a*d+b*c)^5/g^3/i^3/(b*x+a)-1/4*b^4*B*n*(d*x+c)^2/(-a*d+b*c)^5/g^3/i^3/(b*x+a)^2+1/2*d^4*(b*x+a)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^5/g^3/i^3/(d*x+c)^2-4*b*d^3*(b*x+a)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^5/g^3/i^3/(d*x+c)+4*b^3*d*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^5/g^3/i^3/(b*x+a)-1/2*b^4*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^5/g^3/i^3/(b*x+a)^2+6*b^2*d^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))*\ln((b*x+a)/(d*x+c))/(-a*d+b*c)^5/g^3/i^3-3*b^2*B*d^2*n*\ln((b*x+a)/(d*x+c))^2/(-a*d+b*c)^5/g^3/i^3$

Rubi [C] time = 1.39, antiderivative size = 701, normalized size of antiderivative = 1.45, number of steps used = 34, number of rules used = 11, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.256$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{6b^2Bd^2n \text{PolyLog}\left(2, -\frac{d(a+bx)}{bc-ad}\right)}{g^3i^3(bc-ad)^5} + \frac{6b^2Bd^2n \text{PolyLog}\left(2, \frac{b(c+dx)}{bc-ad}\right)}{g^3i^3(bc-ad)^5} + \frac{6b^2d^2 \log(a+bx) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right)}{g^3i^3(bc-ad)^5} - \frac{6b^2d^2 \log\left(\frac{a+bx}{c+dx}\right) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right)}{g^3i^3(bc-ad)^5}$$

Antiderivative was successfully verified.

[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)^3*(c*i + d*i*x)^3), x]

[Out] $-(b^2*B*n)/(4*(b*c - a*d)^3*g^3*i^3*(a + b*x)^2) + (7*b^2*B*d*n)/(2*(b*c - a*d)^4*g^3*i^3*(a + b*x)) - (B*d^2*n)/(4*(b*c - a*d)^3*g^3*i^3*(c + d*x)^2) - (7*b*B*d^2*n)/(2*(b*c - a*d)^4*g^3*i^3*(c + d*x)) - (3*b^2*B*d^2*n*\Log[a + b*x]^2)/((b*c - a*d)^5*g^3*i^3) - (b^2*(A + B*\Log[e*((a + b*x)/(c + d*x))^n]))/(2*(b*c - a*d)^3*g^3*i^3*(a + b*x)^2) + (3*b^2*d*(A + B*\Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)^4*g^3*i^3*(a + b*x)) + (d^2*(A + B*\Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)^3*g^3*i^3*(c + d*x)^2) + (3*b*d^2*(A + B*\Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)^4*g^3*i^3*(c + d*x)) + (6*b^2*d^2*\Log[a + b*x]*(A + B*\Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)^5*g^3*i^3) + (6*b^2*B*d^2*n*\Log[-((d*(a + b*x))/(b*c - a*d))]*\Log[c + d*x])/((b*c - a*d)^5*g^3*i^3) - (6*b^2*d^2*(A + B*\Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)^5*g^3*i^3)$

$$\begin{aligned} &)^n) * \text{Log}[c + d*x] / ((b*c - a*d)^5 * g^3 * i^3) - (3*b^2 * B*d^2 * n * \text{Log}[c + d*x]^2) / \\ & ((b*c - a*d)^5 * g^3 * i^3) + (6*b^2 * B*d^2 * n * \text{Log}[a + b*x] * \text{Log}[(b*(c + d*x)) / \\ & (b*c - a*d)]) / ((b*c - a*d)^5 * g^3 * i^3) + (6*b^2 * B*d^2 * n * \text{PolyLog}[2, -((d*(a + \\ & b*x)) / (b*c - a*d))]) / ((b*c - a*d)^5 * g^3 * i^3) + (6*b^2 * B*d^2 * n * \text{PolyLog}[2, (b \\ & *(c + d*x)) / (b*c - a*d)]) / ((b*c - a*d)^5 * g^3 * i^3) \end{aligned}$$
Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 44

```
Int[((a_) + (b_)*(x_))^(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_) + Log[(c_)*(x_)]^(n_))* (b_)] / (x_), x_Symbol] := Simp[(a + b*Lo
g[c*x^n])^2 / (2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)]*(b_))^(p_)*((f_) + (g_
)*(x_))^(q_), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_)*((d_) + (e_)*(x_))^(n_))] / (x_), x_Symbol] := -Simp[PolyLog[2
, -(c*e*x^n)] / n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))])*(b_)] / ((f_) + (g_)*(x_)), x_
Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g]) / x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)]*(b_)] / ((f_) + (g_)*(x_
)), x_Symbol] := Simp[(Log[(e*(f + g*x)) / (e*f - d*g)]*(a + b*Log[c*(d + e*x
```

```
)^n))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n]^p, RFx, x]}, Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(157c + 157dx)^3(ag + bgx)^3} dx &= \int \left(\frac{b^3 \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) \right)}{3869893(bc - ad)^3 g^3 (a + bx)^3} - \frac{3b^3 d \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) \right)}{3869893(bc - ad)^4 g^3 (a + bx)^2} + \frac{6b^3 d^2}{3869893} \right) dx \\
&= \frac{(6b^3 d^2) \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{a+bx} dx}{3869893(bc - ad)^5 g^3} - \frac{(6b^2 d^3) \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{c+dx} dx}{3869893(bc - ad)^5 g^3} - \frac{(3b^3 d) \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{a+bx} dx}{3869893} \\
&= -\frac{b^2 \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) \right)}{7739786(bc - ad)^3 g^3 (a + bx)^2} + \frac{3b^2 d \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) \right)}{3869893(bc - ad)^4 g^3 (a + bx)} + \frac{d^2 \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) \right)}{7739786} \\
&= -\frac{b^2 \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) \right)}{7739786(bc - ad)^3 g^3 (a + bx)^2} + \frac{3b^2 d \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) \right)}{3869893(bc - ad)^4 g^3 (a + bx)} + \frac{d^2 \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) \right)}{7739786} \\
&= -\frac{b^2 \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) \right)}{7739786(bc - ad)^3 g^3 (a + bx)^2} + \frac{3b^2 d \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) \right)}{3869893(bc - ad)^4 g^3 (a + bx)} + \frac{d^2 \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) \right)}{7739786} \\
&= -\frac{b^2 B n}{15479572(bc - ad)^3 g^3 (a + bx)^2} + \frac{7b^2 B d n}{7739786(bc - ad)^4 g^3 (a + bx)} - \frac{d^2 B n}{15479572} \\
&= -\frac{b^2 B n}{15479572(bc - ad)^3 g^3 (a + bx)^2} + \frac{7b^2 B d n}{7739786(bc - ad)^4 g^3 (a + bx)} - \frac{d^2 B n}{15479572} \\
&= -\frac{b^2 B n}{15479572(bc - ad)^3 g^3 (a + bx)^2} + \frac{7b^2 B d n}{7739786(bc - ad)^4 g^3 (a + bx)} - \frac{d^2 B n}{15479572}
\end{aligned}$$

Mathematica [C] time = 1.28, size = 561, normalized size = 1.16

$$\frac{-24b^2 d^2 \log(a + bx) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right) + 24b^2 d^2 \log(c + dx) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right) - \frac{12b^2 d(bc - ad) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right)}{a+bx}}{1}$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)^3*(c*i + d*i*x)^3), x]

```
[Out] -1/4*((b^2*B*(b*c - a*d)^2*n)/(a + b*x)^2 - (12*b^3*B*c*d*n)/(a + b*x) + (1
2*a*b^2*B*d^2*n)/(a + b*x) - (2*b^2*B*d*(b*c - a*d)*n)/(a + b*x) + (B*d^2*(
b*c - a*d)^2*n)/(c + d*x)^2 + (12*b^2*B*c*d^2*n)/(c + d*x) - (12*a*b*B*d^3*
n)/(c + d*x) + (2*b*B*d^2*(b*c - a*d)*n)/(c + d*x) + (2*b^2*(b*c - a*d)^2*(
A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a + b*x)^2 - (12*b^2*d*(b*c - a*d)*
(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a + b*x) - (2*d^2*(b*c - a*d)^2*(A
+ B*Log[e*((a + b*x)/(c + d*x))^n]))/(c + d*x)^2 - (12*b*d^2*(b*c - a*d)*(
A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c + d*x) - 24*b^2*d^2*Log[a + b*x]*
(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 24*b^2*d^2*(A + B*Log[e*((a + b*x)
/(c + d*x))^n])*Log[c + d*x] + 12*b^2*B*d^2*n*(Log[a + b*x]*(Log[a + b*x] -
2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a
*d)]) - 12*b^2*B*d^2*n*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x]
)*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/((b*c - a*d)^5*g
^3*i^3)
```

fricas [B] time = 1.05, size = 1416, normalized size = 2.93

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^3/(d*i*x+c*i)^3,x, a
lgorithm="fricas")
```

```
[Out] -1/4*(2*A*b^4*c^4 - 16*A*a*b^3*c^3*d + 16*A*a^3*b*c*d^3 - 2*A*a^4*d^4 - 24*
(A*b^4*c*d^3 - A*a*b^3*d^4)*x^3 - 12*(3*A*b^4*c^2*d^2 - 3*A*a^2*b^2*d^4 + (
B*b^4*c^2*d^2 - 2*B*a*b^3*c*d^3 + B*a^2*b^2*d^4)*n)*x^2 - 12*(B*b^4*d^4*n*x
^4 + B*a^2*b^2*c^2*d^2*n + 2*(B*b^4*c*d^3 + B*a*b^3*d^4)*n*x^3 + (B*b^4*c^2
*d^2 + 4*B*a*b^3*c*d^3 + B*a^2*b^2*d^4)*n*x^2 + 2*(B*a*b^3*c^2*d^2 + B*a^2*
b^2*c*d^3)*n*x)*log((b*x + a)/(d*x + c))^2 + (B*b^4*c^4 - 16*B*a*b^3*c^3*d
+ 30*B*a^2*b^2*c^2*d^2 - 16*B*a^3*b*c*d^3 + B*a^4*d^4)*n - 4*(2*A*b^4*c^3*d
+ 12*A*a*b^3*c^2*d^2 - 12*A*a^2*b^2*c*d^3 - 2*A*a^3*b*d^4 + 3*(B*b^4*c^3*d
- B*a*b^3*c^2*d^2 - B*a^2*b^2*c*d^3 + B*a^3*b*d^4)*n)*x + 2*(B*b^4*c^4 - 8
*B*a*b^3*c^3*d + 8*B*a^3*b*c*d^3 - B*a^4*d^4 - 12*(B*b^4*c*d^3 - B*a*b^3*d^
4)*x^3 - 18*(B*b^4*c^2*d^2 - B*a^2*b^2*d^4)*x^2 - 4*(B*b^4*c^3*d + 6*B*a*b^
3*c^2*d^2 - 6*B*a^2*b^2*c*d^3 - B*a^3*b*d^4)*x - 12*(B*b^4*d^4*x^4 + B*a^2*
b^2*c^2*d^2 + 2*(B*b^4*c*d^3 + B*a*b^3*d^4)*x^3 + (B*b^4*c^2*d^2 + 4*B*a*b^
3*c*d^3 + B*a^2*b^2*d^4)*x^2 + 2*(B*a*b^3*c^2*d^2 + B*a^2*b^2*c*d^3)*x)*log
((b*x + a)/(d*x + c))*log(e) - 2*(12*A*b^4*d^4*x^4 + 12*A*a^2*b^2*c^2*d^2
+ 12*(2*A*b^4*c*d^3 + 2*A*a*b^3*d^4 + (B*b^4*c*d^3 - B*a*b^3*d^4)*n)*x^3 +
6*(2*A*b^4*c^2*d^2 + 8*A*a*b^3*c*d^3 + 2*A*a^2*b^2*d^4 + 3*(B*b^4*c^2*d^2 -
B*a^2*b^2*d^4)*n)*x^2 - (B*b^4*c^4 - 8*B*a*b^3*c^3*d + 8*B*a^3*b*c*d^3 - B
*a^4*d^4)*n + 4*(6*A*a*b^3*c^2*d^2 + 6*A*a^2*b^2*c*d^3 + (B*b^4*c^3*d + 6*B
*a*b^3*c^2*d^2 - 6*B*a^2*b^2*c*d^3 - B*a^3*b*d^4)*n)*x)*log((b*x + a)/(d*x
+ c)))/((b^7*c^5*d^2 - 5*a*b^6*c^4*d^3 + 10*a^2*b^5*c^3*d^4 - 10*a^3*b^4*c^
2*d^5 + 5*a^4*b^3*c*d^6 - a^5*b^2*d^7)*g^3*i^3*x^4 + 2*(b^7*c^6*d - 4*a*b^6
```

```
*c^5*d^2 + 5*a^2*b^5*c^4*d^3 - 5*a^4*b^3*c^2*d^5 + 4*a^5*b^2*c*d^6 - a^6*b*d^7)*g^3*i^3*x^3 + (b^7*c^7 - a*b^6*c^6*d - 9*a^2*b^5*c^5*d^2 + 25*a^3*b^4*c^4*d^3 - 25*a^4*b^3*c^3*d^4 + 9*a^5*b^2*c^2*d^5 + a^6*b*c*d^6 - a^7*d^7)*g^3*i^3*x^2 + 2*(a*b^6*c^7 - 4*a^2*b^5*c^6*d + 5*a^3*b^4*c^5*d^2 - 5*a^5*b^2*c^3*d^4 + 4*a^6*b*c^2*d^5 - a^7*c*d^6)*g^3*i^3*x + (a^2*b^5*c^7 - 5*a^3*b^4*c^6*d + 10*a^4*b^3*c^5*d^2 - 10*a^5*b^2*c^4*d^3 + 5*a^6*b*c^3*d^4 - a^7*c^2*d^5)*g^3*i^3)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^3/(d*i*x+c*i)^3,x, algorithm="giac")
```

[Out] Timed out

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A}{(bgx + ag)^3 (dix + ci)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^3/(d*i*x+c*i)^3,x)
```

```
[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^3/(d*i*x+c*i)^3,x)
```

maxima [B] time = 2.52, size = 2383, normalized size = 4.93

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^3/(d*i*x+c*i)^3,x, algorithm="maxima")
```

```
[Out] 1/2*B*((12*b^3*d^3*x^3 - b^3*c^3 + 7*a*b^2*c^2*d + 7*a^2*b*c*d^2 - a^3*d^3 + 18*(b^3*c*d^2 + a*b^2*d^3)*x^2 + 4*(b^3*c^2*d + 7*a*b^2*c*d^2 + a^2*b*d^3)*x)/((b^6*c^4*d^2 - 4*a*b^5*c^3*d^3 + 6*a^2*b^4*c^2*d^4 - 4*a^3*b^3*c*d^5 + a^4*b^2*d^6)*g^3*i^3*x^4 + 2*(b^6*c^5*d - 3*a*b^5*c^4*d^2 + 2*a^2*b^4*c^3*d^3 + 2*a^3*b^3*c^2*d^4 - 3*a^4*b^2*c*d^5 + a^5*b*d^6)*g^3*i^3*x^3 + (b^6*c^6 - 9*a^2*b^4*c^4*d^2 + 16*a^3*b^3*c^3*d^3 - 9*a^4*b^2*c^2*d^4 + a^6*d^6)
```

$$\begin{aligned}
& *g^3i^3x^2 + 2*(ab^5c^6 - 3a^2b^4c^5d + 2a^3b^3c^4d^2 + 2a^4b^2c^3d^3 - 3a^5b^1c^2d^4 + a^6c^1d^5)*g^3i^3x + (a^2b^4c^6 - 4a^3b^3c^5d + 6a^4b^2c^4d^2 - 4a^5b^1c^3d^3 + a^6c^2d^4)*g^3i^3) + 1 \\
& 2*b^2d^2*log(b*x + a)/((b^5c^5 - 5a*b^4c^4d + 10a^2b^3c^3d^2 - 10a^3b^2c^2d^3 + 5a^4b^1c^1d^4 - a^5d^5)*g^3i^3) - 12*b^2d^2*log(d*x + c)/((b^5c^5 - 5a*b^4c^4d + 10a^2b^3c^3d^2 - 10a^3b^2c^2d^3 + 5a^4b^1c^1d^4 - a^5d^5)*g^3i^3))*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) - 1 \\
& /4*(b^4c^4 - 16a*b^3c^3d + 30a^2b^2c^2d^2 - 16a^3b^1c^1d^3 + a^4d^4 - 12*(b^4c^2d^2 - 2a*b^3c^1d^3 + a^2b^2d^4)*x^2 + 12*(b^4d^4*x^4 + a^2b^2c^2d^2 + 2*(b^4c^1d^3 + a*b^3d^4)*x^3 + (b^4c^2d^2 + 4a*b^3c^1d^3 + a^2b^2d^4)*x^2 + 2*(a*b^3c^2d^2 + a^2b^2c^1d^3)*x)*log(b*x + a)^2 - 24*(b^4d^4*x^4 + a^2b^2c^2d^2 + 2*(b^4c^1d^3 + a*b^3d^4)*x^3 + (b^4c^2d^2 + 4a*b^3c^1d^3 + a^2b^2d^4)*x^2 + 2*(a*b^3c^2d^2 + a^2b^2c^1d^3)*x)*log(b*x + a)*log(d*x + c) + 12*(b^4d^4*x^4 + a^2b^2c^2d^2 + 2*(b^4c^1d^3 + a*b^3d^4)*x^3 + (b^4c^2d^2 + 4a*b^3c^1d^3 + a^2b^2d^4)*x^2 + 2*(a*b^3c^2d^2 + a^2b^2c^1d^3)*x)*log(d*x + c)^2 - 12*(b^4c^3d - a*b^3c^2d^2 - a^2b^2c^1d^3 + a^3b^1d^4)*x)*B^n/(a^2b^5c^7g^3i^3 - 5a^3b^4c^6d*g^3i^3 + 10a^4b^3c^5d^2g^3i^3 - 10a^5b^2c^4d^3g^3i^3 + 5a^6b^1c^3d^4g^3i^3 - a^7c^2d^5g^3i^3 + (b^7c^5d^2g^3i^3 - 5a*b^6c^4d^3g^3i^3 + 10a^2b^5c^3d^4g^3i^3 - 10a^3b^4c^2d^5g^3i^3 + 5a^4b^3c^1d^6g^3i^3 - a^5b^2d^7g^3i^3)*x^4 + 2*(b^7c^6d*g^3i^3 - 4a*b^6c^5d^2g^3i^3 + 5a^2b^5c^4d^3g^3i^3 - 5a^4b^3c^2d^5g^3i^3 + 4a^5b^2c^1d^6g^3i^3 - a^6b^1d^7g^3i^3)*x^3 + (b^7c^7g^3i^3 - a*b^6c^6d*g^3i^3 - 9a^2b^5c^5d^2g^3i^3 + 25a^3b^4c^4d^3g^3i^3 - 25a^4b^3c^3d^4g^3i^3 + 9a^5b^2c^2d^5g^3i^3 + a^6b^1c^1d^6g^3i^3 - a^7d^7g^3i^3)*x^2 + 2*(a*b^6c^7g^3i^3 - 4a^2b^5c^6d*g^3i^3 + 5a^3b^4c^5d^2g^3i^3 - 5a^5b^2c^3d^4g^3i^3 + 4a^6b^1c^2d^5g^3i^3 - a^7c^1d^6g^3i^3)*x) + 1/2*A*((12b^3d^3*x^3 - b^3c^3 + 7a*b^2c^2d + 7a^2b^1c^1d^2 - a^3d^3 + 18*(b^3c^1d^2 + a*b^2d^3)*x^2 + 4*(b^3c^2d + 7a*b^2c^1d^2 + a^2b^1d^3)*x)/((b^6c^4d^2 - 4a*b^5c^3d^3 + 6a^2b^4c^2d^4 - 4a^3b^3c^1d^5 + a^4b^2d^6)*g^3i^3*x^4 + 2*(b^6c^5d - 3a*b^5c^4d^2 + 2a^2b^4c^3d^3 + 2a^3b^3c^2d^4 - 3a^4b^2c^1d^5 + a^5b^1d^6)*g^3i^3*x^3 + (b^6c^6 - 9a^2b^4c^4d^2 + 16a^3b^3c^3d^3 - 9a^4b^2c^2d^4 + a^6d^6)*g^3i^3*x^2 + 2*(a*b^5c^6 - 3a^2b^4c^5d + 2a^3b^3c^4d^2 + 2a^4b^2c^3d^3 - 3a^5b^1c^2d^4 + a^6c^1d^5)*g^3i^3*x + (a^2b^4c^6 - 4a^3b^3c^5d + 6a^4b^2c^4d^2 - 4a^5b^1c^3d^3 + a^6c^2d^4)*g^3i^3) + 12*b^2d^2*log(b*x + a)/((b^5c^5 - 5a*b^4c^4d + 10a^2b^3c^3d^2 - 10a^3b^2c^2d^3 + 5a^4b^1c^1d^4 - a^5d^5)*g^3i^3) - 12*b^2d^2*log(d*x + c)/((b^5c^5 - 5a*b^4c^4d + 10a^2b^3c^3d^2 - 10a^3b^2c^2d^3 + 5a^4b^1c^1d^4 - a^5d^5)*g^3i^3))
\end{aligned}$$

mupad [B] time = 7.93, size = 1341, normalized size = 2.78

$$2x(2Aa^2)$$

$$x^4 (2a^3 b^2 d^5 g^3 i^3 - 6a^2 b^3 c d^4 g^3 i^3 + 6a b^4 c^2 d^3 g^3 i^3 - 2b^5 c^3 d^2 g^3 i^3) - x (-4a^5 c d^4 g^3 i^3 + 8a^4 b c^2 d^3 g^3 i^3 - \dots)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))/((a*g + b*g*x)^3*(c*i + d*i*x)^3), x)

[Out] ((2*x*(2*A*a^2*b*d^3 + 2*A*b^3*c^2*d + 14*A*a*b^2*c*d^2 - 3*B*a^2*b*d^3*n + 3*B*b^3*c^2*d*n))/(a*d - b*c) - (2*A*a^3*d^3 + 2*A*b^3*c^3 - B*a^3*d^3*n + B*b^3*c^3*n - 14*A*a*b^2*c^2*d - 14*A*a^2*b*c*d^2 - 15*B*a*b^2*c^2*d*n + 15*B*a^2*b*c*d^2*n)/(2*(a*d - b*c)) + (6*x^2*(3*A*a*b^2*d^3 + 3*A*b^3*c*d^2 - B*a*b^2*d^3*n + B*b^3*c*d^2*n))/(a*d - b*c) + (12*A*b^3*d^3*x^3)/(a*d - b*c))/(x^4*(2*a^3*b^2*d^5*g^3*i^3 - 2*b^5*c^3*d^2*g^3*i^3 + 6*a*b^4*c^2*d^3*g^3*i^3 - 6*a^2*b^3*c*d^4*g^3*i^3) - x*(4*a*b^4*c^5*g^3*i^3 - 4*a^5*c*d^4*g^3*i^3 - 8*a^2*b^3*c^4*d*g^3*i^3 + 8*a^4*b*c^2*d^3*g^3*i^3) + x^3*(4*a^4*b*d^5*g^3*i^3 - 4*b^5*c^4*d*g^3*i^3 + 8*a*b^4*c^3*d^2*g^3*i^3 - 8*a^3*b^2*c*d^4*g^3*i^3) + x^2*(2*a^5*d^5*g^3*i^3 - 2*b^5*c^5*g^3*i^3 - 2*a*b^4*c^4*d*g^3*i^3 + 2*a^4*b*c*d^4*g^3*i^3 + 16*a^2*b^3*c^3*d^2*g^3*i^3 - 16*a^3*b^2*c^2*d^3*g^3*i^3) - 2*a^2*b^3*c^5*g^3*i^3 + 2*a^5*c^2*d^3*g^3*i^3 + 6*a^3*b^2*c^4*d*g^3*i^3 - 6*a^4*b*c^3*d^2*g^3*i^3) + (log(e*((a + b*x)/(c + d*x))^n)*(x*((3*B*b*d*(a*d + b*c)^2)/(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2 - (B*b*d)/(a^2*d^2 + b^2*c^2 - 2*a*b*c*d) + (6*B*a*b^2*c*d^2)/(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2) - (B*(a*d + b*c))/(2*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (6*B*b^3*d^3*x^3)/(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2 + (9*B*b^2*d^2*x^2*(a*d + b*c))/(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2 + (3*B*a*b*c*d*(a*d + b*c))/(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2))/(x*(2*a*b*c^2*g^3*i^3 + 2*a^2*c*d*g^3*i^3) + x^3*(2*a*b*d^2*g^3*i^3 + 2*b^2*c*d*g^3*i^3) + x^2*(a^2*d^2*g^3*i^3 + b^2*c^2*g^3*i^3 + 4*a*b*c*d*g^3*i^3) + a^2*c^2*g^3*i^3 + b^2*d^2*g^3*i^3*x^4) + (A*b^2*d^2*atan(((a^5*d^5*g^3*i^3 + b^5*c^5*g^3*i^3 - 3*a*b^4*c^4*d*g^3*i^3 - 3*a^4*b*c*d^4*g^3*i^3 + 2*a^2*b^3*c^3*d^2*g^3*i^3 + 2*a^3*b^2*c^2*d^3*g^3*i^3)*1i)/(g^3*i^3*(a*d - b*c)^5) + (b*d*x*(a^4*d^4*g^3*i^3 + b^4*c^4*g^3*i^3 - 4*a*b^3*c^3*d*g^3*i^3 - 4*a^3*b*c*d^3*g^3*i^3 + 6*a^2*b^2*c^2*d^2*g^3*i^3)*2i)/(g^3*i^3*(a*d - b*c)^5))*12i)/(g^3*i^3*(a*d - b*c)^5) - (3*B*b^2*d^2*log(e*((a + b*x)/(c + d*x))^n)^2)/(g^3*i^3*n*(a*d - b*c)^5)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.


```
[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))**n)))/(b*g*x+a*g)**3/(d*i*x+c*i)**3,x)
```

```
[Out] Timed out
```

$$3.158 \quad \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(ag+bgx)^4(ci+dix)^3} dx$$

Optimal. Leaf size=587

$$\frac{b^5(c+dx)^3 \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right)}{3g^4i^3(a+bx)^3(bc-ad)^6} + \frac{5b^4d(c+dx)^2 \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right)}{2g^4i^3(a+bx)^2(bc-ad)^6} - \frac{10b^3d^2(c+dx) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right)}{g^4i^3(a+bx)(bc-ad)^6}$$

[Out] $\frac{1}{4} B d^5 n (b x+a)^2 /(-a d+b c)^6 / g^4 / i^3 / (d x+c)^2 - 5 b^5 B d^4 n (b x+a) /(-a d+b c)^6 / g^4 / i^3 / (d x+c) - 10 b^4 B d^3 n (d x+c) /(-a d+b c)^6 / g^4 / i^3 / (b x+a) + 5 / 4 b^4 B d^2 n (d x+c)^2 /(-a d+b c)^6 / g^4 / i^3 / (b x+a)^2 - 1 / 9 b^5 B n (d x+c)^3 /(-a d+b c)^6 / g^4 / i^3 / (b x+a)^3 - 1 / 2 d^5 (b x+a)^2 (A+B \ln(e((b x+a) / (d x+c))^n)) /(-a d+b c)^6 / g^4 / i^3 / (d x+c)^2 + 5 b^4 d^4 (b x+a) (A+B \ln(e((b x+a) / (d x+c))^n)) /(-a d+b c)^6 / g^4 / i^3 / (d x+c) - 10 b^3 d^2 (d x+c) (A+B \ln(e((b x+a) / (d x+c))^n)) /(-a d+b c)^6 / g^4 / i^3 / (b x+a) + 5 / 2 b^4 d (d x+c)^2 (A+B \ln(e((b x+a) / (d x+c))^n)) /(-a d+b c)^6 / g^4 / i^3 / (b x+a)^2 - 1 / 3 b^5 (d x+c)^3 (A+B \ln(e((b x+a) / (d x+c))^n)) /(-a d+b c)^6 / g^4 / i^3 / (b x+a)^3 - 10 b^2 d^3 (A+B \ln(e((b x+a) / (d x+c))^n)) \ln((b x+a) / (d x+c)) /(-a d+b c)^6 / g^4 / i^3 + 5 b^2 B d^3 n \ln((b x+a) / (d x+c))^2 /(-a d+b c)^6 / g^4 / i^3$

Rubi [C] time = 1.69, antiderivative size = 859, normalized size of antiderivative = 1.46, number of steps used = 38, number of rules used = 11, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.256$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{5b^2 B n \log^2(a+bx)d^3}{(bc-ad)^6 g^4 i^3} + \frac{5b^2 B n \log^2(c+dx)d^3}{(bc-ad)^6 g^4 i^3} - \frac{10b^2 B n \log(a+bx)d^3}{3(bc-ad)^6 g^4 i^3} - \frac{10b^2 \log(a+bx) \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) \right)}{(bc-ad)^6 g^4 i^3}$$

Antiderivative was successfully verified.

[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)^4*(c*i + d*i*x)^3), x]

[Out] $-(b^2 B n) / (9 (b c - a d)^3 g^4 i^3 (a + b x)^3) + (11 b^2 B d n) / (12 (b c - a d)^4 g^4 i^3 (a + b x)^2) - (47 b^2 B d^2 n) / (6 (b c - a d)^5 g^4 i^3 (a + b x)) + (B d^3 n) / (4 (b c - a d)^4 g^4 i^3 (c + d x)^2) + (9 b^2 B d^3 n) / (2 (b c - a d)^5 g^4 i^3 (c + d x)) - (10 b^2 B d^3 n \log[a + b x]) / (3 (b c - a d)^6 g^4 i^3) + (5 b^2 B d^3 n \log[a + b x]^2) / ((b c - a d)^6 g^4 i^3) - (b^2 (A + B \log[e*((a + b x)/(c + d x))^n])) / (3 (b c - a d)^3 g^4 i^3 (a + b x)^3) + (3 b^2 d (A + B \log[e*((a + b x)/(c + d x))^n])) / (2 (b c - a d)^4 g^4 i^3 (a + b x)^2) - (6 b^2 d^2 (A + B \log[e*((a + b x)/(c + d x))^n])) / ((b c - a d)^5 g^4 i^3 (a + b x)) - (d^3 (A + B \log[e*((a + b x)/(c + d x))^n])) / ((b c - a d)^6 g^4 i^3)$

$$\begin{aligned} & *x))^n]))/((b*c - a*d)^4*g^4*i^3*(c + d*x)^2) - (4*b*d^3*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)^5*g^4*i^3*(c + d*x)) - (10*b^2*d^3*\text{Log}[a + b*x]*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)^6*g^4*i^3) + \\ & (10*b^2*B*d^3*n*\text{Log}[c + d*x])/((b*c - a*d)^6*g^4*i^3) - (10*b^2*B*d^3*n*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c + d*x])/((b*c - a*d)^6*g^4*i^3) + (\\ & 10*b^2*d^3*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]*\text{Log}[c + d*x])/((b*c - a*d)^6*g^4*i^3) + (5*b^2*B*d^3*n*\text{Log}[c + d*x]^2)/((b*c - a*d)^6*g^4*i^3) - (10 \\ & *b^2*B*d^3*n*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)]))/((b*c - a*d)^6*g^4*i^3) - (10*b^2*B*d^3*n*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - \\ & a*d)^6*g^4*i^3) - (10*b^2*B*d^3*n*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]))/((b*c - a*d)^6*g^4*i^3) \end{aligned}$$

Rule 12

$\text{Int}[(a_)*(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \&\& \text{!MatchQ}[u, (b_)*(v_)] /; \text{FreeQ}[b, x]$

Rule 44

$\text{Int}[(a_ + (b_)*(x_))^m*(c_ + (d_)*(x_))^n, x_Symbol] \rightarrow \text{Int}[\text{ExpandIntegrand}[(a + b*x)^m*(c + d*x)^n, x], x] /; \text{FreeQ}[\{a, b, c, d\}, x] \&\& \text{NeQ}[b*c - a*d, 0] \&\& \text{ILtQ}[m, 0] \&\& \text{IntegerQ}[n] \&\& \text{!(IGtQ}[n, 0] \&\& \text{LtQ}[m + n + 2, 0])]$

Rule 2301

$\text{Int}[(a_ + \text{Log}[(c_)*(x_)^n]*(b_)]/(x_), x_Symbol] \rightarrow \text{Simp}[(a + b*\text{Log}[c*x^n])^2/(2*b*n), x] /; \text{FreeQ}[\{a, b, c, n\}, x]$

Rule 2390

$\text{Int}[(a_ + \text{Log}[(c_)*((d_ + (e_)*(x_))^n]*(b_))^p*(f_ + (g_)*(x_))^q], x_Symbol] \rightarrow \text{Dist}[1/e, \text{Subst}[\text{Int}[(f*x)/d]^q*(a + b*\text{Log}[c*x^n])^p, x], x, d + e*x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g, n, p, q\}, x] \&\& \text{EqQ}[e*f - d*g, 0]$

Rule 2391

$\text{Int}[\text{Log}[(c_)*((d_ + (e_)*(x_))^n)]/(x_), x_Symbol] \rightarrow -\text{Simp}[\text{PolyLog}[2, -(c*e*x^n)]/n, x] /; \text{FreeQ}[\{c, d, e, n\}, x] \&\& \text{EqQ}[c*d, 1]$

Rule 2393

$\text{Int}[(a_ + \text{Log}[(c_)*((d_ + (e_)*(x_))]*(b_)]/((f_ + (g_)*(x_))), x_Symbol] \rightarrow \text{Dist}[1/g, \text{Subst}[\text{Int}[(a + b*\text{Log}[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g\}, x] \&\& \text{NeQ}[e*f - d*g, 0] \&\& \text{EqQ}[g + c*$

$(e*f - d*g), 0]$

Rule 2394

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2418

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]

Rule 2524

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]

Rule 2525

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]

Rule 2528

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]

Rubi steps

$$\begin{aligned}
\int \frac{A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(158c + 158dx)^3(ag + bgx)^4} dx &= \int \left(\frac{b^3 \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) \right)}{3944312(bc - ad)^3 g^4 (a + bx)^4} - \frac{3b^3 d \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) \right)}{3944312(bc - ad)^4 g^4 (a + bx)^3} + \frac{3b^3 c}{1972156(bc - ad)^5 g^4 (a + bx)^2} \right) dx \\
&= -\frac{(5b^3 d^3) \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{a+bx} dx}{1972156(bc - ad)^6 g^4} + \frac{(5b^2 d^4) \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{c+dx} dx}{1972156(bc - ad)^6 g^4} + \frac{(3b^3 d^2)}{1972156(bc - ad)^5 g^4 (a + bx)^2} \\
&= -\frac{b^2 \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) \right)}{11832936(bc - ad)^3 g^4 (a + bx)^3} + \frac{3b^2 d \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) \right)}{7888624(bc - ad)^4 g^4 (a + bx)^2} - \frac{3b^2 d^2}{1972156(bc - ad)^5 g^4 (a + bx)} \\
&= -\frac{b^2 \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) \right)}{11832936(bc - ad)^3 g^4 (a + bx)^3} + \frac{3b^2 d \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) \right)}{7888624(bc - ad)^4 g^4 (a + bx)^2} - \frac{3b^2 d^2}{1972156(bc - ad)^5 g^4 (a + bx)} \\
&= -\frac{b^2 \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) \right)}{11832936(bc - ad)^3 g^4 (a + bx)^3} + \frac{3b^2 d \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) \right)}{7888624(bc - ad)^4 g^4 (a + bx)^2} - \frac{3b^2 d^2}{1972156(bc - ad)^5 g^4 (a + bx)} \\
&= -\frac{b^2 B n}{35498808(bc - ad)^3 g^4 (a + bx)^3} + \frac{11b^2 B d n}{47331744(bc - ad)^4 g^4 (a + bx)^2} - \frac{3b^2 d^2}{23604480(bc - ad)^5 g^4 (a + bx)} \\
&= -\frac{b^2 B n}{35498808(bc - ad)^3 g^4 (a + bx)^3} + \frac{11b^2 B d n}{47331744(bc - ad)^4 g^4 (a + bx)^2} - \frac{3b^2 d^2}{23604480(bc - ad)^5 g^4 (a + bx)} \\
&= -\frac{b^2 B n}{35498808(bc - ad)^3 g^4 (a + bx)^3} + \frac{11b^2 B d n}{47331744(bc - ad)^4 g^4 (a + bx)^2} - \frac{3b^2 d^2}{23604480(bc - ad)^5 g^4 (a + bx)}
\end{aligned}$$

Mathematica [C] time = 2.03, size = 671, normalized size = 1.14

$$\frac{360b^2 d^3 \log(a + bx) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right) - 360b^2 d^3 \log(c + dx) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right) + \frac{216b^2 d^2 (bc - ad) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right)}{a + bx}}{(158c + 158dx)^3 (ag + bgx)^4}$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)^4*(c*i + d*i*x)^3), x]

```
[Out] -1/36*((4*b^2*B*(b*c - a*d)^3*n)/(a + b*x)^3 - (33*b^2*B*d*(b*c - a*d)^2*n)
/(a + b*x)^2 + (216*b^3*B*c*d^2*n)/(a + b*x) - (216*a*b^2*B*d^3*n)/(a + b*x
) + (66*b^2*B*d^2*(b*c - a*d)*n)/(a + b*x) - (9*B*d^3*(b*c - a*d)^2*n)/(c +
d*x)^2 - (144*b^2*B*c*d^3*n)/(c + d*x) + (144*a*b*B*d^4*n)/(c + d*x) - (18
*b*B*d^3*(b*c - a*d)*n)/(c + d*x) + 120*b^2*B*d^3*n*Log[a + b*x] + (12*b^2*
(b*c - a*d)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a + b*x)^3 - (54*b^2
*d*(b*c - a*d)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a + b*x)^2 + (216
*b^2*d^2*(b*c - a*d)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a + b*x) + (1
8*d^3*(b*c - a*d)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c + d*x)^2 + (
144*b*d^3*(b*c - a*d)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c + d*x) + 3
60*b^2*d^3*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 120*b^2*B*
d^3*n*Log[c + d*x] - 360*b^2*d^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log
[c + d*x] - 180*b^2*B*d^3*n*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x
))/(b*c - a*d)])) - 2*PolyLog[2, (d*(a + b*x))/(-b*c + a*d)] + 180*b^2*B*
d^3*n*((2*Log[(d*(a + b*x))/(-b*c + a*d)] - Log[c + d*x])*Log[c + d*x] +
2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))/((b*c - a*d)^6*g^4*i^3)
```

fricas [B] time = 1.01, size = 2181, normalized size = 3.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^4/(d*i*x+c*i)^3,x, a
lgorithm="fricas")
```

```
[Out] -1/36*(12*A*b^5*c^5 - 90*A*a*b^4*c^4*d + 360*A*a^2*b^3*c^3*d^2 - 120*A*a^3*
b^2*c^2*d^3 - 180*A*a^4*b*c*d^4 + 18*A*a^5*d^5 + 120*(3*A*b^5*c*d^4 - 3*A*a
*b^4*d^5 + (B*b^5*c*d^4 - B*a*b^4*d^5)*n)*x^4 + 60*(9*A*b^5*c^2*d^3 + 6*A*a
*b^4*c*d^4 - 15*A*a^2*b^3*d^5 + 2*(3*B*b^5*c^2*d^3 - 2*B*a*b^4*c*d^4 - B*a^
2*b^3*d^5)*n)*x^3 + 20*(6*A*b^5*c^3*d^2 + 63*A*a*b^4*c^2*d^3 - 36*A*a^2*b^3
*c*d^4 - 33*A*a^3*b^2*d^5 + (11*B*b^5*c^3*d^2 + 21*B*a*b^4*c^2*d^3 - 39*B*a
^2*b^3*c*d^4 + 7*B*a^3*b^2*d^5)*n)*x^2 + 180*(B*b^5*d^5*n*x^5 + B*a^3*b^2*c
^2*d^3*n + (2*B*b^5*c*d^4 + 3*B*a*b^4*d^5)*n*x^4 + (B*b^5*c^2*d^3 + 6*B*a*b
^4*c*d^4 + 3*B*a^2*b^3*d^5)*n*x^3 + (3*B*a*b^4*c^2*d^3 + 6*B*a^2*b^3*c*d^4
+ B*a^3*b^2*d^5)*n*x^2 + (3*B*a^2*b^3*c^2*d^3 + 2*B*a^3*b^2*c*d^4)*n*x)*log
((b*x + a)/(d*x + c))^2 + (4*B*b^5*c^5 - 45*B*a*b^4*c^4*d + 360*B*a^2*b^3*c
^3*d^2 - 490*B*a^3*b^2*c^2*d^3 + 180*B*a^4*b*c*d^4 - 9*B*a^5*d^5)*n - 5*(6*
A*b^5*c^4*d - 72*A*a*b^4*c^3*d^2 - 144*A*a^2*b^3*c^2*d^3 + 192*A*a^3*b^2*c*
d^4 + 18*A*a^4*b*d^5 + (5*B*b^5*c^4*d - 108*B*a*b^4*c^3*d^2 + 78*B*a^2*b^3*
c^2*d^3 + 52*B*a^3*b^2*c*d^4 - 27*B*a^4*b*d^5)*n)*x + 6*(2*B*b^5*c^5 - 15*B
*a*b^4*c^4*d + 60*B*a^2*b^3*c^3*d^2 - 20*B*a^3*b^2*c^2*d^3 - 30*B*a^4*b*c*d
^4 + 3*B*a^5*d^5 + 60*(B*b^5*c*d^4 - B*a*b^4*d^5)*x^4 + 30*(3*B*b^5*c^2*d^3
+ 2*B*a*b^4*c*d^4 - 5*B*a^2*b^3*d^5)*x^3 + 10*(2*B*b^5*c^3*d^2 + 21*B*a*b^
4*c^2*d^3 - 12*B*a^2*b^3*c*d^4 - 11*B*a^3*b^2*d^5)*x^2 - 5*(B*b^5*c^4*d - 1
2*B*a*b^4*c^3*d^2 - 24*B*a^2*b^3*c^2*d^3 + 32*B*a^3*b^2*c*d^4 + 3*B*a^4*b*d
```

```

^5)*x + 60*(B*b^5*d^5*x^5 + B*a^3*b^2*c^2*d^3 + (2*B*b^5*c*d^4 + 3*B*a*b^4*
d^5)*x^4 + (B*b^5*c^2*d^3 + 6*B*a*b^4*c*d^4 + 3*B*a^2*b^3*d^5)*x^3 + (3*B*a
*b^4*c^2*d^3 + 6*B*a^2*b^3*c*d^4 + B*a^3*b^2*d^5)*x^2 + (3*B*a^2*b^3*c^2*d^
3 + 2*B*a^3*b^2*c*d^4)*x)*log((b*x + a)/(d*x + c))*log(e) + 6*(60*A*a^3*b^
2*c^2*d^3 + 20*(B*b^5*d^5*n + 3*A*b^5*d^5)*x^5 + 20*(5*B*b^5*c*d^4*n + 6*A*
b^5*c*d^4 + 9*A*a*b^4*d^5)*x^4 + 10*(6*A*b^5*c^2*d^3 + 36*A*a*b^4*c*d^4 + 1
8*A*a^2*b^3*d^5 + (11*B*b^5*c^2*d^3 + 18*B*a*b^4*c*d^4 - 9*B*a^2*b^3*d^5)*n
)*x^3 + 10*(18*A*a*b^4*c^2*d^3 + 36*A*a^2*b^3*c*d^4 + 6*A*a^3*b^2*d^5 + (2*
B*b^5*c^3*d^2 + 27*B*a*b^4*c^2*d^3 - 9*B*a^3*b^2*d^5)*n)*x^2 + (2*B*b^5*c^5
- 15*B*a*b^4*c^4*d + 60*B*a^2*b^3*c^3*d^2 - 30*B*a^4*b*c*d^4 + 3*B*a^5*d^5
)*n + 5*(36*A*a^2*b^3*c^2*d^3 + 24*A*a^3*b^2*c*d^4 - (B*b^5*c^4*d - 12*B*a*
b^4*c^3*d^2 - 36*B*a^2*b^3*c^2*d^3 + 24*B*a^3*b^2*c*d^4 + 3*B*a^4*b*d^5)*n)
*x)*log((b*x + a)/(d*x + c))/((b^9*c^6*d^2 - 6*a*b^8*c^5*d^3 + 15*a^2*b^7*
c^4*d^4 - 20*a^3*b^6*c^3*d^5 + 15*a^4*b^5*c^2*d^6 - 6*a^5*b^4*c*d^7 + a^6*b
^3*d^8)*g^4*i^3*x^5 + (2*b^9*c^7*d - 9*a*b^8*c^6*d^2 + 12*a^2*b^7*c^5*d^3 +
5*a^3*b^6*c^4*d^4 - 30*a^4*b^5*c^3*d^5 + 33*a^5*b^4*c^2*d^6 - 16*a^6*b^3*c
*d^7 + 3*a^7*b^2*d^8)*g^4*i^3*x^4 + (b^9*c^8 - 18*a^2*b^7*c^6*d^2 + 52*a^3*
b^6*c^5*d^3 - 60*a^4*b^5*c^4*d^4 + 24*a^5*b^4*c^3*d^5 + 10*a^6*b^3*c^2*d^6
- 12*a^7*b^2*c*d^7 + 3*a^8*b*d^8)*g^4*i^3*x^3 + (3*a*b^8*c^8 - 12*a^2*b^7*c
^7*d + 10*a^3*b^6*c^6*d^2 + 24*a^4*b^5*c^5*d^3 - 60*a^5*b^4*c^4*d^4 + 52*a^
6*b^3*c^3*d^5 - 18*a^7*b^2*c^2*d^6 + a^9*d^8)*g^4*i^3*x^2 + (3*a^2*b^7*c^8
- 16*a^3*b^6*c^7*d + 33*a^4*b^5*c^6*d^2 - 30*a^5*b^4*c^5*d^3 + 5*a^6*b^3*c^
4*d^4 + 12*a^7*b^2*c^3*d^5 - 9*a^8*b*c^2*d^6 + 2*a^9*c*d^7)*g^4*i^3*x + (a^
3*b^6*c^8 - 6*a^4*b^5*c^7*d + 15*a^5*b^4*c^6*d^2 - 20*a^6*b^3*c^5*d^3 + 15*
a^7*b^2*c^4*d^4 - 6*a^8*b*c^3*d^5 + a^9*c^2*d^6)*g^4*i^3)

```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^4/(d*i*x+c*i)^3,x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A}{(bgx + ag)^4 (dix + ci)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^4/(d*i*x+c*i)^3,x)
```

[Out] $\text{int}((B*\ln(e*((b*x+a)/(d*x+c)))^n)+A)/(b*g*x+a*g)^4/(d*i*x+c*i)^3,x)$

maxima [B] time = 4.95, size = 3819, normalized size = 6.51

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((A+B*log(e*((b*x+a)/(d*x+c)))^n))/(b*g*x+a*g)^4/(d*i*x+c*i)^3,x, algorithm="maxima")`

[Out]
$$-1/6*B*((60*b^4*d^4*x^4 + 2*b^4*c^4 - 13*a*b^3*c^3*d + 47*a^2*b^2*c^2*d^2 + 27*a^3*b*c*d^3 - 3*a^4*d^4 + 30*(3*b^4*c*d^3 + 5*a*b^3*d^4)*x^3 + 10*(2*b^4*c^2*d^2 + 23*a*b^3*c*d^3 + 11*a^2*b^2*d^4)*x^2 - 5*(b^4*c^3*d - 11*a*b^3*c^2*d^2 - 35*a^2*b^2*c*d^3 - 3*a^3*b*d^4)*x)/(b^8*c^5*d^2 - 5*a*b^7*c^4*d^3 + 10*a^2*b^6*c^3*d^4 - 10*a^3*b^5*c^2*d^5 + 5*a^4*b^4*c*d^6 - a^5*b^3*d^7)*g^4*i^3*x^5 + (2*b^8*c^6*d - 7*a*b^7*c^5*d^2 + 5*a^2*b^6*c^4*d^3 + 10*a^3*b^5*c^3*d^4 - 20*a^4*b^4*c^2*d^5 + 13*a^5*b^3*c*d^6 - 3*a^6*b^2*d^7)*g^4*i^3*x^4 + (b^8*c^7 + a*b^7*c^6*d - 17*a^2*b^6*c^5*d^2 + 35*a^3*b^5*c^4*d^3 - 25*a^4*b^4*c^3*d^4 - a^5*b^3*c^2*d^5 + 9*a^6*b^2*c*d^6 - 3*a^7*b*d^7)*g^4*i^3*x^3 + (3*a*b^7*c^7 - 9*a^2*b^6*c^6*d + a^3*b^5*c^5*d^2 + 25*a^4*b^4*c^4*d^3 - 35*a^5*b^3*c^3*d^4 + 17*a^6*b^2*c^2*d^5 - a^7*b*c*d^6 - a^8*d^7)*g^4*i^3*x^2 + (3*a^2*b^6*c^7 - 13*a^3*b^5*c^6*d + 20*a^4*b^4*c^5*d^2 - 10*a^5*b^3*c^4*d^3 - 5*a^6*b^2*c^3*d^4 + 7*a^7*b*c^2*d^5 - 2*a^8*c*d^6)*g^4*i^3*x + (a^3*b^5*c^7 - 5*a^4*b^4*c^6*d + 10*a^5*b^3*c^5*d^2 - 10*a^6*b^2*c^4*d^3 + 5*a^7*b*c^3*d^4 - a^8*c^2*d^5)*g^4*i^3 + 60*b^2*d^3*log(b*x + a)/((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)*g^4*i^3) - 60*b^2*d^3*log(d*x + c)/((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)*g^4*i^3))*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) - 1/36*(4*b^5*c^5 - 45*a*b^4*c^4*d + 360*a^2*b^3*c^3*d^2 - 490*a^3*b^2*c^2*d^3 + 180*a^4*b*c*d^4 - 9*a^5*d^5 + 120*(b^5*c*d^4 - a*b^4*d^5)*x^4 + 120*(3*b^5*c^2*d^3 - 2*a*b^4*c*d^4 - a^2*b^3*d^5)*x^3 + 20*(11*b^5*c^3*d^2 + 21*a*b^4*c^2*d^3 - 39*a^2*b^3*c*d^4 + 7*a^3*b^2*d^5)*x^2 - 180*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x)*log(b*x + a)^2 - 180*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x)*log(d*x + c)^2 - 5*(5*b^5*c^4*d - 108*a*b^4*c^3*d^2 + 78*a^2*b^3*c^2*d^3 + 52*a^3*b^2*c*d^4 - 27*a^4*b*d^5)*x + 120*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x)*log(b*x + a) - 120*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a$$

$$\begin{aligned}
& 2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3 \\
& *a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x - 3*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + \\
& (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3* \\
& d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b \\
& ^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x)*\log(b*x + a))*\log(d*x + c))*B*n/(a^3*b^6*c \\
& ^8*g^4*i^3 - 6*a^4*b^5*c^7*d*g^4*i^3 + 15*a^5*b^4*c^6*d^2*g^4*i^3 - 20*a^6* \\
& b^3*c^5*d^3*g^4*i^3 + 15*a^7*b^2*c^4*d^4*g^4*i^3 - 6*a^8*b*c^3*d^5*g^4*i^3 \\
& + a^9*c^2*d^6*g^4*i^3 + (b^9*c^6*d^2*g^4*i^3 - 6*a*b^8*c^5*d^3*g^4*i^3 + 15 \\
& *a^2*b^7*c^4*d^4*g^4*i^3 - 20*a^3*b^6*c^3*d^5*g^4*i^3 + 15*a^4*b^5*c^2*d^6* \\
& g^4*i^3 - 6*a^5*b^4*c*d^7*g^4*i^3 + a^6*b^3*d^8*g^4*i^3)*x^5 + (2*b^9*c^7*d \\
& *g^4*i^3 - 9*a*b^8*c^6*d^2*g^4*i^3 + 12*a^2*b^7*c^5*d^3*g^4*i^3 + 5*a^3*b^6 \\
& *c^4*d^4*g^4*i^3 - 30*a^4*b^5*c^3*d^5*g^4*i^3 + 33*a^5*b^4*c^2*d^6*g^4*i^3 \\
& - 16*a^6*b^3*c*d^7*g^4*i^3 + 3*a^7*b^2*d^8*g^4*i^3)*x^4 + (b^9*c^8*g^4*i^3 \\
& - 18*a^2*b^7*c^6*d^2*g^4*i^3 + 52*a^3*b^6*c^5*d^3*g^4*i^3 - 60*a^4*b^5*c^4* \\
& d^4*g^4*i^3 + 24*a^5*b^4*c^3*d^5*g^4*i^3 + 10*a^6*b^3*c^2*d^6*g^4*i^3 - 12* \\
& a^7*b^2*c*d^7*g^4*i^3 + 3*a^8*b*d^8*g^4*i^3)*x^3 + (3*a*b^8*c^8*g^4*i^3 - 1 \\
& 2*a^2*b^7*c^7*d*g^4*i^3 + 10*a^3*b^6*c^6*d^2*g^4*i^3 + 24*a^4*b^5*c^5*d^3*g \\
& ^4*i^3 - 60*a^5*b^4*c^4*d^4*g^4*i^3 + 52*a^6*b^3*c^3*d^5*g^4*i^3 - 18*a^7*b \\
& ^2*c^2*d^6*g^4*i^3 + a^9*d^8*g^4*i^3)*x^2 + (3*a^2*b^7*c^8*g^4*i^3 - 16*a^3 \\
& *b^6*c^7*d*g^4*i^3 + 33*a^4*b^5*c^6*d^2*g^4*i^3 - 30*a^5*b^4*c^5*d^3*g^4*i^ \\
& 3 + 5*a^6*b^3*c^4*d^4*g^4*i^3 + 12*a^7*b^2*c^3*d^5*g^4*i^3 - 9*a^8*b*c^2*d^ \\
& 6*g^4*i^3 + 2*a^9*c*d^7*g^4*i^3)*x) - 1/6*A*((60*b^4*d^4*x^4 + 2*b^4*c^4 - \\
& 13*a*b^3*c^3*d + 47*a^2*b^2*c^2*d^2 + 27*a^3*b*c*d^3 - 3*a^4*d^4 + 30*(3*b^ \\
& 4*c*d^3 + 5*a*b^3*d^4)*x^3 + 10*(2*b^4*c^2*d^2 + 23*a*b^3*c*d^3 + 11*a^2*b^ \\
& 2*d^4)*x^2 - 5*(b^4*c^3*d - 11*a*b^3*c^2*d^2 - 35*a^2*b^2*c*d^3 - 3*a^3*b*d \\
& ^4)*x)/((b^8*c^5*d^2 - 5*a*b^7*c^4*d^3 + 10*a^2*b^6*c^3*d^4 - 10*a^3*b^5*c^ \\
& 2*d^5 + 5*a^4*b^4*c*d^6 - a^5*b^3*d^7)*g^4*i^3*x^5 + (2*b^8*c^6*d - 7*a*b^7 \\
& *c^5*d^2 + 5*a^2*b^6*c^4*d^3 + 10*a^3*b^5*c^3*d^4 - 20*a^4*b^4*c^2*d^5 + 13 \\
& *a^5*b^3*c*d^6 - 3*a^6*b^2*d^7)*g^4*i^3*x^4 + (b^8*c^7 + a*b^7*c^6*d - 17*a \\
& ^2*b^6*c^5*d^2 + 35*a^3*b^5*c^4*d^3 - 25*a^4*b^4*c^3*d^4 - a^5*b^3*c^2*d^5 \\
& + 9*a^6*b^2*c*d^6 - 3*a^7*b*d^7)*g^4*i^3*x^3 + (3*a*b^7*c^7 - 9*a^2*b^6*c^6 \\
& *d + a^3*b^5*c^5*d^2 + 25*a^4*b^4*c^4*d^3 - 35*a^5*b^3*c^3*d^4 + 17*a^6*b^2 \\
& *c^2*d^5 - a^7*b*c*d^6 - a^8*d^7)*g^4*i^3*x^2 + (3*a^2*b^6*c^7 - 13*a^3*b^5 \\
& *c^6*d + 20*a^4*b^4*c^5*d^2 - 10*a^5*b^3*c^4*d^3 - 5*a^6*b^2*c^3*d^4 + 7*a^ \\
& 7*b*c^2*d^5 - 2*a^8*c*d^6)*g^4*i^3*x + (a^3*b^5*c^7 - 5*a^4*b^4*c^6*d + 10* \\
& a^5*b^3*c^5*d^2 - 10*a^6*b^2*c^4*d^3 + 5*a^7*b*c^3*d^4 - a^8*c^2*d^5)*g^4*i \\
& ^3) + 60*b^2*d^3*\log(b*x + a)/((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^ \\
& 2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)*g^4* \\
& i^3) - 60*b^2*d^3*\log(d*x + c)/((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d \\
& ^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)*g^4 \\
& *i^3))
\end{aligned}$$

mupad [B] time = 10.22, size = 2400, normalized size = 4.09

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{int}((A + B \cdot \log(e((a + b \cdot x)/(c + d \cdot x))^n))/((a \cdot g + b \cdot g \cdot x)^4 \cdot (c \cdot i + d \cdot i \cdot x)^3), x)$

[Out] $\log(e((a + b \cdot x)/(c + d \cdot x))^n) \cdot ((x \cdot ((5 \cdot B \cdot (2 \cdot a \cdot b \cdot d^2 + b^2 \cdot c \cdot d) \cdot (a \cdot d + b \cdot c)) / (3 \cdot (a^2 \cdot d^2 + b^2 \cdot c^2 - 2 \cdot a \cdot b \cdot c \cdot d)^2) - (5 \cdot B \cdot b \cdot d) / (6 \cdot (a^2 \cdot d^2 + b^2 \cdot c^2 - 2 \cdot a \cdot b \cdot c \cdot d)) + (5 \cdot B \cdot a \cdot b^2 \cdot c \cdot d^2) / (a^2 \cdot d^2 + b^2 \cdot c^2 - 2 \cdot a \cdot b \cdot c \cdot d)^2) + x^2 \cdot ((5 \cdot B \cdot b \cdot d \cdot (2 \cdot a \cdot b \cdot d^2 + b^2 \cdot c \cdot d)) / (3 \cdot (a^2 \cdot d^2 + b^2 \cdot c^2 - 2 \cdot a \cdot b \cdot c \cdot d)^2) + (5 \cdot B \cdot b^2 \cdot d^2 \cdot (a \cdot d + b \cdot c)) / (a^2 \cdot d^2 + b^2 \cdot c^2 - 2 \cdot a \cdot b \cdot c \cdot d)^2) - (B \cdot (3 \cdot a \cdot d + 2 \cdot b \cdot c)) / (6 \cdot (a^2 \cdot d^2 + b^2 \cdot c^2 - 2 \cdot a \cdot b \cdot c \cdot d)) + (5 \cdot B \cdot a \cdot c \cdot (2 \cdot a \cdot b \cdot d^2 + b^2 \cdot c \cdot d)) / (3 \cdot (a^2 \cdot d^2 + b^2 \cdot c^2 - 2 \cdot a \cdot b \cdot c \cdot d)^2) + (5 \cdot B \cdot b^3 \cdot d^3 \cdot x^3) / (a^2 \cdot d^2 + b^2 \cdot c^2 - 2 \cdot a \cdot b \cdot c \cdot d)^2) / (x \cdot (2 \cdot a^3 \cdot c \cdot d \cdot g^4 \cdot i^3 + 3 \cdot a^2 \cdot b \cdot c^2 \cdot g^4 \cdot i^3) + x^2 \cdot (a^3 \cdot d^2 \cdot g^4 \cdot i^3 + 3 \cdot a \cdot b^2 \cdot c^2 \cdot g^4 \cdot i^3 + 6 \cdot a^2 \cdot b \cdot c \cdot d \cdot g^4 \cdot i^3) + x^3 \cdot (b^3 \cdot c^2 \cdot g^4 \cdot i^3 + 3 \cdot a^2 \cdot b \cdot d^2 \cdot g^4 \cdot i^3 + 6 \cdot a \cdot b^2 \cdot c \cdot d \cdot g^4 \cdot i^3) + x^4 \cdot (2 \cdot b^3 \cdot c \cdot d \cdot g^4 \cdot i^3 + 3 \cdot a \cdot b^2 \cdot d^2 \cdot g^4 \cdot i^3) + a^3 \cdot c^2 \cdot g^4 \cdot i^3 + b^3 \cdot d^2 \cdot g^4 \cdot i^3 \cdot x^5) + (10 \cdot B \cdot b^2 \cdot d^3 \cdot (x^2 \cdot ((g^4 \cdot i^3 \cdot n \cdot (a \cdot d + b \cdot c))^2 \cdot (a \cdot d - b \cdot c)) / d + 2 \cdot a \cdot b \cdot c \cdot g^4 \cdot i^3 \cdot n \cdot (a \cdot d - b \cdot c)) + b^2 \cdot d \cdot g^4 \cdot i^3 \cdot n \cdot x^4 \cdot (a \cdot d - b \cdot c) + (a^2 \cdot c^2 \cdot g^4 \cdot i^3 \cdot n \cdot (a \cdot d - b \cdot c)) / d + 2 \cdot b \cdot g^4 \cdot i^3 \cdot n \cdot x^3 \cdot (a \cdot d + b \cdot c) \cdot (a \cdot d - b \cdot c) + (2 \cdot a \cdot c \cdot g^4 \cdot i^3 \cdot n \cdot x \cdot (a \cdot d + b \cdot c) \cdot (a \cdot d - b \cdot c)) / d)) / (g^4 \cdot i^3 \cdot n \cdot (a \cdot d - b \cdot c)^6 \cdot (x \cdot (2 \cdot a^3 \cdot c \cdot d \cdot g^4 \cdot i^3 + 3 \cdot a^2 \cdot b \cdot c^2 \cdot g^4 \cdot i^3) + x^2 \cdot (a^3 \cdot d^2 \cdot g^4 \cdot i^3 + 3 \cdot a \cdot b^2 \cdot c^2 \cdot g^4 \cdot i^3 + 6 \cdot a^2 \cdot b \cdot c \cdot d \cdot g^4 \cdot i^3) + x^3 \cdot (b^3 \cdot c^2 \cdot g^4 \cdot i^3 + 3 \cdot a^2 \cdot b \cdot d^2 \cdot g^4 \cdot i^3 + 6 \cdot a \cdot b^2 \cdot c \cdot d \cdot g^4 \cdot i^3) + x^4 \cdot (2 \cdot b^3 \cdot c \cdot d \cdot g^4 \cdot i^3 + 3 \cdot a \cdot b^2 \cdot d^2 \cdot g^4 \cdot i^3) + a^3 \cdot c^2 \cdot g^4 \cdot i^3 + b^3 \cdot d^2 \cdot g^4 \cdot i^3 \cdot x^5))) + ((12 \cdot A \cdot b^4 \cdot c^4 - 18 \cdot A \cdot a^4 \cdot d^4 + 9 \cdot B \cdot a^4 \cdot d^4 \cdot n + 4 \cdot B \cdot b^4 \cdot c^4 \cdot n + 282 \cdot A \cdot a^2 \cdot b^2 \cdot c^2 \cdot d^2 - 78 \cdot A \cdot a \cdot b^3 \cdot c^3 \cdot d + 162 \cdot A \cdot a^3 \cdot b \cdot c \cdot d^3 + 319 \cdot B \cdot a^2 \cdot b^2 \cdot c^2 \cdot d^2 \cdot n - 41 \cdot B \cdot a \cdot b^3 \cdot c^3 \cdot d \cdot n - 171 \cdot B \cdot a^3 \cdot b \cdot c \cdot d^3 \cdot n) / (6 \cdot (a \cdot d - b \cdot c)) + (5 \cdot x \cdot (18 \cdot A \cdot a^3 \cdot b \cdot d^4 - 6 \cdot A \cdot b^4 \cdot c^3 \cdot d + 66 \cdot A \cdot a \cdot b^3 \cdot c^2 \cdot d^2 + 210 \cdot A \cdot a^2 \cdot b^2 \cdot c \cdot d^3 - 27 \cdot B \cdot a^3 \cdot b \cdot d^4 \cdot n - 5 \cdot B \cdot b^4 \cdot c^3 \cdot d \cdot n + 103 \cdot B \cdot a \cdot b^3 \cdot c^2 \cdot d^2 \cdot n + 25 \cdot B \cdot a^2 \cdot b^2 \cdot c \cdot d^3 \cdot n)) / (6 \cdot (a \cdot d - b \cdot c)) + (20 \cdot x^4 \cdot (3 \cdot A \cdot b^4 \cdot d^4 + B \cdot b^4 \cdot d^4 \cdot n)) / (a \cdot d - b \cdot c) + (10 \cdot x^2 \cdot (33 \cdot A \cdot a^2 \cdot b^2 \cdot d^4 + 6 \cdot A \cdot b^4 \cdot c^2 \cdot d^2 - 7 \cdot B \cdot a^2 \cdot b^2 \cdot d^4 \cdot n + 11 \cdot B \cdot b^4 \cdot c^2 \cdot d^2 \cdot n + 69 \cdot A \cdot a \cdot b^3 \cdot c \cdot d^3 + 32 \cdot B \cdot a \cdot b^3 \cdot c \cdot d^3 \cdot n)) / (3 \cdot (a \cdot d - b \cdot c)) + (10 \cdot x^3 \cdot (15 \cdot A \cdot a \cdot b^3 \cdot d^4 + 9 \cdot A \cdot b^4 \cdot c \cdot d^3 + 2 \cdot B \cdot a \cdot b^3 \cdot d^4 \cdot n + 6 \cdot B \cdot b^4 \cdot c \cdot d^3 \cdot n)) / (a \cdot d - b \cdot c)) / (x^5 \cdot (6 \cdot a^4 \cdot b^3 \cdot d^6 \cdot g^4 \cdot i^3 + 6 \cdot b^7 \cdot c^4 \cdot d^2 \cdot g^4 \cdot i^3 - 24 \cdot a \cdot b^6 \cdot c^3 \cdot d^3 \cdot g^4 \cdot i^3 - 24 \cdot a^3 \cdot b^4 \cdot c \cdot d^5 \cdot g^4 \cdot i^3 + 36 \cdot a^2 \cdot b^5 \cdot c^2 \cdot d^4 \cdot g^4 \cdot i^3) + x \cdot (18 \cdot a^2 \cdot b^5 \cdot c^6 \cdot g^4 \cdot i^3 + 12 \cdot a^7 \cdot c \cdot d^5 \cdot g^4 \cdot i^3 - 60 \cdot a^3 \cdot b^4 \cdot c^5 \cdot d \cdot g^4 \cdot i^3 - 30 \cdot a^6 \cdot b \cdot c^2 \cdot d^4 \cdot g^4 \cdot i^3 + 60 \cdot a^4 \cdot b^3 \cdot c^4 \cdot d^2 \cdot g^4 \cdot i^3) + x^2 \cdot (6 \cdot a^7 \cdot d^6 \cdot g^4 \cdot i^3 + 18 \cdot a \cdot b^6 \cdot c^6 \cdot g^4 \cdot i^3 + 12 \cdot a^6 \cdot b \cdot c \cdot d^5 \cdot g^4 \cdot i^3 - 36 \cdot a^2 \cdot b^5 \cdot c^5 \cdot d \cdot g^4 \cdot i^3 - 30 \cdot a^3 \cdot b^4 \cdot c^4 \cdot d^2 \cdot g^4 \cdot i^3 + 120 \cdot a^4 \cdot b^3 \cdot c^3 \cdot d^3 \cdot g^4 \cdot i^3 - 90 \cdot a^5 \cdot b^2 \cdot c^2 \cdot d^4 \cdot g^4 \cdot i^3) + x^3 \cdot (6 \cdot b^7 \cdot c^6 \cdot g^4 \cdot i^3 + 18 \cdot a^6 \cdot b \cdot d^6 \cdot g^4 \cdot i^3 + 12 \cdot a \cdot b^6 \cdot c^5 \cdot d \cdot g^4 \cdot i^3 - 36 \cdot a^5 \cdot b^2 \cdot c \cdot d^5 \cdot g^4 \cdot i^3 - 90 \cdot a^2 \cdot b^5 \cdot c^4 \cdot d^2 \cdot g^4 \cdot i^3 + 120 \cdot a^3 \cdot b^4 \cdot c^3 \cdot d^3 \cdot g^4 \cdot i^3 - 30 \cdot a^4 \cdot b^3 \cdot c^2 \cdot d^4 \cdot g^4 \cdot i^3) + x^4 \cdot (18 \cdot a^5 \cdot b^2 \cdot d^6 \cdot g^4 \cdot i^3 + 12 \cdot b^7 \cdot c^5 \cdot d \cdot g^4 \cdot i^3 - 30 \cdot a \cdot b^6 \cdot c^4 \cdot d^2 \cdot g^4 \cdot i^3 - 60 \cdot a^4 \cdot b^3 \cdot c \cdot d^5 \cdot g^4 \cdot i^3 + 60 \cdot a^3 \cdot b^4 \cdot c^2 \cdot d^4 \cdot g^4 \cdot i^3) + 6 \cdot a^3 \cdot b^4 \cdot c^6 \cdot g^4 \cdot i^3 + 6 \cdot a^7 \cdot c^2 \cdot d^4 \cdot g^4 \cdot i^3 - 24 \cdot a^4 \cdot b^3 \cdot c^5 \cdot d \cdot g^4 \cdot i^3 - 24 \cdot a^6 \cdot b \cdot c^3 \cdot d^3 \cdot g^4 \cdot i^3 + 36 \cdot a^5 \cdot b^2 \cdot c^4 \cdot d^2 \cdot g^4 \cdot i^3) + (b^2 \cdot d^3 \cdot \text{atan}((b^2 \cdot d^3 \cdot (3 \cdot$

$$\begin{aligned} & (A + B*n) * ((a^6*d^6*g^4*i^3 - b^6*c^6*g^4*i^3 + 4*a*b^5*c^5*d*g^4*i^3 - 4*a^5*b*c*d^5*g^4*i^3 - 5*a^2*b^4*c^4*d^2*g^4*i^3 + 5*a^4*b^2*c^2*d^4*g^4*i^3) / \\ & (a^5*d^5*g^4*i^3 - b^5*c^5*g^4*i^3 + 5*a*b^4*c^4*d*g^4*i^3 - 5*a^4*b*c*d^4*g^4*i^3 - 10*a^2*b^3*c^3*d^2*g^4*i^3 + 10*a^3*b^2*c^2*d^3*g^4*i^3) + 2*b*d*x) * \\ & (a^5*d^5*g^4*i^3 - b^5*c^5*g^4*i^3 + 5*a*b^4*c^4*d*g^4*i^3 - 5*a^4*b*c*d^4*g^4*i^3 - 10*a^2*b^3*c^3*d^2*g^4*i^3 + 10*a^3*b^2*c^2*d^3*g^4*i^3) * 10i) / \\ & (g^4*i^3 * (30*A*b^2*d^3 + 10*B*b^2*d^3*n) * (a*d - b*c)^6) * (3*A + B*n) * 20i) / (\\ & 3*g^4*i^3 * (a*d - b*c)^6 - (5*B*b^2*d^3 * \log(e*((a + b*x)/(c + d*x)))^n)^2) / (\\ & g^4*i^3 * n * (a*d - b*c)^6) \end{aligned}$$

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c)))**n))/(b*g*x+a*g)**4/(d*i*x+c*i)**3,x)

[Out] Timed out

$$3.159 \quad \int (ag+bgx)^3(ci+dix) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx$$

Optimal. Leaf size=584

$$\frac{Bg^3in(bc-ad)^5 \log\left(\frac{bc-ad}{b(c+dx)}\right) \left(6B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + 6A + 11Bn\right)}{60b^2d^4} - \frac{Bg^3in(a+bx)(bc-ad)^4 \left(6B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + 6A + 11Bn\right)}{60b^2d^3}$$

[Out] $3/10*B^2*(-a*d+b*c)^4*g^3*i*n^2*x/b/d^3-3/20*B^2*(-a*d+b*c)^3*g^3*i*n^2*(d*x+c)^2/d^4+1/30*b*B^2*(-a*d+b*c)^2*g^3*i*n^2*(d*x+c)^3/d^4-1/30*B*(-a*d+b*c)^2*g^3*i*n*(b*x+a)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^2/d-1/10*B*(-a*d+b*c)*g^3*i*n*(b*x+a)^4*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^2+1/20*(-a*d+b*c)*g^3*i*(b*x+a)^4*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/b^2+1/5*g^3*i*(b*x+a)^4*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/b+1/60*B*(-a*d+b*c)^3*g^3*i*n*(b*x+a)^2*(3*A+B*n+3*B*\ln(e*((b*x+a)/(d*x+c))^n))/b^2/d^2-1/60*B*(-a*d+b*c)^4*g^3*i*n*(b*x+a)*(6*A+5*B*n+6*B*\ln(e*((b*x+a)/(d*x+c))^n))/b^2/d^3-1/60*B*(-a*d+b*c)^5*g^3*i*n*(6*A+11*B*n+6*B*\ln(e*((b*x+a)/(d*x+c))^n))*\ln((-a*d+b*c)/b/(d*x+c))/b^2/d^4-1/10*B^2*(-a*d+b*c)^5*g^3*i*n^2*\ln(d*x+c)/b^2/d^4-1/10*B^2*(-a*d+b*c)^5*g^3*i*n^2*polylog(2,d*(b*x+a)/b/(d*x+c))/b^2/d^4$

Rubi [A] time = 1.90, antiderivative size = 670, normalized size of antiderivative = 1.15, number of steps used = 52, number of rules used = 13, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.302$, Rules used = {2528, 2525, 12, 2486, 31, 43, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$\frac{B^2g^3in^2(bc-ad)^5 \text{PolyLog}\left(2, \frac{b(c+dx)}{bc-ad}\right)}{10b^2d^4} + \frac{Bg^3in(bc-ad)^5 \log(c+dx) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A\right)}{10b^2d^4} + \frac{Bg^3in(a+bx)^2(b(c+dx)-a)^2}{10b^2d^4}$$

Antiderivative was successfully verified.

[In] Int[(a*g + b*g*x)^3*(c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2, x]

[Out] $-(A*B*(b*c - a*d)^4*g^3*i*n*x)/(10*b*d^3) + (B^2*(b*c - a*d)^4*g^3*i*n^2*x)/(60*b*d^3) - (B^2*(b*c - a*d)^3*g^3*i*n^2*(a + b*x)^2)/(30*b^2*d^2) + (B^2*(b*c - a*d)^2*g^3*i*n^2*(a + b*x)^3)/(30*b^2*d) - (B^2*(b*c - a*d)^4*g^3*i*n*(a + b*x)*\text{Log}[e*((a + b*x)/(c + d*x))^n])/(10*b^2*d^3) + (B*(b*c - a*d)^3*g^3*i*n*(a + b*x)^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(20*b^2*d^2) - (B*(b*c - a*d)^2*g^3*i*n*(a + b*x)^3*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(30*b^2*d) - (B*(b*c - a*d)*g^3*i*n*(a + b*x)^4*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(10*b^2) + ((b*c - a*d)*g^3*i*(a + b*x)^4*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(4*b^2) + (d*g^3*i*(a + b*x)^5*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(10*b^2)$

$$\frac{b*x}{(c + d*x))^{n}})^2)/(5*b^2) + (B^2*(b*c - a*d)^5*g^3*i*n^2*Log[c + d*x])/(12*b^2*d^4) - (B^2*(b*c - a*d)^5*g^3*i*n^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(10*b^2*d^4) + (B*(b*c - a*d)^5*g^3*i*n*(A + B*Log[e*((a + b*x)/(c + d*x))^{n}])*Log[c + d*x])/(10*b^2*d^4) + (B^2*(b*c - a*d)^5*g^3*i*n^2*Log[c + d*x]^2)/(20*b^2*d^4) - (B^2*(b*c - a*d)^5*g^3*i*n^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(10*b^2*d^4)$$
Rule 12

$$\text{Int}[(a_*)*(u_), x_Symbol] \text{ :> } \text{Dist}[a, \text{Int}[u, x], x] \text{ /; } \text{FreeQ}[a, x] \ \&\& \ !\text{MatchQ}[u, (b_)*(v_)] \text{ /; } \text{FreeQ}[b, x]$$
Rule 31

$$\text{Int}[(a_*) + (b_)*(x_)]^{-1}, x_Symbol] \text{ :> } \text{Simp}[\text{Log}[\text{RemoveContent}[a + b*x, x]]/b, x] \text{ /; } \text{FreeQ}[\{a, b\}, x]$$
Rule 43

$$\text{Int}[(a_*) + (b_)*(x_)]^{(m_*)}*((c_*) + (d_)*(x_)]^{(n_*)}, x_Symbol] \text{ :> } \text{Int}[\text{ExpandIntegrand}[(a + b*x)^m*(c + d*x)^n, x], x] \text{ /; } \text{FreeQ}[\{a, b, c, d, n\}, x] \ \&\& \ \text{NeQ}[b*c - a*d, 0] \ \&\& \ \text{IGtQ}[m, 0] \ \&\& \ (\ !\text{IntegerQ}[n] \ || \ (\text{EqQ}[c, 0] \ \&\& \ \text{LeQ}[7*m + 4*n + 4, 0]) \ || \ \text{LtQ}[9*m + 5*(n + 1), 0] \ || \ \text{GtQ}[m + n + 2, 0])$$
Rule 2301

$$\text{Int}[(a_*) + \text{Log}[(c_)*(x_)]^{(n_*)}*(b_)]/(x_), x_Symbol] \text{ :> } \text{Simp}[(a + b*\text{Log}[c*x^n])^2/(2*b*n), x] \text{ /; } \text{FreeQ}[\{a, b, c, n\}, x]$$
Rule 2390

$$\text{Int}[(a_*) + \text{Log}[(c_)*((d_*) + (e_)*(x_)]^{(n_*)}*(b_)]^{(p_*)}*((f_*) + (g_)*(x_)]^{(q_*)}, x_Symbol] \text{ :> } \text{Dist}[1/e, \text{Subst}[\text{Int}[(f*x)/d]^q*(a + b*\text{Log}[c*x^n])^p, x], x, d + e*x], x] \text{ /; } \text{FreeQ}[\{a, b, c, d, e, f, g, n, p, q\}, x] \ \&\& \ \text{EqQ}[e*f - d*g, 0]$$
Rule 2391

$$\text{Int}[\text{Log}[(c_)*((d_*) + (e_)*(x_)]^{(n_*)})]/(x_), x_Symbol] \text{ :> } -\text{Simp}[\text{PolyLog}[2, -(c*e*x^n)]/n, x] \text{ /; } \text{FreeQ}[\{c, d, e, n\}, x] \ \&\& \ \text{EqQ}[c*d, 1]$$
Rule 2393

$$\text{Int}[(a_*) + \text{Log}[(c_)*((d_*) + (e_)*(x_))]* (b_)]/((f_*) + (g_)*(x_)), x_Symbol] \text{ :> } \text{Dist}[1/g, \text{Subst}[\text{Int}[(a + b*\text{Log}[1 + (c*e*x)/g])/x, x], x, f + g*x], x] \text{ /; } \text{FreeQ}[\{a, b, c, d, e, f, g\}, x] \ \&\& \ \text{NeQ}[e*f - d*g, 0] \ \&\& \ \text{EqQ}[g + c*$$

$(e*f - d*g), 0]$

Rule 2394

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_.) + (e_.)*(x_.))^{(n_.)}]*(b_.)]/((f_.) + (g_.)*(x_.)), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[(e*(f + g*x))/(e*f - d*g)]*(a + b*\text{Log}[c*(d + e*x)^n])/g, x] - \text{Dist}[(b*e*n)/g, \text{Int}[\text{Log}[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; \text{FreeQ}\{a, b, c, d, e, f, g, n\}, x] \&\& \text{NeQ}[e*f - d*g, 0]$

Rule 2418

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_.) + (e_.)*(x_.))^{(n_.)}]*(b_.))^{(p_.)}*(\text{RFx}_.), x_Symbol] \rightarrow \text{With}\{u = \text{ExpandIntegrand}[(a + b*\text{Log}[c*(d + e*x)^n])^p, \text{RFx}, x]\}, \text{Int}[u, x] /; \text{SumQ}[u] /; \text{FreeQ}\{a, b, c, d, e, n\}, x] \&\& \text{RationalFunctionQ}[\text{RFx}, x] \&\& \text{IntegerQ}[p]$

Rule 2486

$\text{Int}[\text{Log}[(e_.)*((f_.)*((a_.) + (b_.)*(x_.))^{(p_.)}*((c_.) + (d_.)*(x_.))^{(q_.)})^{(r_.)}]^{(s_.)}, x_Symbol] \rightarrow \text{Simp}[(a + b*x)*\text{Log}[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s/b, x] + \text{Dist}[(q*r*s*(b*c - a*d))/b, \text{Int}[\text{Log}[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^{(s - 1)}/(c + d*x), x], x] /; \text{FreeQ}\{a, b, c, d, e, f, p, q, r, s\}, x] \&\& \text{NeQ}[b*c - a*d, 0] \&\& \text{EqQ}[p + q, 0] \&\& \text{IGtQ}[s, 0]$

Rule 2524

$\text{Int}[(a_.) + \text{Log}[(c_.)*(\text{RFx}_.)^{(p_.)}]*(b_.))^{(n_.)}/((d_.) + (e_.)*(x_.)), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[d + e*x]*(a + b*\text{Log}[c*\text{RFx}^p])^n)/e, x] - \text{Dist}[(b*n*p)/e, \text{Int}[(\text{Log}[d + e*x]*(a + b*\text{Log}[c*\text{RFx}^p])^{(n - 1)}*D[\text{RFx}, x])/(\text{RFx}, x), x] /; \text{FreeQ}\{a, b, c, d, e, p\}, x] \&\& \text{RationalFunctionQ}[\text{RFx}, x] \&\& \text{IGtQ}[n, 0]$

Rule 2525

$\text{Int}[(a_.) + \text{Log}[(c_.)*(\text{RFx}_.)^{(p_.)}]*(b_.))^{(n_.)}*((d_.) + (e_.)*(x_.))^{(m_.)}, x_Symbol] \rightarrow \text{Simp}[(d + e*x)^{(m + 1)}*(a + b*\text{Log}[c*\text{RFx}^p])^n/(e*(m + 1)), x] - \text{Dist}[(b*n*p)/(e*(m + 1)), \text{Int}[\text{SimplifyIntegrand}[(d + e*x)^{(m + 1)}*(a + b*\text{Log}[c*\text{RFx}^p])^{(n - 1)}*D[\text{RFx}, x])/(\text{RFx}, x), x], x] /; \text{FreeQ}\{a, b, c, d, e, m, p\}, x] \&\& \text{RationalFunctionQ}[\text{RFx}, x] \&\& \text{IGtQ}[n, 0] \&\& (\text{EqQ}[n, 1] \parallel \text{IntegerQ}[m]) \&\& \text{NeQ}[m, -1]$

Rule 2528

$\text{Int}[(a_.) + \text{Log}[(c_.)*(\text{RFx}_.)^{(p_.)}]*(b_.))^{(n_.)}*(\text{RGx}_.), x_Symbol] \rightarrow \text{With}\{u = \text{ExpandIntegrand}[(a + b*\text{Log}[c*\text{RFx}^p])^n, \text{RGx}, x]\}, \text{Int}[u, x] /; \text{SumQ}[u] /; \text{FreeQ}\{a, b, c, p\}, x] \&\& \text{RationalFunctionQ}[\text{RFx}, x] \&\& \text{RationalFunctionQ}[\text{RGx}, x]$

onQ[RGx, x] && IGtQ[n, 0]

Rubi steps

$$\begin{aligned}
\int (159c + 159dx)(ag + bgx)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx &= \int \left(\frac{159(bc - ad)(ag + bgx)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b} \right) dx \\
&= \frac{(159(bc - ad)) \int (ag + bgx)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b} \\
&= \frac{159(bc - ad)g^3(a + bx)^4 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{4b^2} \\
&= \frac{159(bc - ad)g^3(a + bx)^4 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{4b^2} \\
&= \frac{159(bc - ad)g^3(a + bx)^4 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{4b^2} \\
&= \frac{159(bc - ad)g^3(a + bx)^4 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{4b^2} \\
&= -\frac{159AB(bc - ad)^4 g^3 n x}{10bd^3} + \frac{159B(bc - ad)^3 g^3 n(a + bx)^4}{10bd^3} \\
&= -\frac{159AB(bc - ad)^4 g^3 n x}{10bd^3} - \frac{159B^2(bc - ad)^4 g^3 n(a + bx)^4}{10b^2d^3} \\
&= -\frac{159AB(bc - ad)^4 g^3 n x}{10bd^3} - \frac{159B^2(bc - ad)^4 g^3 n(a + bx)^4}{10b^2d^3} \\
&= -\frac{159AB(bc - ad)^4 g^3 n x}{10bd^3} + \frac{53B^2(bc - ad)^4 g^3 n^2 x}{20bd^3} \\
&= -\frac{159AB(bc - ad)^4 g^3 n x}{10bd^3} + \frac{53B^2(bc - ad)^4 g^3 n^2 x}{20bd^3} \\
&= -\frac{159AB(bc - ad)^4 g^3 n x}{10bd^3} + \frac{53B^2(bc - ad)^4 g^3 n^2 x}{20bd^3}
\end{aligned}$$

Mathematica [A] time = 0.91, size = 949, normalized size = 1.62

$$g^3 i \left(4d \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 (a+bx)^5 + 5(bc-ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 (a+bx)^4 - \frac{5B(bc-ad)^2 n \left(-6Bn \log(c) \right)}{\dots} \right)$$

Antiderivative was successfully verified.

[In] Integrate[(a*g + b*g*x)^3*(c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2,x]

[Out] (g^3*i*(5*(b*c - a*d)*(a + b*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 + 4*d*(a + b*x)^5*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 - (5*B*(b*c - a*d)^2*n*(6*A*b*d*(b*c - a*d)^2*x + 6*B*d*(b*c - a*d)^2*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n] + 3*d^2*(-(b*c) + a*d)*(a + b*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 2*d^3*(a + b*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 6*B*(b*c - a*d)^3*n*Log[c + d*x] - 6*(b*c - a*d)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] + B*(b*c - a*d)*n*(2*b*d*(b*c - a*d)*x - d^2*(a + b*x)^2 - 2*(b*c - a*d)^2*Log[c + d*x]) + 3*B*(b*c - a*d)^2*n*(b*d*x + (-(b*c) + a*d)*Log[c + d*x]) + 3*B*(b*c - a*d)^3*n*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(3*d^4) + (B*(b*c - a*d)*n*(24*A*b*d*(b*c - a*d)^3*x + 24*B*d*(b*c - a*d)^3*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n] - 12*d^2*(b*c - a*d)^2*(a + b*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 8*d^3*(b*c - a*d)*(a + b*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 6*d^4*(a + b*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 24*B*(b*c - a*d)^4*n*Log[c + d*x] - 24*(b*c - a*d)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] + 4*B*(b*c - a*d)^2*n*(2*b*d*(b*c - a*d)*x - d^2*(a + b*x)^2 - 2*(b*c - a*d)^2*Log[c + d*x]) + B*(b*c - a*d)*n*(6*b*d*(b*c - a*d)^2*x + 3*d^2*(-(b*c) + a*d)*(a + b*x)^2 + 2*d^3*(a + b*x)^3 - 6*(b*c - a*d)^3*Log[c + d*x]) + 12*B*(b*c - a*d)^3*n*(b*d*x + (-(b*c) + a*d)*Log[c + d*x]) + 12*B*(b*c - a*d)^4*n*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(3*d^4))/(20*b^2)

fricas [F] time = 0.91, size = 0, normalized size = 0.00

$$\text{integral} \left(A^2 b^3 d g^3 i x^4 + A^2 a^3 c g^3 i + (A^2 b^3 c + 3 A^2 a b^2 d) g^3 i x^3 + 3 (A^2 a b^2 c + A^2 a^2 b d) g^3 i x^2 + (3 A^2 a^2 b c + A^2 a^3) \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, algorithm="fricas")

```
[Out] integral(A^2*b^3*d*g^3*i*x^4 + A^2*a^3*c*g^3*i + (A^2*b^3*c + 3*A^2*a*b^2*d)
)*g^3*i*x^3 + 3*(A^2*a*b^2*c + A^2*a^2*b*d)*g^3*i*x^2 + (3*A^2*a^2*b*c + A^
2*a^3*d)*g^3*i*x + (B^2*b^3*d*g^3*i*x^4 + B^2*a^3*c*g^3*i + (B^2*b^3*c + 3*
B^2*a*b^2*d)*g^3*i*x^3 + 3*(B^2*a*b^2*c + B^2*a^2*b*d)*g^3*i*x^2 + (3*B^2*a
^2*b*c + B^2*a^3*d)*g^3*i*x)*log(e*((b*x + a)/(d*x + c))^n)^2 + 2*(A*B*b^3*
d*g^3*i*x^4 + A*B*a^3*c*g^3*i + (A*B*b^3*c + 3*A*B*a*b^2*d)*g^3*i*x^3 + 3*(
A*B*a*b^2*c + A*B*a^2*b*d)*g^3*i*x^2 + (3*A*B*a^2*b*c + A*B*a^3*d)*g^3*i*x)
*log(e*((b*x + a)/(d*x + c))^n), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, a
lgorithm="giac")
```

[Out] Timed out

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int (bgx + ag)^3 (dix + ci) \left(B \ln \left(e \left(\frac{bx + a}{dx + c} \right)^n \right) + A \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^3*(d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)
```

```
[Out] int((b*g*x+a*g)^3*(d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)
```

maxima [B] time = 7.67, size = 3764, normalized size = 6.45

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, a
lgorithm="maxima")
```

```
[Out] 2/5*A*B*b^3*d*g^3*i*x^5*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/5*A^2*b^
3*d*g^3*i*x^5 + 1/2*A*B*b^3*c*g^3*i*x^4*log(e*(b*x/(d*x + c) + a/(d*x + c))
^n) + 3/2*A*B*a*b^2*d*g^3*i*x^4*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/
4*A^2*b^3*c*g^3*i*x^4 + 3/4*A^2*a*b^2*d*g^3*i*x^4 + 2*A*B*a*b^2*c*g^3*i*x^3
*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 2*A*B*a^2*b*d*g^3*i*x^3*log(e*(b*
x/(d*x + c) + a/(d*x + c))^n) + A^2*a*b^2*c*g^3*i*x^3 + A^2*a^2*b*d*g^3*i*x
^3 + 3*A*B*a^2*b*c*g^3*i*x^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A*B*a
```

$$\begin{aligned}
&^3*d*g^3*i*x^2*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 3/2*A^2*a^2*b*c*g^3 \\
&*i*x^2 + 1/2*A^2*a^3*d*g^3*i*x^2 + 1/30*A*B*b^3*d*g^3*i*n*(12*a^5*\log(b*x + \\
&a)/b^5 - 12*c^5*\log(d*x + c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4 \\
&*c^2*d^2 - a^2*b^2*d^4)*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 - \\
&a^4*d^4)*x)/(b^4*d^4) - 1/12*A*B*b^3*c*g^3*i*n*(6*a^4*\log(b*x + a)/b^4 - \\
&6*c^4*\log(d*x + c)/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^ \\
&2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3) - 1/4*A*B*a*b^2*d*g^3*i \\
&n*(6*a^4*\log(b*x + a)/b^4 - 6*c^4*\log(d*x + c)/d^4 + (2*(b^3*c*d^2 - a*b^2 \\
&d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^ \\
&3)) + A*B*a*b^2*c*g^3*i*n*(2*a^3*\log(b*x + a)/b^3 - 2*c^3*\log(d*x + c)/d^3 \\
&- ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2) + A*B*a^2* \\
&b*d*g^3*i*n*(2*a^3*\log(b*x + a)/b^3 - 2*c^3*\log(d*x + c)/d^3 - ((b^2*c*d - \\
&a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2) - 3*A*B*a^2*b*c*g^3*i*n* \\
&(a^2*\log(b*x + a)/b^2 - c^2*\log(d*x + c)/d^2 + (b*c - a*d)*x/(b*d)) - A*B*a \\
&^3*d*g^3*i*n*(a^2*\log(b*x + a)/b^2 - c^2*\log(d*x + c)/d^2 + (b*c - a*d)*x/(\\
&b*d)) + 2*A*B*a^3*c*g^3*i*n*(a*\log(b*x + a)/b - c*\log(d*x + c)/d) + 2*A*B*a \\
&^3*c*g^3*i*x*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A^2*a^3*c*g^3*i*x - 1 \\
&/60*(6*a^4*c*d^4*g^3*i*n^2 - (5*g^3*i*n^2 + 6*g^3*i*n*\log(e))*b^4*c^5 + (19 \\
&*g^3*i*n^2 + 30*g^3*i*n*\log(e))*a*b^3*c^4*d - (23*g^3*i*n^2 + 60*g^3*i*n*\log \\
&(e))*a^2*b^2*c^3*d^2 + 3*(g^3*i*n^2 + 20*g^3*i*n*\log(e))*a^3*b*c^2*d^3)*B^ \\
&2*\log(d*x + c)/(b*d^4) + 1/10*(b^5*c^5*g^3*i*n^2 - 5*a*b^4*c^4*d*g^3*i*n^2 \\
&+ 10*a^2*b^3*c^3*d^2*g^3*i*n^2 - 10*a^3*b^2*c^2*d^3*g^3*i*n^2 + 5*a^4*b*c*d \\
&^4*g^3*i*n^2 - a^5*d^5*g^3*i*n^2)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a* \\
&d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d)))*B^2/(b^2*d^4) + 1/60*(12*B^2*b \\
&^5*d^5*g^3*i*x^5*\log(e)^2 - 3*((2*g^3*i*n*\log(e) - 5*g^3*i*\log(e)^2)*b^5*c* \\
&d^4 - (2*g^3*i*n*\log(e) + 15*g^3*i*\log(e)^2)*a*b^4*d^5)*B^2*x^4 + 2*((g^3*i \\
&n^2 - g^3*i*n*\log(e))*b^5*c^2*d^3 - 2*(g^3*i*n^2 + 5*g^3*i*n*\log(e) - 15*g \\
&^3*i*\log(e)^2)*a*b^4*c*d^4 + (g^3*i*n^2 + 11*g^3*i*n*\log(e) + 30*g^3*i*\log(\\
&e)^2)*a^2*b^3*d^5)*B^2*x^3 - ((2*g^3*i*n^2 - 3*g^3*i*n*\log(e))*b^5*c^3*d^2 \\
&- 3*(4*g^3*i*n^2 - 5*g^3*i*n*\log(e))*a*b^4*c^2*d^3 + 3*(6*g^3*i*n^2 + 5*g^3 \\
&*i*n*\log(e) - 30*g^3*i*\log(e)^2)*a^2*b^3*c*d^4 - (8*g^3*i*n^2 + 27*g^3*i*n* \\
&\log(e) + 30*g^3*i*\log(e)^2)*a^3*b^2*d^5)*B^2*x^2 - 3*(5*a^4*b*c*d^4*g^3*i*n \\
&^2 - a^5*d^5*g^3*i*n^2)*B^2*\log(b*x + a)^2 - 6*(b^5*c^5*g^3*i*n^2 - 5*a*b^4 \\
&*c^4*d*g^3*i*n^2 + 10*a^2*b^3*c^3*d^2*g^3*i*n^2 - 10*a^3*b^2*c^2*d^3*g^3*i*n \\
&n^2)*B^2*\log(b*x + a)*\log(d*x + c) + 3*(b^5*c^5*g^3*i*n^2 - 5*a*b^4*c^4*d*g \\
&^3*i*n^2 + 10*a^2*b^3*c^3*d^2*g^3*i*n^2 - 10*a^3*b^2*c^2*d^3*g^3*i*n^2)*B^2 \\
&*\log(d*x + c)^2 + ((g^3*i*n^2 - 6*g^3*i*n*\log(e))*b^5*c^4*d - 2*(4*g^3*i*n^ \\
&2 - 15*g^3*i*n*\log(e))*a*b^4*c^3*d^2 + 12*(2*g^3*i*n^2 - 5*g^3*i*n*\log(e))* \\
&a^2*b^3*c^2*d^3 - 2*(14*g^3*i*n^2 - 15*g^3*i*n*\log(e) - 30*g^3*i*\log(e)^2)* \\
&a^3*b^2*c*d^4 + (11*g^3*i*n^2 + 6*g^3*i*n*\log(e))*a^4*b*d^5)*B^2*x - (6*a*b \\
&^4*c^4*d*g^3*i*n^2 - 27*a^2*b^3*c^3*d^2*g^3*i*n^2 + 47*a^3*b^2*c^2*d^3*g^3* \\
&i*n^2 - (31*g^3*i*n^2 + 30*g^3*i*n*\log(e))*a^4*b*c*d^4 + (5*g^3*i*n^2 + 6*g \\
&^3*i*n*\log(e))*a^5*d^5)*B^2*\log(b*x + a) + 3*(4*B^2*b^5*d^5*g^3*i*x^5 + 20* \\
&B^2*a^3*b^2*c*d^4*g^3*i*x + 5*(b^5*c*d^4*g^3*i + 3*a*b^4*d^5*g^3*i)*B^2*x^4 \\
&+ 20*(a*b^4*c*d^4*g^3*i + a^2*b^3*d^5*g^3*i)*B^2*x^3 + 10*(3*a^2*b^3*c*d^4
\end{aligned}$$

```

*g^3*i + a^3*b^2*d^5*g^3*i)*B^2*x^2)*log((b*x + a)^n)^2 + 3*(4*B^2*b^5*d^5*
g^3*i*x^5 + 20*B^2*a^3*b^2*c*d^4*g^3*i*x + 5*(b^5*c*d^4*g^3*i + 3*a*b^4*d^5
*g^3*i)*B^2*x^4 + 20*(a*b^4*c*d^4*g^3*i + a^2*b^3*d^5*g^3*i)*B^2*x^3 + 10*(
3*a^2*b^3*c*d^4*g^3*i + a^3*b^2*d^5*g^3*i)*B^2*x^2)*log((d*x + c)^n)^2 + (
4*B^2*b^5*d^5*g^3*i*x^5*log(e) - 6*((g^3*i*n - 5*g^3*i*log(e))*b^5*c*d^4 -
(g^3*i*n + 15*g^3*i*log(e))*a*b^4*d^5)*B^2*x^4 - 2*(b^5*c^2*d^3*g^3*i*n + 1
0*(g^3*i*n - 6*g^3*i*log(e))*a*b^4*c*d^4 - (11*g^3*i*n + 60*g^3*i*log(e))*a
^2*b^3*d^5)*B^2*x^3 + 3*(b^5*c^3*d^2*g^3*i*n - 5*a*b^4*c^2*d^3*g^3*i*n - 5*
(g^3*i*n - 12*g^3*i*log(e))*a^2*b^3*c*d^4 + (9*g^3*i*n + 20*g^3*i*log(e))*a
^3*b^2*d^5)*B^2*x^2 - 6*(b^5*c^4*d*g^3*i*n - 5*a*b^4*c^3*d^2*g^3*i*n + 10*a
^2*b^3*c^2*d^3*g^3*i*n - a^4*b*d^5*g^3*i*n - 5*(g^3*i*n + 4*g^3*i*log(e))*a
^3*b^2*c*d^4)*B^2*x + 6*(5*a^4*b*c*d^4*g^3*i*n - a^5*d^5*g^3*i*n)*B^2*log(b
*x + a) + 6*(b^5*c^5*g^3*i*n - 5*a*b^4*c^4*d*g^3*i*n + 10*a^2*b^3*c^3*d^2*g
^3*i*n - 10*a^3*b^2*c^2*d^3*g^3*i*n)*B^2*log(d*x + c))*log((b*x + a)^n) - (
24*B^2*b^5*d^5*g^3*i*x^5*log(e) - 6*((g^3*i*n - 5*g^3*i*log(e))*b^5*c*d^4 -
(g^3*i*n + 15*g^3*i*log(e))*a*b^4*d^5)*B^2*x^4 - 2*(b^5*c^2*d^3*g^3*i*n +
10*(g^3*i*n - 6*g^3*i*log(e))*a*b^4*c*d^4 - (11*g^3*i*n + 60*g^3*i*log(e))*
a^2*b^3*d^5)*B^2*x^3 + 3*(b^5*c^3*d^2*g^3*i*n - 5*a*b^4*c^2*d^3*g^3*i*n - 5
*(g^3*i*n - 12*g^3*i*log(e))*a^2*b^3*c*d^4 + (9*g^3*i*n + 20*g^3*i*log(e))*
a^3*b^2*d^5)*B^2*x^2 - 6*(b^5*c^4*d*g^3*i*n - 5*a*b^4*c^3*d^2*g^3*i*n + 10*
a^2*b^3*c^2*d^3*g^3*i*n - a^4*b*d^5*g^3*i*n - 5*(g^3*i*n + 4*g^3*i*log(e))*
a^3*b^2*c*d^4)*B^2*x + 6*(5*a^4*b*c*d^4*g^3*i*n - a^5*d^5*g^3*i*n)*B^2*log(
b*x + a) + 6*(b^5*c^5*g^3*i*n - 5*a*b^4*c^4*d*g^3*i*n + 10*a^2*b^3*c^3*d^2*
g^3*i*n - 10*a^3*b^2*c^2*d^3*g^3*i*n)*B^2*log(d*x + c) + 6*(4*B^2*b^5*d^5*g
^3*i*x^5 + 20*B^2*a^3*b^2*c*d^4*g^3*i*x + 5*(b^5*c*d^4*g^3*i + 3*a*b^4*d^5*
g^3*i)*B^2*x^4 + 20*(a*b^4*c*d^4*g^3*i + a^2*b^3*d^5*g^3*i)*B^2*x^3 + 10*(3
*a^2*b^3*c*d^4*g^3*i + a^3*b^2*d^5*g^3*i)*B^2*x^2)*log((b*x + a)^n))*log((d
*x + c)^n))/(b^2*d^4)

```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (ag + bgx)^3 (ci + dix) \left(A + B \ln \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)^3*(c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2,
x)
```

```
[Out] int((a*g + b*g*x)^3*(c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2,
x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**3*(d*i*x+c*i)*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2,x)
```

```
[Out] Timed out
```

$$3.160 \quad \int (ag+bgx)^2(ci+dix) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx$$

Optimal. Leaf size=487

$$\frac{Bg^2in(bc-ad)^4 \log\left(\frac{bc-ad}{b(c+dx)}\right) \left(2B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + 2A + 3Bn\right)}{12b^2d^3} + \frac{Bg^2in(a+bx)(bc-ad)^3 \left(2B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + 2A + 3Bn\right)}{12b^2d^2}$$

[Out] $-1/3*B^2*(-a*d+b*c)^3*g^2*i*n^2*x/b/d^2+1/12*B^2*(-a*d+b*c)^2*g^2*i*n^2*(d*x+c)^2/d^3-1/12*B*(-a*d+b*c)^2*g^2*i*n*(b*x+a)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^2/d-1/6*B*(-a*d+b*c)*g^2*i*n*(b*x+a)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^2+1/12*(-a*d+b*c)*g^2*i*(b*x+a)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/b^2+1/4*g^2*i*(b*x+a)^3*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/b+1/12*B*(-a*d+b*c)^3*g^2*i*n*(b*x+a)*(2*A+B*n+2*B*\ln(e*((b*x+a)/(d*x+c))^n))/b^2/d^2+1/12*B*(-a*d+b*c)^4*g^2*i*n*(2*A+3*B*n+2*B*\ln(e*((b*x+a)/(d*x+c))^n))*\ln((-a*d+b*c)/b/(d*x+c))/b^2/d^3+1/6*B^2*(-a*d+b*c)^4*g^2*i*n^2*\ln(d*x+c)/b^2/d^3+1/6*B^2*(-a*d+b*c)^4*g^2*i*n^2*\text{polylog}(2,d*(b*x+a)/b/(d*x+c))/b^2/d^3$

Rubi [A] time = 1.59, antiderivative size = 578, normalized size of antiderivative = 1.19, number of steps used = 44, number of rules used = 13, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.302$, Rules used = {2528, 2525, 12, 2486, 31, 43, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$\frac{B^2g^2in^2(bc-ad)^4\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{6b^2d^3} - \frac{Bg^2in(bc-ad)^4 \log(c+dx) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right)}{6b^2d^3} - \frac{Bg^2in(a+bx)^2(bc-ad)^3}{6b^2d^3}$$

Antiderivative was successfully verified.

[In] Int[(a*g + b*g*x)^2*(c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2, x]

[Out] $(A*B*(b*c - a*d)^3*g^2*i*n*x)/(6*b*d^2) - (B^2*(b*c - a*d)^3*g^2*i*n^2*x)/(12*b*d^2) + (B^2*(b*c - a*d)^2*g^2*i*n^2*(a + b*x)^2)/(12*b^2*d) + (B^2*(b*c - a*d)^3*g^2*i*n*(a + b*x)*\text{Log}[e*((a + b*x)/(c + d*x))^n])/(6*b^2*d^2) - (B*(b*c - a*d)^2*g^2*i*n*(a + b*x)^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(12*b^2*d) - (B*(b*c - a*d)*g^2*i*n*(a + b*x)^3*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(6*b^2) + ((b*c - a*d)*g^2*i*(a + b*x)^3*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))^2/(3*b^2) + (d*g^2*i*(a + b*x)^4*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))^2/(4*b^2) - (B^2*(b*c - a*d)^4*g^2*i*n^2*\text{Log}[c + d*x])/(12*b^2*d^3) + (B^2*(b*c - a*d)^4*g^2*i*n^2*\text{Log}[-(d*(a + b*x))/(b*c - a*d)])*\text{Log}[c + d*x]/(6*b^2*d^3) - (B*(b*c - a*d)^4*g^2*i*n*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))*\text{Log}[c + d*x]/(6*b^2*d^3) - (B^2*(b*c - a*d)^4*g^2*i*n^2$

$\frac{\text{Log}[c + d*x]^2}{(12*b^2*d^3) + (B^2*(b*c - a*d)^4*g^2*i*n^2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])}/(6*b^2*d^3)$

Rule 12

$\text{Int}[(a_*)*(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \ \&\& \ !\text{Match}[\text{Q}[u, (b_*)*(v_)] /; \text{FreeQ}[b, x]]$

Rule 31

$\text{Int}[(a_*) + (b_*)*(x_)^{-1}, x_Symbol] \rightarrow \text{Simp}[\text{Log}[\text{RemoveContent}[a + b*x, x]]/b, x] /; \text{FreeQ}[\{a, b\}, x]$

Rule 43

$\text{Int}[(a_*) + (b_*)*(x_)^{(m_*)}*((c_*) + (d_*)*(x_)^{(n_*)}), x_Symbol] \rightarrow \text{Int}[\text{ExpandIntegrand}[(a + b*x)^m*(c + d*x)^n, x], x] /; \text{FreeQ}[\{a, b, c, d, n\}, x] \ \&\& \ \text{NeQ}[b*c - a*d, 0] \ \&\& \ \text{IGtQ}[m, 0] \ \&\& \ (\ !\text{IntegerQ}[n] \ || \ (\text{EqQ}[c, 0] \ \&\& \ \text{LeQ}[7*m + 4*n + 4, 0]) \ || \ \text{LtQ}[9*m + 5*(n + 1), 0] \ || \ \text{GtQ}[m + n + 2, 0])$

Rule 2301

$\text{Int}[(a_*) + \text{Log}[(c_*)*(x_)^{(n_*)}]* (b_*)]/(x_), x_Symbol] \rightarrow \text{Simp}[(a + b*\text{Log}[c*x^n])^2/(2*b*n), x] /; \text{FreeQ}[\{a, b, c, n\}, x]$

Rule 2390

$\text{Int}[(a_*) + \text{Log}[(c_*)*((d_*) + (e_*)*(x_)^{(n_*)})* (b_*)]^{(p_*)}*((f_*) + (g_*)*(x_)^{(q_*)}), x_Symbol] \rightarrow \text{Dist}[1/e, \text{Subst}[\text{Int}[(f*x)/d]^q*(a + b*\text{Log}[c*x^n])^p, x], x, d + e*x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g, n, p, q\}, x] \ \&\& \ \text{EqQ}[e*f - d*g, 0]$

Rule 2391

$\text{Int}[\text{Log}[(c_*)*((d_*) + (e_*)*(x_)^{(n_*)})]/(x_), x_Symbol] \rightarrow -\text{Simp}[\text{PolyLog}[2, -(c*e*x^n)]/n, x] /; \text{FreeQ}[\{c, d, e, n\}, x] \ \&\& \ \text{EqQ}[c*d, 1]$

Rule 2393

$\text{Int}[(a_*) + \text{Log}[(c_*)*((d_*) + (e_*)*(x_))] * (b_*)]/((f_*) + (g_*)*(x_)), x_Symbol] \rightarrow \text{Dist}[1/g, \text{Subst}[\text{Int}[(a + b*\text{Log}[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g\}, x] \ \&\& \ \text{NeQ}[e*f - d*g, 0] \ \&\& \ \text{EqQ}[g + c*(e*f - d*g), 0]$

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n]^p, RFx, x]}, Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]^(s_.), x_Symbol] := Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.))/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int (160c + 160dx)(ag + bgx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx &= \int \left(\frac{160(bc - ad)(ag + bgx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b} \right) dx \\
&= \frac{(160(bc - ad)) \int (ag + bgx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b} \\
&= \frac{160(bc - ad)g^2(a + bx)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{3b^2} \\
&= \frac{160(bc - ad)g^2(a + bx)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{3b^2} \\
&= \frac{160(bc - ad)g^2(a + bx)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{3b^2} \\
&= \frac{160(bc - ad)g^2(a + bx)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{3b^2} \\
&= \frac{160(bc - ad)g^2(a + bx)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{3b^2} \\
&= \frac{80AB(bc - ad)^3 g^2 nx}{3bd^2} - \frac{40B(bc - ad)^2 g^2 n(a + bx)}{3bd^2} \\
&= \frac{80AB(bc - ad)^3 g^2 nx}{3bd^2} + \frac{80B^2(bc - ad)^3 g^2 n(a + bx)}{3b^2 d^2} \\
&= \frac{80AB(bc - ad)^3 g^2 nx}{3bd^2} + \frac{80B^2(bc - ad)^3 g^2 n(a + bx)}{3b^2 d^2} \\
&= \frac{80AB(bc - ad)^3 g^2 nx}{3bd^2} - \frac{40B^2(bc - ad)^3 g^2 n^2 x}{3bd^2} + \frac{40B^2(bc - ad)^3 g^2 n^2 x}{3bd^2} \\
&= \frac{80AB(bc - ad)^3 g^2 nx}{3bd^2} - \frac{40B^2(bc - ad)^3 g^2 n^2 x}{3bd^2} + \frac{40B^2(bc - ad)^3 g^2 n^2 x}{3bd^2} \\
&= \frac{80AB(bc - ad)^3 g^2 nx}{3bd^2} - \frac{40B^2(bc - ad)^3 g^2 n^2 x}{3bd^2} + \frac{40B^2(bc - ad)^3 g^2 n^2 x}{3bd^2}
\end{aligned}$$

Mathematica [A] time = 0.57, size = 716, normalized size = 1.47

$$g^2 i \left(\frac{4Bn(bc-ad)^2 \left(-d^2(a+bx)^2 \left(B \log \left(e^{\left(\frac{a+bx}{c+dx} \right)^n} \right) + A \right) - 2(bc-ad)^2 \log(c+dx) \left(B \log \left(e^{\left(\frac{a+bx}{c+dx} \right)^n} \right) + A \right) + 2Abdx(bc-ad) + 2Bd(a+bx)(bc-ad) \log \left(e^{\left(\frac{a+bx}{c+dx} \right)^n} \right) \right)}{d^3} \right)$$

Antiderivative was successfully verified.

[In] Integrate[(a*g + b*g*x)^2*(c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2,x]

[Out] (g^2*i*(4*(b*c - a*d)*(a + b*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))^2 + 3*d*(a + b*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 + (4*B*(b*c - a*d)^2*n*(2*A*b*d*(b*c - a*d)*x + 2*B*d*(b*c - a*d)*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n] - d^2*(a + b*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 2*B*(b*c - a*d)^2*n*Log[c + d*x] - 2*(b*c - a*d)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] + B*(b*c - a*d)*n*(b*d*x + (-b*c) + a*d)*Log[c + d*x]) + B*(b*c - a*d)^2*n*((2*Log[(d*(a + b*x))/(-b*c) + a*d]) - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/d^3 - (B*(b*c - a*d)*n*(6*A*b*d*(b*c - a*d)^2*x + 6*B*d*(b*c - a*d)^2*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n] + 3*d^2*(-b*c) + a*d)*(a + b*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 2*d^3*(a + b*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 6*B*(b*c - a*d)^3*n*Log[c + d*x] - 6*(b*c - a*d)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] + B*(b*c - a*d)*n*(2*b*d*(b*c - a*d)*x - d^2*(a + b*x)^2 - 2*(b*c - a*d)^2*Log[c + d*x]) + 3*B*(b*c - a*d)^2*n*(b*d*x + (-b*c) + a*d)*Log[c + d*x]) + 3*B*(b*c - a*d)^3*n*((2*Log[(d*(a + b*x))/(-b*c) + a*d]) - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/d^3)/(12*b^2)

fricas [F] time = 0.82, size = 0, normalized size = 0.00

$$\text{integral} \left(A^2 b^2 d g^2 i x^3 + A^2 a^2 c g^2 i + (A^2 b^2 c + 2 A^2 a b d) g^2 i x^2 + (2 A^2 a b c + A^2 a^2 d) g^2 i x + (B^2 b^2 d g^2 i x^3 + B^2 a^2 c g^2 i x) \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, algorithm="fricas")

[Out] integral(A^2*b^2*d*g^2*i*x^3 + A^2*a^2*c*g^2*i + (A^2*b^2*c + 2*A^2*a*b*d)*g^2*i*x^2 + (2*A^2*a*b*c + A^2*a^2*d)*g^2*i*x + (B^2*b^2*d*g^2*i*x^3 + B^2*a^2*c*g^2*i + (B^2*b^2*c + 2*B^2*a*b*d)*g^2*i*x^2 + (2*B^2*a*b*c + B^2*a^2*d)*g^2*i*x)*log(e*((b*x + a)/(d*x + c))^n)^2 + 2*(A*B*b^2*d*g^2*i*x^3 + A*B*a^2*c*g^2*i + (A*B*b^2*c + 2*A*B*a*b*d)*g^2*i*x^2 + (2*A*B*a*b*c + A*B*a^2*d)*g^2*i*x)*log(e*((b*x + a)/(d*x + c))^n), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, algorithm="giac")

[Out] Timed out

maple [F] time = 0.30, size = 0, normalized size = 0.00

$$\int (bgx + ag)^2 (dix + ci) \left(B \ln \left(e \left(\frac{bx + a}{dx + c} \right)^n \right) + A \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)^2*(d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)

[Out] int((b*g*x+a*g)^2*(d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)

maxima [B] time = 6.92, size = 2691, normalized size = 5.53

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, algorithm="maxima")

[Out] $\frac{1}{2}A*B*b^2*d*g^2*i*x^4*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + \frac{1}{4}A^2*b^2*d*g^2*i*x^4 + \frac{2}{3}A*B*b^2*c*g^2*i*x^3*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + \frac{4}{3}A*B*a*b*d*g^2*i*x^3*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + \frac{1}{3}A^2*b^2*c*g^2*i*x^3 + \frac{2}{3}A^2*a*b*d*g^2*i*x^3 + 2*A*B*a*b*c*g^2*i*x^2*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A*B*a^2*d*g^2*i*x^2*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A^2*a*b*c*g^2*i*x^2 + \frac{1}{2}A^2*a^2*d*g^2*i*x^2 - \frac{1}{12}A*B*b^2*d*g^2*i*n*(6*a^4*\log(b*x + a)/b^4 - 6*c^4*\log(d*x + c)/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3)) + \frac{1}{3}A*B*b^2*c*g^2*i*n*(2*a^3*\log(b*x + a)/b^3 - 2*c^3*\log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) + \frac{2}{3}A*B*a*b*d*g^2*i*n*(2*a^3*\log(b*x + a)/b^3 - 2*c^3*\log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) - 2*A*B*a*b*c*g^2*i*n*(a^2*\log(b*x + a)/b^2 - c^2*\log(d*x + c)/d^2 + (b*c - a*d)*x/(b*d)) - A*B*a^2*d*g^2*i*n*(a^2*\log(b*x + a)/b^2 - c^2*\log(d*x + c)/d^2 + (b*c - a*d)*x/(b*d)) + 2*A*B*a^2*c*g^2*i*n*(a*\log(b*x + a)/b - c*\log(d*x$

$$\begin{aligned}
& + c)/d) + 2*A*B*a^2*c*g^2*i*x*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A^2 \\
& *a^2*c*g^2*i*x - 1/12*(2*a^3*c*d^3*g^2*i*n^2 + (g^2*i*n^2 + 2*g^2*i*n*\log(e) \\
&))*b^3*c^4 - 2*(g^2*i*n^2 + 4*g^2*i*n*\log(e))*a*b^2*c^3*d - (g^2*i*n^2 - 12 \\
& *g^2*i*n*\log(e))*a^2*b*c^2*d^2)*B^2*\log(d*x + c)/(b*d^3) - 1/6*(b^4*c^4*g^2 \\
& *i*n^2 - 4*a*b^3*c^3*d*g^2*i*n^2 + 6*a^2*b^2*c^2*d^2*g^2*i*n^2 - 4*a^3*b*c* \\
& d^3*g^2*i*n^2 + a^4*d^4*g^2*i*n^2)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a \\
& *d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d)))*B^2/(b^2*d^3) + 1/12*(3*B^2*b \\
& ^4*d^4*g^2*i*x^4*\log(e)^2 - 2*((g^2*i*n*\log(e) - 2*g^2*i*\log(e)^2)*b^4*c*d^ \\
& 3 - (g^2*i*n*\log(e) + 4*g^2*i*\log(e)^2)*a*b^3*d^4)*B^2*x^3 + ((g^2*i*n^2 - \\
& g^2*i*n*\log(e))*b^4*c^2*d^2 - 2*(g^2*i*n^2 + 2*g^2*i*n*\log(e) - 6*g^2*i*\log \\
& (e)^2)*a*b^3*c*d^3 + (g^2*i*n^2 + 5*g^2*i*n*\log(e) + 6*g^2*i*\log(e)^2)*a^2* \\
& b^2*d^4)*B^2*x^2 - (4*a^3*b*c*d^3*g^2*i*n^2 - a^4*d^4*g^2*i*n^2)*B^2*\log(b* \\
& x + a)^2 + 2*(b^4*c^4*g^2*i*n^2 - 4*a*b^3*c^3*d*g^2*i*n^2 + 6*a^2*b^2*c^2*d \\
& ^2*g^2*i*n^2)*B^2*\log(b*x + a)*log(d*x + c) - (b^4*c^4*g^2*i*n^2 - 4*a*b^3* \\
& c^3*d*g^2*i*n^2 + 6*a^2*b^2*c^2*d^2*g^2*i*n^2)*B^2*\log(d*x + c)^2 - ((g^2*i \\
& *n^2 - 2*g^2*i*n*\log(e))*b^4*c^3*d - (5*g^2*i*n^2 - 8*g^2*i*n*\log(e))*a*b^3 \\
& *c^2*d^2 + (7*g^2*i*n^2 - 4*g^2*i*n*\log(e) - 12*g^2*i*\log(e)^2)*a^2*b^2*c*d \\
& ^3 - (3*g^2*i*n^2 + 2*g^2*i*n*\log(e))*a^3*b*d^4)*B^2*x + (2*a*b^3*c^3*d*g^2 \\
& *i*n^2 - 7*a^2*b^2*c^2*d^2*g^2*i*n^2 + 2*(3*g^2*i*n^2 + 4*g^2*i*n*\log(e))*a \\
& ^3*b*c*d^3 - (g^2*i*n^2 + 2*g^2*i*n*\log(e))*a^4*d^4)*B^2*\log(b*x + a) + (3* \\
& B^2*b^4*d^4*g^2*i*x^4 + 12*B^2*a^2*b^2*c*d^3*g^2*i*x + 4*(b^4*c*d^3*g^2*i \\
& + 2*a*b^3*d^4*g^2*i)*B^2*x^3 + 6*(2*a*b^3*c*d^3*g^2*i + a^2*b^2*d^4*g^2*i)*B \\
& ^2*x^2)*\log((b*x + a)^n)^2 + (3*B^2*b^4*d^4*g^2*i*x^4 + 12*B^2*a^2*b^2*c*d^ \\
& 3*g^2*i*x + 4*(b^4*c*d^3*g^2*i + 2*a*b^3*d^4*g^2*i)*B^2*x^3 + 6*(2*a*b^3*c* \\
& d^3*g^2*i + a^2*b^2*d^4*g^2*i)*B^2*x^2)*\log((d*x + c)^n)^2 + (6*B^2*b^4*d^4 \\
& *g^2*i*x^4*\log(e) - 2*((g^2*i*n - 4*g^2*i*\log(e))*b^4*c*d^3 - (g^2*i*n + 8* \\
& g^2*i*\log(e))*a*b^3*d^4)*B^2*x^3 - (b^4*c^2*d^2*g^2*i*n + 4*(g^2*i*n - 6*g^ \\
& 2*i*\log(e))*a*b^3*c*d^3 - (5*g^2*i*n + 12*g^2*i*\log(e))*a^2*b^2*d^4)*B^2*x^ \\
& 2 + 2*(b^4*c^3*d*g^2*i*n - 4*a*b^3*c^2*d^2*g^2*i*n + a^3*b*d^4*g^2*i*n + 2* \\
& (g^2*i*n + 6*g^2*i*\log(e))*a^2*b^2*c*d^3)*B^2*x + 2*(4*a^3*b*c*d^3*g^2*i*n \\
& - a^4*d^4*g^2*i*n)*B^2*\log(b*x + a) - 2*(b^4*c^4*g^2*i*n - 4*a*b^3*c^3*d*g^ \\
& 2*i*n + 6*a^2*b^2*c^2*d^2*g^2*i*n)*B^2*\log(d*x + c))*\log((b*x + a)^n) - (6* \\
& B^2*b^4*d^4*g^2*i*x^4*\log(e) - 2*((g^2*i*n - 4*g^2*i*\log(e))*b^4*c*d^3 - (g \\
& ^2*i*n + 8*g^2*i*\log(e))*a*b^3*d^4)*B^2*x^3 - (b^4*c^2*d^2*g^2*i*n + 4*(g^2 \\
& *i*n - 6*g^2*i*\log(e))*a*b^3*c*d^3 - (5*g^2*i*n + 12*g^2*i*\log(e))*a^2*b^2* \\
& d^4)*B^2*x^2 + 2*(b^4*c^3*d*g^2*i*n - 4*a*b^3*c^2*d^2*g^2*i*n + a^3*b*d^4*g^ \\
& ^2*i*n + 2*(g^2*i*n + 6*g^2*i*\log(e))*a^2*b^2*c*d^3)*B^2*x + 2*(4*a^3*b*c*d \\
& ^3*g^2*i*n - a^4*d^4*g^2*i*n)*B^2*\log(b*x + a) - 2*(b^4*c^4*g^2*i*n - 4*a*b \\
& ^3*c^3*d*g^2*i*n + 6*a^2*b^2*c^2*d^2*g^2*i*n)*B^2*\log(d*x + c) + 2*(3*B^2*b \\
& ^4*d^4*g^2*i*x^4 + 12*B^2*a^2*b^2*c*d^3*g^2*i*x + 4*(b^4*c*d^3*g^2*i + 2*a* \\
& b^3*d^4*g^2*i)*B^2*x^3 + 6*(2*a*b^3*c*d^3*g^2*i + a^2*b^2*d^4*g^2*i)*B^2*x^ \\
& 2)*\log((b*x + a)^n))*\log((d*x + c)^n)/(b^2*d^3)
\end{aligned}$$

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (ag + bgx)^2 (ci + dix) \left(A + B \ln \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a*g + b*g*x)^2*(c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2, x)

[Out] int((a*g + b*g*x)^2*(c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2, x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)**2*(d*i*x+c*i)*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2,x)

[Out] Timed out

$$3.161 \quad \int (ag+bgx)(ci+dix) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx$$

Optimal. Leaf size=372

$$\frac{Bgin(bc-ad)^3 \log\left(\frac{bc-ad}{b(c+dx)}\right) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A + Bn \right)}{3b^2d^2} - \frac{Bgin(a+bx)(bc-ad)^2 \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right)}{3b^2d} +$$

[Out] $1/3*B^2*(-a*d+b*c)^2*g*i*n^2*x/b/d-1/3*B*(-a*d+b*c)^2*g*i*n*(b*x+a)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^2/d-1/3*B*(-a*d+b*c)*g*i*n*(b*x+a)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^2+1/6*(-a*d+b*c)*g*i*(b*x+a)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/b^2+1/3*g*i*(b*x+a)^2*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/b-1/3*B*(-a*d+b*c)^3*g*i*n*(A+B*n+B*\ln(e*((b*x+a)/(d*x+c))^n))*\ln((-a*d+b*c)/b/(d*x+c))/b^2/d^2-1/3*B^2*(-a*d+b*c)^3*g*i*n^2*\ln(d*x+c)/b^2/d^2-1/3*B^2*(-a*d+b*c)^3*g*i*n^2*polylog(2,d*(b*x+a)/b/(d*x+c))/b^2/d^2$

Rubi [B] time = 2.88, antiderivative size = 1323, normalized size of antiderivative = 3.56, number of steps used = 72, number of rules used = 14, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}} = 0.342$, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 2486, 31, 72}

$$\frac{B^2dgin^2 \log^2(a+bx)a^3}{3b^2} + \frac{2Bdgin \log(a+bx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) a^3}{3b^2} + \frac{2B^2dgin^2 \log(a+bx) \log\left(\frac{b(c+dx)}{bc-ad}\right) a^3}{3b^2}$$

Antiderivative was successfully verified.

[In] Int[(a*g + b*g*x)*(c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2,x]

[Out] $(-2*A*b*B*(a^2/b^2 - c^2/d^2)*d*g*i*n*x)/3 - (A*B*(b*c - a*d)*(b*c + a*d)*g*i*n*x)/(b*d) + (B^2*(b*c - a*d)^2*g*i*n^2*x)/(3*b*d) + (a^2*B^2*(b*c - a*d)*g*i*n^2*Log[a + b*x])/(3*b^2) - (a^2*B^2*c*g*i*n^2*Log[a + b*x]^2)/b - (a^3*B^2*d*g*i*n^2*Log[a + b*x]^2)/(3*b^2) + (a^2*B^2*(b*c + a*d)*g*i*n^2*Log[a + b*x]^2)/(2*b^2) - (B^2*(b*c - a*d)*(b*c + a*d)*g*i*n*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n])/(3*b^2*d) - (B*(b*c - a*d)*g*i*n*x^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/3 + (2*a^2*B*c*g*i*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/b + (2*a^3*B*d*g*i*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(3*b^2) - (a^2*B*(b*c + a*d)*g*i*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/b^2 + a*c*g*i*x*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 + ((b*c + a*d)*g*i*x^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/2 + (b*d*g*i*x^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/3 - (B^2*c^2*(b*c - a*d)*g*i*n^2*Log[c + d*x])/(3*d^2) + (B^2*(b*c - a*d)^2*(b*c + a*d)*g*i*n^2*Log[c + d*x])/(3*b^2*d^2) + (2*b*B^2*c^3*g*i*n^2*Log[-((d*(a$

$$\begin{aligned}
& + b*x))/(b*c - a*d)]*Log[c + d*x]]/(3*d^2) + (2*a*B^2*c^2*g*i*n^2*Log[-((d*(a + b*x))/(b*c - a*d))] * Log[c + d*x])/d - (B^2*c^2*(b*c + a*d)*g*i*n^2*Log[-((d*(a + b*x))/(b*c - a*d))] * Log[c + d*x])/d^2 - (2*b*B*c^3*g*i*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) * Log[c + d*x])/(3*d^2) - (2*a*B*c^2*g*i*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) * Log[c + d*x])/d + (B*c^2*(b*c + a*d)*g*i*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) * Log[c + d*x])/d^2 - (b*B^2*c^3*g*i*n^2*Log[c + d*x]^2)/(3*d^2) - (a*B^2*c^2*g*i*n^2*Log[c + d*x]^2)/d + (B^2*c^2*(b*c + a*d)*g*i*n^2*Log[c + d*x]^2)/(2*d^2) + (2*a^2*B^2*c*g*i*n^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)]/b + (2*a^3*B^2*d*g*i*n^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)]/(3*b^2) - (a^2*B^2*(b*c + a*d)*g*i*n^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)]/b^2 + (2*a^2*B^2*c*g*i*n^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))]/b + (2*a^3*B^2*d*g*i*n^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))]/(3*b^2) - (a^2*B^2*(b*c + a*d)*g*i*n^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))]/b^2 + (2*b*B^2*c^3*g*i*n^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]/(3*d^2) + (2*a*B^2*c^2*g*i*n^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]/d - (B^2*c^2*(b*c + a*d)*g*i*n^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]/d^2
\end{aligned}$$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 31

Int[((a_) + (b_.)*(x_))^-1, x_Symbol] := Simp[Log[RemoveContent[a + b*x, x]]/b, x] /; FreeQ[{a, b}, x]

Rule 72

Int[((e_.) + (f_.)*(x_))^(p_.)/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] := Int[ExpandIntegrand[(e + f*x)^p/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IntegerQ[p]

Rule 2301

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E_qQ[e*f - d*g, 0]

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_)^(p_.))*((c_.) + (d_.)*(x_)^(q_.))^(r_.))^(s_.), x_Symbol] := Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s, x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2523

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] := Simp[x*(a + b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
```



```
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_.))^(m_.),
 x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)),
 x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
 a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d,
 e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
 IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int (161c + 161dx)(ag + bgx) \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2 dx &= \int \left(161acg \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2 + 161(bc + \right. \\
&= (161acg) \int \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2 dx + (161b \\
&= 161acgx \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2 + \frac{161}{2}(bc + ad) \\
&= 161acgx \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2 + \frac{161}{2}(bc + ad) \\
&= 161acgx \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2 + \frac{161}{2}(bc + ad) \\
&= 161acgx \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2 + \frac{161}{2}(bc + ad) \\
&= -\frac{161AB(bc - ad)(bc + ad)gnx}{3bd} - \frac{161}{3}B(bc - ad)gn \\
&= -\frac{161AB(bc - ad)(bc + ad)gnx}{3bd} - \frac{161B^2(bc - ad)(bc + ad)gn}{3bd} \\
&= -\frac{161AB(bc - ad)(bc + ad)gnx}{3bd} - \frac{161B^2(bc - ad)(bc + ad)gn}{3bd} \\
&= -\frac{161AB(bc - ad)(bc + ad)gnx}{3bd} + \frac{161B^2(bc - ad)^2g}{3bd} \\
&= -\frac{161AB(bc - ad)(bc + ad)gnx}{3bd} + \frac{161B^2(bc - ad)^2g}{3bd} \\
&= -\frac{161AB(bc - ad)(bc + ad)gnx}{3bd} + \frac{161B^2(bc - ad)^2g}{3bd}
\end{aligned}$$

Mathematica [B] time = 0.74, size = 937, normalized size = 2.52

$$gi \left(2b^3 B n \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) \log(c+dx) c^3 - b^3 B^2 n^2 \left(\left(2 \log \left(\frac{d(a+bx)}{ad-bc} \right) - \log(c+dx) \right) \log(c+dx) + 2 \text{Li}_2 \left(\frac{b}{c+dx} \right) \right)$$

Antiderivative was successfully verified.

[In] Integrate[(a*g + b*g*x)*(c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2,x]

[Out] (g*i*(-6*A*b^2*B*c*d*(b*c - a*d)*n*x + 6*a*A*b*B*d^2*(-(b*c) + a*d)*n*x + 4*A*b*B*d*(b*c - a*d)*(b*c + a*d)*n*x - 6*b*B^2*c*d*(b*c - a*d)*n*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n] + 6*a*B^2*d^2*(-(b*c) + a*d)*n*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n] + 4*B^2*d*(b*c - a*d)*(b*c + a*d)*n*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n] - 2*b^2*B*d^2*(b*c - a*d)*n*x^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 6*a^2*b*B*c*d^2*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 2*a^3*B*d^3*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 6*a*b^2*c*d^2*x*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 + 3*b^2*d^2*(b*c + a*d)*x^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 + 2*b^3*d^3*x^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 + 6*b*B^2*c*(b*c - a*d)^2*n^2*Log[c + d*x] + 6*a*B^2*d*(b*c - a*d)^2*n^2*Log[c + d*x] - 4*B^2*(b*c - a*d)^2*(b*c + a*d)*n^2*Log[c + d*x] + 2*b^3*B*c^3*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] - 6*a*b^2*B*c^2*d*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] + 2*B^2*(b*c - a*d)*n^2*(a^2*d^2*Log[a + b*x] - b*(d*(-(b*c) + a*d)*x + b*c^2*Log[c + d*x])) - 3*a^2*b*B^2*c*d^2*n^2*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + a^3*B^2*d^3*n^2*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) - b^3*B^2*c^3*n^2*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]) + 3*a*b^2*B^2*c^2*d*n^2*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(6*b^2*d^2)

fricas [F] time = 0.90, size = 0, normalized size = 0.00

$$\text{integral} \left(A^2 b d g i x^2 + A^2 a c g i + (A^2 b c + A^2 a d) g i x + (B^2 b d g i x^2 + B^2 a c g i + (B^2 b c + B^2 a d) g i x) \log \left(e \left(\frac{b x + a}{d x + c} \right)^n \right) \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, algorithm="fricas")

[Out] integral(A^2*b*d*g*i*x^2 + A^2*a*c*g*i + (A^2*b*c + A^2*a*d)*g*i*x + (B^2*b*d*g*i*x^2 + B^2*a*c*g*i + (B^2*b*c + B^2*a*d)*g*i*x)*log(e*((b*x + a)/(d*x

+ c))ⁿ)² + 2*(A*B*b*d*g*i*x² + A*B*a*c*g*i + (A*B*b*c + A*B*a*d)*g*i*x)
log(e((b*x + a)/(d*x + c))ⁿ), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))ⁿ))²,x, alg
orithm="giac")

[Out] Timed out

maple [F] time = 0.12, size = 0, normalized size = 0.00

$$\int (bgx + ag)(dix + ci) \left(B \ln \left(e \left(\frac{bx + a}{dx + c} \right)^n \right) + A \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)*(d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))ⁿ)+A)²,x)

[Out] int((b*g*x+a*g)*(d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))ⁿ)+A)²,x)

maxima [B] time = 6.92, size = 1542, normalized size = 4.15

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))ⁿ))²,x, alg
orithm="maxima")

[Out] 2/3*A*B*b*d*g*i*x³*log(e*(b*x/(d*x + c) + a/(d*x + c))ⁿ) + 1/3*A²*b*d*g*
i*x³ + A*B*b*c*g*i*x²*log(e*(b*x/(d*x + c) + a/(d*x + c))ⁿ) + A*B*a*d*g*
i*x²*log(e*(b*x/(d*x + c) + a/(d*x + c))ⁿ) + 1/2*A²*b*c*g*i*x² + 1/2*A²*
a*d*g*i*x² + 1/3*A*B*b*d*g*i*n*(2*a³*log(b*x + a)/b³ - 2*c³*log(d*x +
c)/d³ - ((b²*c*d - a*b*d²)*x² - 2*(b²*c² - a²*d²)*x)/(b²*d²) -
A*B*b*c*g*i*n*(a²*log(b*x + a)/b² - c²*log(d*x + c)/d² + (b*c - a*d)*x/
(b*d)) - A*B*a*d*g*i*n*(a²*log(b*x + a)/b² - c²*log(d*x + c)/d² + (b*c
- a*d)*x/(b*d)) + 2*A*B*a*c*g*i*n*(a*log(b*x + a)/b - c*log(d*x + c)/d) + 2
*A*B*a*c*g*i*x*log(e*(b*x/(d*x + c) + a/(d*x + c))ⁿ) + A²*a*c*g*i*x - 1/3
(a²*c*d²*g*i*n² - b²*c³*g*i*n*log(e) - (g*i*n² - 3*g*i*n*log(e))*a*b
*c²*d)*B²*log(d*x + c)/(b*d²) + 1/3*(b³*c³*g*i*n² - 3*a*b²*c²*d*g*i
*n² + 3*a²*b*c*d²*g*i*n² - a³*d³*g*i*n²)*(log(b*x + a)*log((b*d*x +
a*d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d)))*B²/(b²*d²) +

```

1/6*(2*B^2*b^3*d^3*g*i*x^3*log(e)^2 - ((2*g*i*n*log(e) - 3*g*i*log(e)^2)*b^
3*c*d^2 - (2*g*i*n*log(e) + 3*g*i*log(e)^2)*a*b^2*d^3)*B^2*x^2 - (3*a^2*b*c
*d^2*g*i*n^2 - a^3*d^3*g*i*n^2)*B^2*log(b*x + a)^2 - 2*(b^3*c^3*g*i*n^2 - 3
*a*b^2*c^2*d*g*i*n^2)*B^2*log(b*x + a)*log(d*x + c) + (b^3*c^3*g*i*n^2 - 3*
a*b^2*c^2*d*g*i*n^2)*B^2*log(d*x + c)^2 + 2*((g*i*n^2 - g*i*n*log(e))*b^3*c
^2*d - (2*g*i*n^2 - 3*g*i*log(e)^2)*a*b^2*c*d^2 + (g*i*n^2 + g*i*n*log(e))*
a^2*b*d^3)*B^2*x - 2*(a*b^2*c^2*d*g*i*n^2 + a^3*d^3*g*i*n*log(e) - (g*i*n^2
+ 3*g*i*n*log(e))*a^2*b*c*d^2)*B^2*log(b*x + a) + (2*B^2*b^3*d^3*g*i*x^3 +
6*B^2*a*b^2*c*d^2*g*i*x + 3*(b^3*c*d^2*g*i + a*b^2*d^3*g*i)*B^2*x^2)*log((
b*x + a)^n)^2 + (2*B^2*b^3*d^3*g*i*x^3 + 6*B^2*a*b^2*c*d^2*g*i*x + 3*(b^3*c
*d^2*g*i + a*b^2*d^3*g*i)*B^2*x^2)*log((d*x + c)^n)^2 + 2*(2*B^2*b^3*d^3*g*
i*x^3*log(e) - ((g*i*n - 3*g*i*log(e))*b^3*c*d^2 - (g*i*n + 3*g*i*log(e))*a
*b^2*d^3)*B^2*x^2 - (b^3*c^2*d*g*i*n - a^2*b*d^3*g*i*n - 6*a*b^2*c*d^2*g*i*
log(e))*B^2*x + (3*a^2*b*c*d^2*g*i*n - a^3*d^3*g*i*n)*B^2*log(b*x + a) + (b
^3*c^3*g*i*n - 3*a*b^2*c^2*d*g*i*n)*B^2*log(d*x + c))*log((b*x + a)^n) - 2*
(2*B^2*b^3*d^3*g*i*x^3*log(e) - ((g*i*n - 3*g*i*log(e))*b^3*c*d^2 - (g*i*n
+ 3*g*i*log(e))*a*b^2*d^3)*B^2*x^2 - (b^3*c^2*d*g*i*n - a^2*b*d^3*g*i*n - 6
*a*b^2*c*d^2*g*i*log(e))*B^2*x + (3*a^2*b*c*d^2*g*i*n - a^3*d^3*g*i*n)*B^2*
log(b*x + a) + (b^3*c^3*g*i*n - 3*a*b^2*c^2*d*g*i*n)*B^2*log(d*x + c) + (2*
B^2*b^3*d^3*g*i*x^3 + 6*B^2*a*b^2*c*d^2*g*i*x + 3*(b^3*c*d^2*g*i + a*b^2*d^
3*g*i)*B^2*x^2)*log((b*x + a)^n))*log((d*x + c)^n))/(b^2*d^2)

```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (ag + bgx)(ci + dix) \left(A + B \ln \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)*(c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2,x)
```

```
[Out] int((a*g + b*g*x)*(c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2, x
)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2,x)
```

```
[Out] Timed out
```

$$3.162 \quad \int (ci + dix) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx$$

Optimal. Leaf size=220

$$\frac{Bin(bc - ad)^2 \log \left(1 - \frac{b(c+dx)}{d(a+bx)} \right) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{b^2 d} - \frac{Bin(a + bx)(bc - ad) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{b^2} + \frac{i(c + dx)^2}{2d}$$

[Out] $-B*(-a*d+b*c)*i*n*(b*x+a)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^2+1/2*i*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/d+B^2*(-a*d+b*c)^2*i*n^2*\ln(d*x+c)/b^2/d+B*(-a*d+b*c)^2*i*n*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))*\ln(1-b*(d*x+c)/d/(b*x+a))/b^2/d-B^2*(-a*d+b*c)^2*i*n^2*\text{polylog}(2,b*(d*x+c)/d/(b*x+a))/b^2/d$

Rubi [A] time = 0.48, antiderivative size = 307, normalized size of antiderivative = 1.40, number of steps used = 15, number of rules used = 12, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.364$, Rules used = {2525, 12, 2528, 2486, 31, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$-\frac{B^2 i n^2 (bc - ad)^2 \text{PolyLog} \left(2, -\frac{d(a+bx)}{bc-ad} \right)}{b^2 d} - \frac{Bin(bc - ad)^2 \log(a + bx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{b^2 d} + \frac{i(c + dx)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)^2}{2d}$$

Antiderivative was successfully verified.

[In] $\text{Int}[(c*i + d*i*x)*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2, x]$

[Out] $-((A*B*(b*c - a*d)*i*n*x)/b) + (B^2*(b*c - a*d)^2*i*n^2*\text{Log}[a + b*x]^2)/(2*b^2*d) - (B^2*(b*c - a*d)*i*n*(a + b*x)*\text{Log}[e*((a + b*x)/(c + d*x))^n])/b^2 - (B*(b*c - a*d)^2*i*n*\text{Log}[a + b*x]*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(b^2*d) + (i*(c + d*x)^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2)/(2*d) + (B^2*(b*c - a*d)^2*i*n^2*\text{Log}[c + d*x])/(b^2*d) - (B^2*(b*c - a*d)^2*i*n^2*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)])/(b^2*d) - (B^2*(b*c - a*d)^2*i*n^2*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))])/(b^2*d)$

Rule 12

$\text{Int}[(a_*)*(u_), x_Symbol] := \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \ \&\& \ !\text{MatchQ}[u, (b_*)*(v_)] /; \text{FreeQ}[b, x]$

Rule 31

$\text{Int}[((a_*) + (b_.)*(x_))^{(-1)}, x_Symbol] := \text{Simp}[\text{Log}[\text{RemoveContent}[a + b*x, x]]/b, x] /; \text{FreeQ}[\{a, b\}, x]$

Rule 2301

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.)]*(b_.))^(p_.)*((f_) + (g_.)*(x_)^(q_.)), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.)]*(b_.))/((f_.) + (g_.)*(x_))), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2418

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]

Rule 2486

Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_)^(p_.))*((c_.) + (d_.)*(x_)^(q_.)))^(r_.)]^(s_.), x_Symbol] := Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}

} , x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]

Rule 2524

Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0]

Rule 2525

Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]

Rule 2528

Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]

Rubi steps

$$\begin{aligned}
\int (162c + 162dx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx &= \frac{81(c+dx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{d} - \frac{(Bn) \int \frac{26244(bc-ad)(c+dx)^{2n}}{c+dx} dx}{1} \\
&= \frac{81(c+dx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{d} - \frac{(162B(bc-ad)n) \int \frac{26244(bc-ad)(c+dx)^{2n}}{c+dx} dx}{1} \\
&= \frac{81(c+dx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{d} - \frac{(162B(bc-ad)n) \int \frac{26244(bc-ad)(c+dx)^{2n}}{c+dx} dx}{1} \\
&= \frac{81(c+dx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{d} - \frac{(162B(bc-ad)n) \int \frac{26244(bc-ad)(c+dx)^{2n}}{c+dx} dx}{1} \\
&= -\frac{162AB(bc-ad)nx}{b} - \frac{162B(bc-ad)^2n \log(a+bx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^2d} \\
&= -\frac{162AB(bc-ad)nx}{b} - \frac{162B^2(bc-ad)n(a+bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^2} \\
&= -\frac{162AB(bc-ad)nx}{b} - \frac{162B^2(bc-ad)n(a+bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^2} \\
&= -\frac{162AB(bc-ad)nx}{b} - \frac{162B^2(bc-ad)n(a+bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^2} \\
&= -\frac{162AB(bc-ad)nx}{b} + \frac{81B^2(bc-ad)^2n^2 \log^2(a+bx)}{b^2d} - \frac{162B^2(bc-ad)n(a+bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^2} \\
&= -\frac{162AB(bc-ad)nx}{b} + \frac{81B^2(bc-ad)^2n^2 \log^2(a+bx)}{b^2d} - \frac{162B^2(bc-ad)n(a+bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^2}
\end{aligned}$$

Mathematica [A] time = 0.19, size = 216, normalized size = 0.98

$$i \left(\frac{Bn(bc-ad) \left(-2(bc-ad) \log(a+bx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + Bn \log \left(\frac{b(c+dx)}{bc-ad} \right) + A \right) - 2 \left(Bd(a+bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + Bn(ad-bc) \log(c+dx) + Abdx \right) + 2Bn(ad-bc) \operatorname{Li}_2 \left(\frac{b(c+dx)}{bc-ad} \right) \right)}{b^2} \right)$$

$$2d$$

Antiderivative was successfully verified.

[In] Integrate[(c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2,x]

[Out] (i*((c + d*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 + (B*(b*c - a*d)*n*(B*(b*c - a*d)*n*Log[a + b*x]^2 - 2*(A*b*d*x + B*d*(a + b*x))*Log[e*((a + b*x)/(c + d*x))^n] + B*(-(b*c) + a*d)*n*Log[c + d*x]) - 2*(b*c - a*d)*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n] + B*n*Log[(b*(c + d*x))/(b*c - a*d)]) + 2*B*(-(b*c) + a*d)*n*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]))/(2*d)

fricas [F] time = 0.74, size = 0, normalized size = 0.00

$$\operatorname{integral} \left(A^2 d i x + A^2 c i + (B^2 d i x + B^2 c i) \log \left(e \left(\frac{b x + a}{d x + c} \right)^n \right)^2 + 2 (A B d i x + A B c i) \log \left(e \left(\frac{b x + a}{d x + c} \right)^n \right), x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, algorithm="fricas")

[Out] integral(A^2*d*i*x + A^2*c*i + (B^2*d*i*x + B^2*c*i)*log(e*((b*x + a)/(d*x + c))^n)^2 + 2*(A*B*d*i*x + A*B*c*i)*log(e*((b*x + a)/(d*x + c))^n), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, algorithm="giac")

[Out] Timed out

maple [F] time = 0.11, size = 0, normalized size = 0.00

$$\int (dix + ci) \left(B \ln \left(e \left(\frac{bx + a}{dx + c} \right)^n \right) + A \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c)))^n)+A)^2,x)`

[Out] `int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c)))^n)+A)^2,x)`

maxima [B] time = 6.65, size = 825, normalized size = 3.75

$$ABdix^2 \log\left(e\left(\frac{bx}{dx+c} + \frac{a}{dx+c}\right)^n\right) + \frac{1}{2} A^2 dix^2 - ABdin\left(\frac{a^2 \log(bx+a)}{b^2} - \frac{c^2 \log(dx+c)}{d^2} + \frac{(bc-ad)x}{bd}\right) + 2 ABCin$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c)))^n))^2,x, algorithm="maxima")`

[Out] `A*B*d*i*x^2*log(e*(b*x/(d*x+c)+a/(d*x+c))^n)+1/2*A^2*d*i*x^2-A*B*d*i*n*(a^2*log(b*x+a)/b^2-c^2*log(d*x+c)/d^2+(b*c-a*d)*x/(b*d))+2*A*B*c*i*n*(a*log(b*x+a)/b-c*log(d*x+c)/d)+2*A*B*c*i*x*log(e*(b*x/(d*x+c)+a/(d*x+c))^n)+A^2*c*i*x-(a*c*d*i*n^2-(i*n^2-i*n*log(e))*b*c^2)*B^2*log(d*x+c)/(b*d)-(b^2*c^2*i*n^2-2*a*b*c*d*i*n^2+a^2*d^2*i*n^2)*(log(b*x+a)*log((b*d*x+a*d)/(b*c-a*d)+1)+dilog(-(b*d*x+a*d)/(b*c-a*d)))*B^2/(b^2*d)+1/2*(2*B^2*b^2*c^2*i*n^2*log(b*x+a)*log(d*x+c)-B^2*b^2*c^2*i*n^2*log(d*x+c)^2+B^2*b^2*d^2*i*x^2*log(e)^2-(2*a*b*c*d*i*n^2-a^2*d^2*i*n^2)*B^2*log(b*x+a)^2+2*(a*b*d^2*i*n*log(e)-i*n*log(e)-i*log(e)^2)*b^2*c*d)*B^2*x-2*((i*n^2-2*i*n*log(e))*a*b*c*d-(i*n^2-i*n*log(e))*a^2*d^2)*B^2*log(b*x+a)+(B^2*b^2*d^2*i*x^2+2*B^2*b^2*c*d*i*x)*log((b*x+a)^n)^2+(B^2*b^2*d^2*i*x^2+2*B^2*b^2*c*d*i*x)*log((d*x+c)^n)^2+2*(B^2*b^2*d^2*i*x^2*log(e)-B^2*b^2*c^2*i*n*log(d*x+c)+(a*b*d^2*i*n-(i*n-2*i*log(e))*b^2*c*d)*B^2*x+(2*a*b*c*d*i*n-a^2*d^2*i*n)*B^2*log(b*x+a))*log((b*x+a)^n)-2*(B^2*b^2*d^2*i*x^2*log(e)-B^2*b^2*c^2*i*n*log(d*x+c)+(a*b*d^2*i*n-(i*n-2*i*log(e))*b^2*c*d)*B^2*x+(2*a*b*c*d*i*n-a^2*d^2*i*n)*B^2*log(b*x+a)+(B^2*b^2*d^2*i*x^2+2*B^2*b^2*c*d*i*x)*log((b*x+a)^n))*log((d*x+c)^n)/(b^2*d)`

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (ci + dix) \left(A + B \ln \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((c*i+d*i*x)*(A+B*log(e*((a+b*x)/(c+d*x)))^n))^2,x)`

[Out] `int((c*i+d*i*x)*(A+B*log(e*((a+b*x)/(c+d*x)))^n))^2,x)`

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$i \left(\int A^2 c dx + \int A^2 dx dx + \int B^2 c \log \left(e \left(\frac{a}{c+dx} + \frac{bx}{c+dx} \right)^n \right)^2 dx + \int 2ABc \log \left(e \left(\frac{a}{c+dx} + \frac{bx}{c+dx} \right)^n \right) dx + \int \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2,x)

[Out] i*(Integral(A**2*c, x) + Integral(A**2*d*x, x) + Integral(B**2*c*log(e*(a/(c + d*x) + b*x/(c + d*x))**n)**2, x) + Integral(2*A*B*c*log(e*(a/(c + d*x) + b*x/(c + d*x))**n), x) + Integral(B**2*d*x*log(e*(a/(c + d*x) + b*x/(c + d*x))**n)**2, x) + Integral(2*A*B*d*x*log(e*(a/(c + d*x) + b*x/(c + d*x))**n), x))

$$3.163 \quad \int \frac{(ci+dx) \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{ag+bgx} dx$$

Optimal. Leaf size=306

$$\frac{2Bin(bc-ad)Li_2\left(\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^2g} + \frac{2Bin(bc-ad)\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^2g} + \frac{di(a+bx)}{b^2g}$$

[Out] d*i*(b*x+a)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/b^2/g+2*B*(-a*d+b*c)*i*n*(A+B*ln(e*((b*x+a)/(d*x+c))^n))*ln((-a*d+b*c)/b/(d*x+c))/b^2/g-(-a*d+b*c)*i*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2*ln(1-b*(d*x+c)/d/(b*x+a))/b^2/g+2*B^2*(-a*d+b*c)*i*n^2*polylog(2,d*(b*x+a)/b/(d*x+c))/b^2/g+2*B*(-a*d+b*c)*i*n*(A+B*ln(e*((b*x+a)/(d*x+c))^n))*polylog(2,b*(d*x+c)/d/(b*x+a))/b^2/g+2*B^2*(-a*d+b*c)*i*n^2*polylog(3,b*(d*x+c)/d/(b*x+a))/b^2/g

Rubi [B] time = 2.87, antiderivative size = 692, normalized size of antiderivative = 2.26, number of steps used = 36, number of rules used = 19, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.442$, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610}

$$\frac{2ABin(bc-ad)PolyLog\left(2, -\frac{d(a+bx)}{bc-ad}\right)}{b^2g} + \frac{2B^2in(bc-ad)PolyLog\left(2, \frac{bc-ad}{d(a+bx)} + 1\right)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{b^2g} + \frac{2aB^2din^2PolyLog\left(2, -\frac{d(a+bx)}{bc-ad}\right)}{b^2g}$$

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b*g*x), x]

[Out] -((A*B*(b*c - a*d)*i*n*Log[a + b*x]^2)/(b^2*g)) - (a*B^2*d*i*n^2*Log[a + b*x]^2)/(b^2*g) - (B^2*(b*c - a*d)*i*Log[-((b*c - a*d)/(d*(a + b*x))])*Log[e*((a + b*x)/(c + d*x))^n]^2)/(b^2*g) - (B^2*(b*c - a*d)*i*Log[a + b*x]*Log[e*((a + b*x)/(c + d*x))^n]^2)/(b^2*g) + (2*a*B*d*i*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n])/(b^2*g) + (d*i*x*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(b*g) + ((b*c - a*d)*i*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(b^2*g) + (2*B^2*c*i*n^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(b*g) - (2*B*c*i*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x])/(b*g) - (B^2*c*i*n^2*Log[c + d*x]^2)/(b*g) + (2*A*B*(b*c - a*d)*i*n*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)]/(b^2*g) + (2*a*B^2*d*i*n^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)]/(b^2*g) + (2*A*B*(b*c - a*d)*i*n*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))]/(b^2*g) + (2*a*B^2*d*i*n^2*P

olyLog[2, -((d*(a + b*x))/(b*c - a*d))]/(b^2*g) + (2*B^2*c*i*n^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]/(b*g) + (2*B^2*(b*c - a*d)*i*n*Log[e*((a + b*x)/(c + d*x))^n]*PolyLog[2, 1 + (b*c - a*d)/(d*(a + b*x))]/(b^2*g) + (2*B^2*(b*c - a*d)*i*n^2*PolyLog[3, 1 + (b*c - a*d)/(d*(a + b*x))]/(b^2*g)

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 2301

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2317

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e, Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]

Rule 2344

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_.) + (e_.)*(x_))), x_Symbol] := Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_.) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_.)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_.)*((d_.) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_.) + Log[(c_.)*((d_.) + (e_.)*(x_))])*(b_.)/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c

$(e*f - d*g), 0]$

Rule 2394

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_.) + (e_.)*(x_.))^{(n_.)}]*(b_.)]/((f_.) + (g_.)*(x_.)), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[(e*(f + g*x))/(e*f - d*g)]*(a + b*\text{Log}[c*(d + e*x)^n])/g, x] - \text{Dist}[(b*e^n)/g, \text{Int}[\text{Log}[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; \text{FreeQ}\{a, b, c, d, e, f, g, n\}, x\} \&\& \text{NeQ}[e*f - d*g, 0]$

Rule 2411

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_.) + (e_.)*(x_.))^{(n_.)}]*(b_.)]^{(p_.)}*((f_.) + (g_.)*(x_.))^{(q_.)}*((h_.) + (i_.)*(x_.))^{(r_.)}, x_Symbol] \rightarrow \text{Dist}[1/e, \text{Subst}[\text{Int}[(g*x)/e]^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*\text{Log}[c*x^n])^p, x], x, d + e*x], x] /; \text{FreeQ}\{a, b, c, d, e, f, g, h, i, n, p, q, r\}, x\} \&\& \text{EqQ}[e*f - d*g, 0] \&\& (\text{IGtQ}[p, 0] \mid \mid \text{IGtQ}[r, 0]) \&\& \text{IntegerQ}[2*r]$

Rule 2418

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_.) + (e_.)*(x_.))^{(n_.)}]*(b_.)]^{(p_.)}(\text{RFx}_.), x_Symbol] \rightarrow \text{With}\{u = \text{ExpandIntegrand}[(a + b*\text{Log}[c*(d + e*x)^n])^p, \text{RFx}, x]\}, \text{Int}[u, x] /; \text{SumQ}[u] /; \text{FreeQ}\{a, b, c, d, e, n\}, x\} \&\& \text{RationalFunctionQ}[\text{RFx}, x] \&\& \text{IntegerQ}[p]$

Rule 2488

$\text{Int}[\text{Log}[e_.)*((f_.)*((a_.) + (b_.)*(x_.))^{(p_.)}*((c_.) + (d_.)*(x_.))^{(q_.)})^{(r_.)}]^{(s_.)}/((g_.) + (h_.)*(x_.)), x_Symbol] \rightarrow -\text{Simp}[(\text{Log}[-((b*c - a*d)/(d*(a + b*x))])*\text{Log}[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/h, x] + \text{Dist}[(p*r*s*(b*c - a*d))/h, \text{Int}[(\text{Log}[-((b*c - a*d)/(d*(a + b*x))])*\text{Log}[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1)/((a + b*x)*(c + d*x)), x], x] /; \text{FreeQ}\{a, b, c, d, e, f, g, h, p, q, r, s\}, x\} \&\& \text{NeQ}[b*c - a*d, 0] \&\& \text{EqQ}[p + q, 0] \&\& \text{EqQ}[b*g - a*h, 0] \&\& \text{IGtQ}[s, 0]$

Rule 2506

$\text{Int}[\text{Log}[v_*]\text{Log}[e_.)*((f_.)*((a_.) + (b_.)*(x_.))^{(p_.)}*((c_.) + (d_.)*(x_.))^{(q_.)})^{(r_.)}]^{(s_.)}*(u_.), x_Symbol] \rightarrow \text{With}\{g = \text{Simplify}[(v - 1)*(c + d*x)/(a + b*x)], h = \text{Simplify}[u*(a + b*x)*(c + d*x)]\}, -\text{Simp}[(h*\text{PolyLog}[2, 1 - v]*\text{Log}[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/(b*c - a*d), x] + \text{Dist}[h*p*r*s, \text{Int}[(\text{PolyLog}[2, 1 - v]*\text{Log}[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1)/((a + b*x)*(c + d*x)), x], x] /; \text{FreeQ}\{g, h\}, x\} /; \text{FreeQ}\{a, b, c, d, e, f, p, q, r, s\}, x\} \&\& \text{NeQ}[b*c - a*d, 0] \&\& \text{IGtQ}[s, 0] \&\& \text{EqQ}[p + q, 0]$

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] :=> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^(s + 1))/(p*r*(s + 1)*(b*c
- a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q]^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2523

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] :=> Simp[x*(a +
b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*
RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, p}, x] && Rat
ionalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :=> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :=> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x], Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :=> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /; !FalseQ[w] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] :=> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]
```

Rule 6742

```
Int[u_, x_Symbol] :=> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
```


]

Rubi steps

$$\begin{aligned}
\int \frac{(163c + 163dx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{ag + bgx} dx &= \int \left(\frac{163d \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{bg} + \frac{163(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{bg(a + bx)} \right) dx \\
&= \frac{(163d) \int \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx}{bg} + \frac{(163(bc - ad)) \int \frac{\left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{a + bx} dx}{bg} \\
&= \frac{163dx \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{bg} + \frac{163(bc - ad) \log(a + bx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^2g} \\
&= \frac{163dx \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{bg} + \frac{163(bc - ad) \log(a + bx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^2g} \\
&= \frac{163dx \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{bg} + \frac{163(bc - ad) \log(a + bx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^2g} \\
&= \frac{163dx \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{bg} + \frac{163(bc - ad) \log(a + bx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^2g} \\
&= \frac{163dx \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{bg} + \frac{163(bc - ad) \log(a + bx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^2g} \\
&= \frac{326ABdn \log(a + bx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^2g} + \frac{163dx \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^2g} \\
&= -\frac{163B^2(bc - ad) \log(a + bx) \log^2 \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^2g} + \frac{326ABdn \log(a + bx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^2g} \\
&= -\frac{163B^2(bc - ad) \log \left(-\frac{bc-ad}{d(a+bx)} \right) \log^2 \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^2g} - \frac{163B^2(bc - ad) \log(a + bx) \log^2 \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^2g} \\
&= -\frac{163AB(bc - ad)n \log^2(a + bx)}{b^2g} - \frac{163B^2(bc - ad) \log \left(-\frac{bc-ad}{d(a+bx)} \right) \log^2 \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^2g} \\
&= -\frac{163AB(bc - ad)n \log^2(a + bx)}{b^2g} - \frac{163aB^2dn^2 \log^2(a + bx)}{b^2g} - \frac{163B^2(bc - ad) \log \left(-\frac{bc-ad}{d(a+bx)} \right) \log^2 \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^2g} \\
&= -\frac{163AB(bc - ad)n \log^2(a + bx)}{b^2g} - \frac{163aB^2dn^2 \log^2(a + bx)}{b^2g} - \frac{163B^2(bc - ad) \log \left(-\frac{bc-ad}{d(a+bx)} \right) \log^2 \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^2g}
\end{aligned}$$

Mathematica [B] time = 1.96, size = 742, normalized size = 2.42

$$i \left(-3Bn \left(-2ad \operatorname{Li}_2 \left(\frac{b(c+dx)}{bc-ad} \right) + 2 \left(\log \left(\frac{c}{d} + x \right) \left(-ad \log \left(\frac{d(a+bx)}{ad-bc} \right) + ad \log(a+bx) + bc \right) + (ad \log(a+bx) - bdx) \right) \right)$$

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b*g*x), x]

[Out] (i*(3*b*d*x*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])^2 + 3*(b*c - a*d)*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])^2 - 3*B*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])*(a*d*Log[a/b + x]^2 - 2*a*d*Log[a/b + x]*(1 + Log[a + b*x]) + 2*(-(b*c) + a*d + Log[c/d + x]*(b*c + a*d*Log[a + b*x] - a*d*Log[(d*(a + b*x))/(-(b*c) + a*d)])) + (-(b*d*x) + a*d*Log[a + b*x])*Log[(a + b*x)/(c + d*x)] - 2*a*d*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]) + 3*b*B*c*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])*(Log[a/b + x]^2 - 2*Log[a + b*x]*(Log[a/b + x] - Log[c/d + x] - Log[(a + b*x)/(c + d*x)]) - 2*(Log[c/d + x]*Log[(d*(a + b*x))/(-(b*c) + a*d)] + PolyLog[2, (b*(c + d*x))/(b*c - a*d)])) + B^2*n^2*(Log[(a + b*x)/(c + d*x)])*(-(a*d*Log[(a + b*x)/(c + d*x)]^2 + 6*(b*c - a*d)*Log[(b*c - a*d)/(b*c + b*d*x]) + 3*d*Log[(a + b*x)/(c + d*x)]*(a + b*x + a*Log[(b*c - a*d)/(b*c + b*d*x]))) + 6*(b*c - a*d + a*d*Log[(a + b*x)/(c + d*x)])*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))] - 6*a*d*PolyLog[3, (d*(a + b*x))/(b*(c + d*x))] - 3*b*B^2*c*n^2*(Log[(-(b*c) + a*d)/(d*(a + b*x))]*Log[(a + b*x)/(c + d*x)]^2 - 2*Log[(a + b*x)/(c + d*x)]*PolyLog[2, (b*(c + d*x))/(d*(a + b*x))] - 2*PolyLog[3, (b*(c + d*x))/(d*(a + b*x))]))/(3*b^2*g)

fricas [F] time = 0.92, size = 0, normalized size = 0.00

$$\operatorname{integral} \left(\frac{A^2 d i x + A^2 c i + (B^2 d i x + B^2 c i) \log \left(e \left(\frac{b x + a}{d x + c} \right)^n \right)^2 + 2 (A B d i x + A B c i) \log \left(e \left(\frac{b x + a}{d x + c} \right)^n \right)}{b g x + a g}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g), x, algorithm="fricas")

[Out] integral((A^2*d*i*x + A^2*c*i + (B^2*d*i*x + B^2*c*i)*log(e*((b*x + a)/(d*x + c))^n))^2 + 2*(A*B*d*i*x + A*B*c*i)*log(e*((b*x + a)/(d*x + c))^n))/(b*g*x + a*g), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g),x, algorithm="giac")

[Out] Timed out

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci) \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)^2}{bgx + ag} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g),x)

[Out] int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g),x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$A^2 di \left(\frac{x}{bg} - \frac{a \log(bx + a)}{b^2 g} \right) + \frac{A^2 ci \log(bgx + ag)}{bg} + \frac{(B^2 b dix + (bci - adi) B^2 \log(bx + a)) \log((dx + c)^n)^2}{b^2 g} - \int - \frac{B^2}{b^2 g} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g),x, algorithm="maxima")

[Out] A^2*d*i*(x/(b*g) - a*log(b*x + a)/(b^2*g)) + A^2*c*i*log(b*g*x + a*g)/(b*g) + (B^2*b*d*i*x + (b*c*i - a*d*i)*B^2*log(b*x + a))*log((d*x + c)^n)^2/(b^2*g) - integrate(-(B^2*b^2*c^2*i*log(e)^2 + 2*A*B*b^2*c^2*i*log(e) + (B^2*b^2*d^2*i*log(e)^2 + 2*A*B*b^2*d^2*i*log(e))*x^2 + (B^2*b^2*d^2*i*x^2 + 2*B^2*b^2*c*d*i*x + B^2*b^2*c^2*i)*log((b*x + a)^n)^2 + 2*(B^2*b^2*c*d*i*log(e)^2 + 2*A*B*b^2*c*d*i*log(e))*x + 2*(B^2*b^2*c^2*i*log(e) + A*B*b^2*c^2*i + (B^2*b^2*d^2*i*log(e) + A*B*b^2*d^2*i))*x^2 + 2*(B^2*b^2*c*d*i*log(e) + A*B*b^2*c*d*i)*x)*log((b*x + a)^n) - 2*(B^2*b^2*c^2*i*log(e) + A*B*b^2*c^2*i + (i*n + i*log(e))*B^2*b^2*d^2 + A*B*b^2*d^2*i))*x^2 + (2*A*B*b^2*c*d*i + (a*b*d^2*i*n + 2*b^2*c*d*i*log(e))*B^2)*x + ((b^2*c*d*i*n - a*b*d^2*i*n)*B^2*x + (a*b*c*d*i*n - a^2*d^2*i*n)*B^2)*log(b*x + a) + (B^2*b^2*d^2*i*x^2 + 2*B^2*b^2*c*d*i*x + B^2*b^2*c^2*i)*log((b*x + a)^n))*log((d*x + c)^n))/(b^3*d*g*x^2 + a*b^2*c*g + (b^3*c*g + a*b^2*d*g)*x), x)

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ci + dix) \left(A + B \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{ag + bgx} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x), x)

[Out] int(((c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x), x)

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$i \left(\int \frac{A^2 c}{a+bx} dx + \int \frac{A^2 dx}{a+bx} dx + \int \frac{B^2 c \log \left(e \left(\frac{a}{c+dx} + \frac{bx}{c+dx} \right)^n \right)^2}{a+bx} dx + \int \frac{2ABc \log \left(e \left(\frac{a}{c+dx} + \frac{bx}{c+dx} \right)^n \right)}{a+bx} dx + \int \frac{B^2 dx \log \left(e \left(\frac{a}{c+dx} + \frac{bx}{c+dx} \right)^n \right)^2}{a+bx} dx \right)$$

g

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g), x)

[Out] i*(Integral(A**2*c/(a + b*x), x) + Integral(A**2*d*x/(a + b*x), x) + Integral(B**2*c*log(e*(a/(c + d*x) + b*x/(c + d*x))^n)**2/(a + b*x), x) + Integral(2*A*B*c*log(e*(a/(c + d*x) + b*x/(c + d*x))^n)/(a + b*x), x) + Integral(B**2*d*x*log(e*(a/(c + d*x) + b*x/(c + d*x))^n)**2/(a + b*x), x) + Integral(2*A*B*d*x*log(e*(a/(c + d*x) + b*x/(c + d*x))^n)/(a + b*x), x))/g

$$3.164 \quad \int \frac{(ci+dx) \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag+bgx)^2} dx$$

Optimal. Leaf size=261

$$\frac{2BdinLi_2 \left(\frac{b(c+dx)}{d(a+bx)} \right) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{b^2g^2} - \frac{di \log \left(1 - \frac{b(c+dx)}{d(a+bx)} \right) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)^2}{b^2g^2} - \frac{2Bin(c+dx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{bg^2(a+bx)}$$

[Out] $-2B^2i^n^2(dx+c)/b/g^2/(bx+a) - 2B^2i^n(dx+c) * (A+B*ln(e*((bx+a)/(dx+c))^n))/b/g^2/(bx+a) - i(dx+c) * (A+B*ln(e*((bx+a)/(dx+c))^n))^2/b/g^2/(bx+a) - di * (A+B*ln(e*((bx+a)/(dx+c))^n))^2 * ln(1-b*(dx+c)/d/(bx+a))/b^2/g^2 + 2*B*d*i^n * (A+B*ln(e*((bx+a)/(dx+c))^n)) * polylog(2, b*(dx+c)/d/(bx+a))/b^2/g^2 + 2*B^2*d*i^n^2 * polylog(3, b*(dx+c)/d/(bx+a))/b^2/g^2$

Rubi [B] time = 2.95, antiderivative size = 766, normalized size of antiderivative = 2.93, number of steps used = 40, number of rules used = 20, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.465$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610}

$$\frac{2ABdinPolyLog \left(2, -\frac{d(a+bx)}{bc-ad} \right)}{b^2g^2} + \frac{2B^2dinPolyLog \left(2, \frac{bc-ad}{d(a+bx)} + 1 \right) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^2g^2} - \frac{2B^2din^2PolyLog \left(2, -\frac{d(a+bx)}{bc-ad} \right)}{b^2g^2}$$

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b*g*x)^2, x]

[Out] $(-2B^2*(b*c - a*d)*i^n^2)/(b^2*g^2*(a + b*x)) - (2B^2*d*i^n^2*Log[a + b*x])/b^2*g^2 - (A*B*d*i^n*Log[a + b*x]^2)/b^2*g^2 + (B^2*d*i^n^2*Log[a + b*x]^2)/b^2*g^2 - (B^2*d*i*Log[-((b*c - a*d)/(d*(a + b*x))])*Log[e*((a + b*x)/(c + d*x))^n]^2)/b^2*g^2 - (B^2*d*i*Log[a + b*x]*Log[e*((a + b*x)/(c + d*x))^n]^2)/b^2*g^2 - (2B*(b*c - a*d)*i^n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/b^2*g^2*(a + b*x) - (2B*d*i^n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/b^2*g^2 - ((b*c - a*d)*i*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/b^2*g^2*(a + b*x) + (d*i*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/b^2*g^2 + (2B^2*d*i^n^2*Log[c + d*x])/b^2*g^2 - (2B^2*d*i^n^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/b^2*g^2 + (2B*d*i^n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x])/b^2*g^2 + (B^2*d*i^n^2*Log[c + d*x]^2)/b^2*g^2 + (2A*B*d*i^n*Log[a + b*x]*Log[b*(c + d*x)/(b*c - a*d)])/b^2*g^2 - (2B^2*d*i^n^2*Log[a + b*x]*Log[b*(c + d*x)/(b*c - a*d)])/b^2*g^2$

$$\frac{(c + dx)}{(b^2c - a^2d)} \frac{1}{(b^2g^2)} + (2ABd^{i+n} \text{PolyLog}[2, -((d(a + bx))/(b^2c - a^2d))]) \frac{1}{(b^2g^2)} - (2B^2d^{i+n} \text{PolyLog}[2, -((d(a + bx))/(b^2c - a^2d))]) \frac{1}{(b^2g^2)} - (2B^2d^{i+n} \text{PolyLog}[2, (b(c + dx))/(b^2c - a^2d)]) \frac{1}{(b^2g^2)} + (2B^2d^{i+n} \text{Log}[e((a + bx)/(c + dx))^n] \text{PolyLog}[2, 1 + (b^2c - a^2d)/(d(a + bx))]) \frac{1}{(b^2g^2)} + (2B^2d^{i+n} \text{PolyLog}[3, 1 + (b^2c - a^2d)/(d(a + bx))]) \frac{1}{(b^2g^2)}$$
Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 44

```
Int[((a_) + (b_)*(x_))^(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2317

```
Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)^(p_)/((d_) + (e_)*(x_)), x_Symbol] := Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b^n*p)/e, Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p-1))/x, x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)^(p_)/((x_)*((d_) + (e_)*(x_))), x_Symbol] := Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2390

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)])*(b_)^(p_)*((f_) + (g_)*(x_))^(q_), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e^n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*((f_.) + (g_.)*(x_)^(q_.))*((h_.) + (i_.)*(x_)^(r_.)), x_Symbol] := Dist[1/e, Subst[Int[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*(RFX_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFX, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFX, x] && IntegerQ[p]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_)^(p_.))*((c_.) + (d_.)*(x_)^(q_.))^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] := -Simp[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/h, x] + Dist[(p*r*s*(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c, d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2506


```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] := With[{g = Simplify[((v - 1)*(c + d*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/(b*c - a*d), x] + Dist[h*p*r*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1)/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_Symbol] := With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g + h*x)^t]^u)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s + 1)/(p*r*(s + 1)*(b*c - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s + 1/(g + h*x), x], x] /; FreeQ[k, x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] := With[{w = DerivativeDivides[v, u*v,
```

x]}, Simp[w*PolyLog[n + 1, v], x] /; !FalseQ[w]] /; FreeQ[n, x]

Rule 6688

Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; SimplifyIntegrandQ[v, u, x]]

Rule 6742

Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]]

Rubi steps

$$\begin{aligned}
\int \frac{(164c + 164dx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag + bgx)^2} dx &= \int \left(\frac{164(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{bg^2(a + bx)^2} + \frac{164d \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{bg^2(a + bx)^2} \right) dx \\
&= \frac{(164d) \int \frac{\left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{a+bx} dx}{bg^2} + \frac{(164(bc - ad)) \int \frac{\left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(a+bx)^2} dx}{bg^2} \\
&= -\frac{164(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^2g^2(a + bx)} + \frac{164d \log(a + bx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^2g^2(a + bx)} \\
&= -\frac{164(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^2g^2(a + bx)} + \frac{164d \log(a + bx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^2g^2(a + bx)} \\
&= -\frac{164(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^2g^2(a + bx)} + \frac{164d \log(a + bx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^2g^2(a + bx)} \\
&= -\frac{164(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^2g^2(a + bx)} + \frac{164d \log(a + bx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^2g^2(a + bx)} \\
&= -\frac{328B(bc - ad)n \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^2g^2(a + bx)} - \frac{328Bdn \log(a + bx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^2g^2(a + bx)} \\
&= -\frac{164B^2d \log(a + bx) \log^2 \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^2g^2} - \frac{328B(bc - ad)n \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^2g^2(a + bx)} \\
&= -\frac{164B^2d \log \left(-\frac{bc-ad}{d(a+bx)} \right) \log^2 \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^2g^2} - \frac{164B^2d \log(a + bx) \log^2 \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^2g^2} \\
&= -\frac{328B^2(bc - ad)n^2}{b^2g^2(a + bx)} - \frac{328B^2dn^2 \log(a + bx)}{b^2g^2} - \frac{164ABdn \log^2 \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^2g^2} \\
&= -\frac{328B^2(bc - ad)n^2}{b^2g^2(a + bx)} - \frac{328B^2dn^2 \log(a + bx)}{b^2g^2} - \frac{164ABdn \log^2 \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^2g^2} \\
&= -\frac{328B^2(bc - ad)n^2}{b^2g^2(a + bx)} - \frac{328B^2dn^2 \log(a + bx)}{b^2g^2} - \frac{164ABdn \log^2 \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^2g^2}
\end{aligned}$$

Mathematica [B] time = 3.21, size = 1556, normalized size = 5.96

result too large to display

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b*g*x)^2,x]

[Out] (i*((-3*(b*c - a*d)*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])^2)/(a + b*x) + 3*d*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])^2 + (6*b*B*c*n*(-A - B*Log[e*((a + b*x)/(c + d*x))^n] + B*n*Log[(a + b*x)/(c + d*x)])*(-d*(a + b*x)*Log[c/d + x]) + d*(a + b*x)*Log[(d*(a + b*x))/(-(b*c) + a*d)] + (b*c - a*d)*(1 + Log[(a + b*x)/(c + d*x)])))/((b*c - a*d)*(a + b*x)) + (3*b*B^2*c*n^2*(-2*b*c + 2*a*d - 2*d*(a + b*x)*Log[a + b*x] - 2*(b*c - a*d)*Log[(a + b*x)/(c + d*x)] - 2*d*(a + b*x)*Log[a + b*x]*Log[(a + b*x)/(c + d*x)] - (b*c - a*d)*Log[(a + b*x)/(c + d*x)]^2 + 2*d*(a + b*x)*Log[c + d*x] - 2*d*(a + b*x)*Log[(a + b*x)/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] + d*(a + b*x)*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + d*(a + b*x)*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b*c) + a*d)] + Log[(b*c - a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/((b*c - a*d)*(a + b*x)) + 3*B*d*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)]*(Log[a/b + x]^2 - 2*Log[a/b + x]*Log[a + b*x] - 2*Log[c/d + x]*Log[(d*(a + b*x))/(-(b*c) + a*d)] + 2*Log[a + b*x]*((a*d)/(b*c - a*d) + Log[c/d + x] + Log[(a + b*x)/(c + d*x)])) + 2*a*((a + b*x)^(-1) + Log[(a + b*x)/(c + d*x)]/(a + b*x) + (d*Log[c + d*x])/(-(b*c) + a*d)) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]) + (B^2*d*n^2*(6*b*c - 6*a*d - (6*b^2*c*x)/(a + b*x) + (6*a*b*d*x)/(a + b*x) + 6*a*d*Log[a/b + x] + 3*b*c*Log[a/b + x]^2 - 3*a*d*Log[a/b + x]^2 - 6*b*c*Log[c/d + x] + 6*b*c*Log[a + b*x] - 6*a*d*Log[a + b*x] - 6*b*c*Log[a/b + x]*Log[a + b*x] + 6*a*d*Log[a/b + x]*Log[a + b*x] + 6*b*c*Log[c/d + x]*Log[a + b*x] - 6*a*d*Log[c/d + x]*Log[a + b*x] - 6*b*c*Log[c/d + x]*Log[(d*(a + b*x))/(-(b*c) + a*d)] + 6*a*d*Log[c/d + x]*Log[(d*(a + b*x))/(-(b*c) + a*d)] - (6*b*(b*c - a*d)*x*Log[(a + b*x)/(c + d*x)]/(a + b*x) + 6*b*c*Log[a + b*x]*Log[(a + b*x)/(c + d*x)] - 6*a*d*Log[a + b*x]*Log[(a + b*x)/(c + d*x)] + 3*a*d*Log[(a + b*x)/(c + d*x)]^2 + 3*b*d*x*Log[(a + b*x)/(c + d*x)]^2 - (3*b^2*x*(c + d*x)*Log[(a + b*x)/(c + d*x)]^2)/(a + b*x) - 3*b*c*Log[-(b*c) + a*d]/(d*(a + b*x)))*Log[(a + b*x)/(c + d*x)]^2 - a*d*Log[(a + b*x)/(c + d*x)]^3 + 6*b*c*Log[(a + b*x)/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] - 6*a*d*Log[(a + b*x)/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] + 3*a*d*Log[(a + b*x)/(c + d*x)]^2*Log[(b*c - a*d)/(b*c + b*d*x)] + 6*(b*c - a*d + a*d*Log[(a + b*x)/(c + d*x)])*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))] - 6*(b*c - a*d)*PolyLog[2, (b*(c + d*x))/(b*c - a*d)] + 6*b*c*Log[(a + b*x)/(c + d*x)]*PolyLog[2, (b*(c + d*x))/(d*(a + b*x))] - 6*a*d*PolyLog[3, (d*(a + b*x))])

))/((b*(c + d*x))) + 6*b*c*PolyLog[3, (b*(c + d*x))/(d*(a + b*x))]))/(b*c - a*d)))/(3*b^2*g^2)

fricas [F] time = 0.99, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{A^2 d i x + A^2 c i + (B^2 d i x + B^2 c i) \log \left(e \left(\frac{b x + a}{d x + c} \right)^n \right)^2 + 2 (A B d i x + A B c i) \log \left(e \left(\frac{b x + a}{d x + c} \right)^n \right)}{b^2 g^2 x^2 + 2 a b g^2 x + a^2 g^2}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^2,x, algorithm="fricas")

[Out] integral((A^2*d*i*x + A^2*c*i + (B^2*d*i*x + B^2*c*i)*log(e*((b*x + a)/(d*x + c))^n))^2 + 2*(A*B*d*i*x + A*B*c*i)*log(e*((b*x + a)/(d*x + c))^n))/(b^2*g^2*x^2 + 2*a*b*g^2*x + a^2*g^2), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^2,x, algorithm="giac")

[Out] Timed out

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int \frac{(d i x + c i) \left(B \ln \left(e \left(\frac{b x + a}{d x + c} \right)^n \right) + A \right)^2}{(b g x + a g)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^2,x)

[Out] int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^2,x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-2 A B c i n \left(\frac{1}{b^2 g^2 x + a b g^2} + \frac{d \log (b x + a)}{(b^2 c - a b d) g^2} - \frac{d \log (d x + c)}{(b^2 c - a b d) g^2} \right) + A^2 d i \left(\frac{a}{b^3 g^2 x + a b^2 g^2} + \frac{\log (b x + a)}{b^2 g^2} \right) - \frac{2 A B c i \log \left(\right)}{b^2 g^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^2,x, a
lgorithm="maxima")
```

```
[Out] -2*A*B*c*i*n*(1/(b^2*g^2*x + a*b*g^2) + d*log(b*x + a)/((b^2*c - a*b*d)*g^2
) - d*log(d*x + c)/((b^2*c - a*b*d)*g^2)) + A^2*d*i*(a/(b^3*g^2*x + a*b^2*g
^2) + log(b*x + a)/(b^2*g^2)) - 2*A*B*c*i*log(e*(b*x/(d*x + c) + a/(d*x + c
))^n)/(b^2*g^2*x + a*b*g^2) - A^2*c*i/(b^2*g^2*x + a*b*g^2) - ((b*c*i - a*d
*i)*B^2 - (B^2*b*d*i*x + B^2*a*d*i)*log(b*x + a))*log((d*x + c)^n)^2/(b^3*g
^2*x + a*b^2*g^2) - integrate(-(B^2*b^2*c^2*i*log(e)^2 + (B^2*b^2*d^2*i*log
(e)^2 + 2*A*B*b^2*d^2*i*log(e))*x^2 + (B^2*b^2*d^2*i*x^2 + 2*B^2*b^2*c*d*i*
x + B^2*b^2*c^2*i)*log((b*x + a)^n)^2 + 2*(B^2*b^2*c*d*i*log(e)^2 + A*B*b^2
*c*d*i*log(e))*x + 2*(B^2*b^2*c^2*i*log(e) + (B^2*b^2*d^2*i*log(e) + A*B*b^
2*d^2*i)*x^2 + (2*B^2*b^2*c*d*i*log(e) + A*B*b^2*c*d*i)*x)*log((b*x + a)^n)
+ 2*((a*b*c*d*i*n - a^2*d^2*i*n - b^2*c^2*i*log(e))*B^2 - (B^2*b^2*d^2*i*log
(e) + A*B*b^2*d^2*i)*x^2 - (A*B*b^2*c*d*i + (a*b*d^2*i*n - (i*n - 2*i*log
(e))*b^2*c*d)*B^2)*x - (B^2*b^2*d^2*i*n*x^2 + 2*B^2*a*b*d^2*i*n*x + B^2*a^2
*d^2*i*n)*log(b*x + a) - (B^2*b^2*d^2*i*x^2 + 2*B^2*b^2*c*d*i*x + B^2*b^2*c
^2*i)*log((b*x + a)^n))*log((d*x + c)^n))/(b^4*d*g^2*x^3 + a^2*b^2*c*g^2 +
(b^4*c*g^2 + 2*a*b^3*d*g^2)*x^2 + (2*a*b^3*c*g^2 + a^2*b^2*d*g^2)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ci + dix) \left(A + B \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag + bgx)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x)^
2,x)
```

```
[Out] int(((c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x)^
2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^2,x)
```

```
[Out] Timed out
```

$$3.165 \quad \int \frac{(ci+dx) \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag+bgx)^3} dx$$

Optimal. Leaf size=151

$$\frac{i(c+dx)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)^2}{2g^3(a+bx)^2(bc-ad)} - \frac{Bin(c+dx)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{2g^3(a+bx)^2(bc-ad)} - \frac{B^2in^2(c+dx)^2}{4g^3(a+bx)^2(bc-ad)}$$

[Out] $-1/4*B^2*i*n^2*(d*x+c)^2/(-a*d+b*c)/g^3/(b*x+a)^2-1/2*B*i*n*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)/g^3/(b*x+a)^2-1/2*i*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)/g^3/(b*x+a)^2$

Rubi [C] time = 2.06, antiderivative size = 691, normalized size of antiderivative = 4.58, number of steps used = 54, number of rules used = 11, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.256$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{B^2d^2in^2\text{PolyLog}\left(2, -\frac{d(a+bx)}{bc-ad}\right)}{b^2g^3(bc-ad)} - \frac{B^2d^2in^2\text{PolyLog}\left(2, \frac{b(c+dx)}{bc-ad}\right)}{b^2g^3(bc-ad)} - \frac{Bd^2in \log(a+bx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{b^2g^3(bc-ad)} + \dots$$

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b*g*x)^3, x]

[Out] $-(B^2*(b*c - a*d)*i*n^2)/(4*b^2*g^3*(a + b*x)^2) - (B^2*d*i*n^2)/(2*b^2*g^3*(a + b*x)) - (B^2*d^2*i*n^2*Log[a + b*x])/(2*b^2*(b*c - a*d)*g^3) + (B^2*d^2*i*n^2*Log[a + b*x]^2)/(2*b^2*(b*c - a*d)*g^3) - (B*(b*c - a*d)*i*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(2*b^2*g^3*(a + b*x)^2) - (B*d*i*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(b^2*g^3*(a + b*x)) - (B*d^2*i*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(b^2*(b*c - a*d)*g^3) - ((b*c - a*d)*i*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(2*b^2*g^3*(a + b*x)^2) - (d*i*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(b^2*g^3*(a + b*x)) + (B^2*d^2*i*n^2*Log[c + d*x])/(2*b^2*(b*c - a*d)*g^3) - (B^2*d^2*i*n^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(b^2*(b*c - a*d)*g^3) + (B*d^2*i*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x])/(b^2*(b*c - a*d)*g^3) + (B^2*d^2*i*n^2*Log[c + d*x]^2)/(2*b^2*(b*c - a*d)*g^3) - (B^2*d^2*i*n^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(b^2*(b*c - a*d)*g^3) - (B^2*d^2*i*n^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(b^2*(b*c - a*d)*g^3) - (B^2*d^2*i*n^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(b^2*(b*c - a*d)*g^3)$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 44

Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])

Rule 2301

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))])*(b_.)/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2418

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},


```
Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[
RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(165c + 165dx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag + bgx)^3} dx &= \int \left(\frac{165(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{bg^3(a + bx)^3} + \frac{165d \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{bg^3(a + bx)^3} \right) dx \\
&= \frac{(165d) \int \frac{\left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(a+bx)^2} dx}{bg^3} + \frac{(165(bc - ad)) \int \frac{\left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(a+bx)^3} dx}{bg^3} \\
&= -\frac{165(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{2b^2g^3(a + bx)^2} - \frac{165d \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^2g^3(a + bx)^2} \\
&= -\frac{165(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{2b^2g^3(a + bx)^2} - \frac{165d \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^2g^3(a + bx)^2} \\
&= -\frac{165(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{2b^2g^3(a + bx)^2} - \frac{165d \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^2g^3(a + bx)^2} \\
&= -\frac{165(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{2b^2g^3(a + bx)^2} - \frac{165d \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^2g^3(a + bx)^2} \\
&= -\frac{165B(bc - ad)n \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{2b^2g^3(a + bx)^2} - \frac{165Bdn \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^2g^3(a + bx)^2} \\
&= -\frac{165B(bc - ad)n \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{2b^2g^3(a + bx)^2} - \frac{165Bdn \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^2g^3(a + bx)^2} \\
&= -\frac{165B(bc - ad)n \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{2b^2g^3(a + bx)^2} - \frac{165Bdn \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^2g^3(a + bx)^2} \\
&= -\frac{165B^2(bc - ad)n^2}{4b^2g^3(a + bx)^2} - \frac{165B^2dn^2}{2b^2g^3(a + bx)} - \frac{165B^2d^2n^2 \log(a + bx)}{2b^2(bc - ad)g^3} \\
&= -\frac{165B^2(bc - ad)n^2}{4b^2g^3(a + bx)^2} - \frac{165B^2dn^2}{2b^2g^3(a + bx)} - \frac{165B^2d^2n^2 \log(a + bx)}{2b^2(bc - ad)g^3} \\
&= -\frac{165B^2(bc - ad)n^2}{4b^2g^3(a + bx)^2} - \frac{165B^2dn^2}{2b^2g^3(a + bx)} - \frac{165B^2d^2n^2 \log(a + bx)}{2b^2(bc - ad)g^3}
\end{aligned}$$

Mathematica [C] time = 0.91, size = 801, normalized size = 5.30

$$i \left(2(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 - 4d(ad - bc)(a + bx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 + 4Bdn(a + bx) \left(2(bc - \right.$$

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b*g*x)^3,x]

[Out] -1/4*(i*(2*(b*c - a*d)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 - 4*d*(-(b*c) + a*d)*(a + b*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 + 4*B*d*n*(a + b*x)*(2*(b*c - a*d)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 2*d*(a + b*x)*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 2*d*(a + b*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] + 2*B*n*(b*c - a*d + d*(a + b*x)*Log[a + b*x] - d*(a + b*x)*Log[c + d*x]) - B*d*n*(a + b*x)*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + B*d*n*(a + b*x)*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])) + B*n*(2*(b*c - a*d)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 4*d*(-(b*c) + a*d)*(a + b*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 4*d^2*(a + b*x)^2*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 4*d^2*(a + b*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] - 4*B*d*n*(a + b*x)*(b*c - a*d + d*(a + b*x)*Log[a + b*x] - d*(a + b*x)*Log[c + d*x]) + B*n*((b*c - a*d)^2 + 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d^2*(a + b*x)^2*Log[a + b*x] + 2*d^2*(a + b*x)^2*Log[c + d*x]) + 2*B*d^2*n*(a + b*x)^2*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)] - 2*B*d^2*n*(a + b*x)^2*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/((b^2*(b*c - a*d)*g^3*(a + b*x)^2)

fricas [B] time = 0.98, size = 600, normalized size = 3.97

$$\left(B^2 b^2 c^2 - B^2 a^2 d^2 \right) i n^2 + 2 \left(A B b^2 c^2 - A B a^2 d^2 \right) i n + 2 \left(2 \left(B^2 b^2 c d - B^2 a b d^2 \right) i x + \left(B^2 b^2 c^2 - B^2 a^2 d^2 \right) i \right) \log(e)^2 + 2$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^3,x, algorithm="fricas")

[Out] -1/4*((B^2*b^2*c^2 - B^2*a^2*d^2)*i*n^2 + 2*(A*B*b^2*c^2 - A*B*a^2*d^2)*i*n + 2*(2*(B^2*b^2*c*d - B^2*a*b*d^2)*i*x + (B^2*b^2*c^2 - B^2*a^2*d^2)*i)*lo

$$g(e)^2 + 2*(B^2*b^2*d^2*i^n^2*x^2 + 2*B^2*b^2*c*d*i^n^2*x + B^2*b^2*c^2*i^n^2)*\log((b*x + a)/(d*x + c))^2 + 2*(A^2*b^2*c^2 - A^2*a^2*d^2)*i + 2*((B^2*b^2*c*d - B^2*a*b*d^2)*i^n^2 + 2*(A*B*b^2*c*d - A*B*a*b*d^2)*i^n + 2*(A^2*b^2*c*d - A^2*a*b*d^2)*i)*x + 2*((B^2*b^2*c^2 - B^2*a^2*d^2)*i^n + 2*(A*B*b^2*c*d - A*B*a*b*d^2)*i)*x + 2*((B^2*b^2*c*d - B^2*a*b*d^2)*i^n + 2*(A*B*b^2*c*d - A*B*a*b*d^2)*i)*x + 2*(B^2*b^2*d^2*i^n*x^2 + 2*B^2*b^2*c*d*i^n*x + B^2*b^2*c^2*i^n)*\log((b*x + a)/(d*x + c))*\log(e) + 2*(B^2*b^2*c^2*i^n^2 + 2*A*B*b^2*c^2*i^n + (B^2*b^2*d^2*i^n^2 + 2*A*B*b^2*d^2*i^n)*x^2 + 2*(B^2*b^2*c*d*i^n^2 + 2*A*B*b^2*c*d*i^n)*x)*\log((b*x + a)/(d*x + c)))/((b^5*c - a*b^4*d)*g^3*x^2 + 2*(a*b^4*c - a^2*b^3*d)*g^3*x + (a^2*b^3*c - a^3*b^2*d)*g^3)$$

giac [A] time = 18.43, size = 185, normalized size = 1.23

$$-\frac{1}{4} \left(\frac{2(dx+c)^2 B^2 i^n^2 \log\left(\frac{bx+a}{dx+c}\right)^2}{(bx+a)^2 g^3} + \frac{2(B^2 i^n^2 + 2ABin + 2B^2 in)(dx+c)^2 \log\left(\frac{bx+a}{dx+c}\right)}{(bx+a)^2 g^3} + \frac{(B^2 i^n^2 + 2ABin + 2B^2 in)}{(bx+a)^2 g^3} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^3,x, algorithm="giac")

[Out] -1/4*(2*(d*x + c)^2*B^2*i^n^2*log((b*x + a)/(d*x + c))^2/((b*x + a)^2*g^3) + 2*(B^2*i^n^2 + 2*A*B*i^n + 2*B^2*i^n)*(d*x + c)^2*log((b*x + a)/(d*x + c))/((b*x + a)^2*g^3) + (B^2*i^n^2 + 2*A*B*i^n + 2*B^2*i^n + 2*A^2*i + 4*A*B*i + 2*B^2*i)*(d*x + c)^2/((b*x + a)^2*g^3))*(b*c/(b*c - a*d)^2 - a*d/(b*c - a*d)^2)

maple [F] time = 0.32, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci) \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)^2}{(bgx + ag)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^3,x)

[Out] int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^3,x)

maxima [B] time = 2.24, size = 2017, normalized size = 13.36

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^3,x, algorithm="maxima")

[Out]
$$\begin{aligned} & -1/2*A*B*d*i*n*((3*a*b*c - a^2*d + 2*(2*b^2*c - a*b*d)*x)/((b^5*c - a*b^4*d) \\ &)*g^3*x^2 + 2*(a*b^4*c - a^2*b^3*d)*g^3*x + (a^2*b^3*c - a^3*b^2*d)*g^3) + \\ & 2*(2*b*c*d - a*d^2)*\log(b*x + a)/((b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)*g^3 \\ &) - 2*(2*b*c*d - a*d^2)*\log(d*x + c)/((b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2) \\ & *g^3)) + 1/2*A*B*c*i*n*((2*b*d*x - b*c + 3*a*d)/((b^4*c - a*b^3*d)*g^3*x^2 \\ & + 2*(a*b^3*c - a^2*b^2*d)*g^3*x + (a^2*b^2*c - a^3*b*d)*g^3) + 2*d^2*\log(b*x \\ & + a)/((b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*g^3) - 2*d^2*\log(d*x + c)/((b^3 \\ & *c^2 - 2*a*b^2*c*d + a^2*b*d^2)*g^3)) - 1/2*(2*b*x + a)*B^2*d*i*\log(e*(b*x/ \\ & (d*x + c) + a/(d*x + c))^n)^2/(b^4*g^3*x^2 + 2*a*b^3*g^3*x + a^2*b^2*g^3) + \\ & 1/4*(2*n*((2*b*d*x - b*c + 3*a*d)/((b^4*c - a*b^3*d)*g^3*x^2 + 2*(a*b^3*c \\ & - a^2*b^2*d)*g^3*x + (a^2*b^2*c - a^3*b*d)*g^3) + 2*d^2*\log(b*x + a)/((b^3* \\ & c^2 - 2*a*b^2*c*d + a^2*b*d^2)*g^3) - 2*d^2*\log(d*x + c)/((b^3*c^2 - 2*a*b^ \\ & 2*c*d + a^2*b*d^2)*g^3))*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) - (b^2*c^2 \\ & - 8*a*b*c*d + 7*a^2*d^2 + 2*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*\log(b*x + \\ & a)^2 + 2*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*\log(d*x + c)^2 - 6*(b^2*c*d \\ & - a*b*d^2)*x - 6*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*\log(b*x + a) + 2*(3 \\ & *b^2*d^2*x^2 + 6*a*b*d^2*x + 3*a^2*d^2 - 2*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2 \\ & *d^2)*\log(b*x + a))*\log(d*x + c))*n^2/(a^2*b^3*c^2*g^3 - 2*a^3*b^2*c*d*g^3 \\ & + a^4*b*d^2*g^3 + (b^5*c^2*g^3 - 2*a*b^4*c*d*g^3 + a^2*b^3*d^2*g^3)*x^2 + 2 \\ & *(a*b^4*c^2*g^3 - 2*a^2*b^3*c*d*g^3 + a^3*b^2*d^2*g^3)*x))*B^2*c*i - 1/4*(2 \\ & *n*((3*a*b*c - a^2*d + 2*(2*b^2*c - a*b*d)*x)/((b^5*c - a*b^4*d)*g^3*x^2 + \\ & 2*(a*b^4*c - a^2*b^3*d)*g^3*x + (a^2*b^3*c - a^3*b^2*d)*g^3) + 2*(2*b*c*d - \\ & a*d^2)*\log(b*x + a)/((b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)*g^3) - 2*(2*b*c \\ & *d - a*d^2)*\log(d*x + c)/((b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)*g^3))*\log(e \\ & *(b*x/(d*x + c) + a/(d*x + c))^n) + (7*a*b^2*c^2 - 8*a^2*b*c*d + a^3*d^2 - \\ & 2*(2*a^2*b*c*d - a^3*d^2 + (2*b^3*c*d - a*b^2*d^2)*x^2 + 2*(2*a*b^2*c*d - a \\ & ^2*b*d^2)*x)*\log(b*x + a)^2 - 2*(2*a^2*b*c*d - a^3*d^2 + (2*b^3*c*d - a*b^2 \\ & *d^2)*x^2 + 2*(2*a*b^2*c*d - a^2*b*d^2)*x)*\log(d*x + c)^2 + 2*(4*b^3*c^2 - \\ & 5*a*b^2*c*d + a^2*b*d^2)*x + 2*(4*a^2*b*c*d - a^3*d^2 + (4*b^3*c*d - a*b^2* \\ & d^2)*x^2 + 2*(4*a*b^2*c*d - a^2*b*d^2)*x)*\log(b*x + a) - 2*(4*a^2*b*c*d - a \\ & ^3*d^2 + (4*b^3*c*d - a*b^2*d^2)*x^2 + 2*(4*a*b^2*c*d - a^2*b*d^2)*x - 2*(2 \\ & *a^2*b*c*d - a^3*d^2 + (2*b^3*c*d - a*b^2*d^2)*x^2 + 2*(2*a*b^2*c*d - a^2*b \\ & *d^2)*x)*\log(b*x + a))*\log(d*x + c))*n^2/(a^2*b^4*c^2*g^3 - 2*a^3*b^3*c*d*g \\ & ^3 + a^4*b^2*d^2*g^3 + (b^6*c^2*g^3 - 2*a*b^5*c*d*g^3 + a^2*b^4*d^2*g^3)*x^ \\ & 2 + 2*(a*b^5*c^2*g^3 - 2*a^2*b^4*c*d*g^3 + a^3*b^3*d^2*g^3)*x))*B^2*d*i - (\\ & 2*b*x + a)*A*B*d*i*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^4*g^3*x^2 + 2* \\ & a*b^3*g^3*x + a^2*b^2*g^3) - 1/2*B^2*c*i*\log(e*(b*x/(d*x + c) + a/(d*x + c) \\ &)^n)^2/(b^3*g^3*x^2 + 2*a*b^2*g^3*x + a^2*b*g^3) - 1/2*(2*b*x + a)*A^2*d*i/ \\ & (b^4*g^3*x^2 + 2*a*b^3*g^3*x + a^2*b^2*g^3) - A*B*c*i*\log(e*(b*x/(d*x + c) \\ & + a/(d*x + c))^n)/(b^3*g^3*x^2 + 2*a*b^2*g^3*x + a^2*b*g^3) - 1/2*A^2*c*i/(\\ & b^3*g^3*x^2 + 2*a*b^2*g^3*x + a^2*b*g^3) \end{aligned}$$

mupad [B] time = 6.82, size = 561, normalized size = 3.72

$$-\ln\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^2\left(\frac{\frac{B^2ci}{2b} + \frac{B^2dix}{b} + \frac{B^2adi}{2b^2}}{a^2g^3 + 2abg^3x + b^2g^3x^2} - \frac{B^2d^2i}{2b^2g^3(ad-bc)}\right) - \ln\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\left(\frac{ABadi + ABbci - B^2d^2i}{a^2b^2g^3 + \dots}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x)^3,x)

[Out] - log(e*((a + b*x)/(c + d*x))^n)^2*((B^2*c*i)/(2*b) + (B^2*d*i*x)/b + (B^2*a*d*i)/(2*b^2))/(a^2*g^3 + b^2*g^3*x^2 + 2*a*b*g^3*x) - (B^2*d^2*i)/(2*b^2*g^3*(a*d - b*c)) - log(e*((a + b*x)/(c + d*x))^n)*((A*B*a*d*i + A*B*b*c*i - B^2*a*d*i*n + B^2*b*c*i*n + 2*A*B*b*d*i*x)/(a^2*b^2*g^3 + b^4*g^3*x^2 + 2*a*b^3*g^3*x) + (B^2*d^2*i*((a*b^2*g^3*n*(a*d - b*c))/(2*d) + (b^3*g^3*n*x*(a*d - b*c))/d + (b^2*g^3*n*(a*d - b*c)*(2*a*d - b*c))/(2*d^2)))/(b^2*g^3*(a*d - b*c)*(a^2*b^2*g^3 + b^4*g^3*x^2 + 2*a*b^3*g^3*x)) - (x*(2*A^2*b*d*i + B^2*b*d*i*n^2 + 2*A*B*b*d*i*n) + A^2*a*d*i + A^2*b*c*i + (B^2*a*d*i*n^2)/2 + (B^2*b*c*i*n^2)/2 + A*B*a*d*i*n + A*B*b*c*i*n)/(2*a^2*b^2*g^3 + 2*b^4*g^3*x^2 + 4*a*b^3*g^3*x) - (B*d^2*i*n*atan((B*d^2*i*n*(2*A + B*n)*((b^3*c*g^3 + a*b^2*d*g^3)/(b^2*g^3) + 2*b*d*x)*1i)/((a*d - b*c)*(B^2*d^2*i*n^2 + 2*A*B*d^2*i*n)))*(2*A + B*n)*1i)/(b^2*g^3*(a*d - b*c))

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$i\left(\int \frac{A^2c}{a^3+3a^2bx+3ab^2x^2+b^3x^3} dx + \int \frac{A^2dx}{a^3+3a^2bx+3ab^2x^2+b^3x^3} dx + \int \frac{B^2c \log\left(e\left(\frac{a}{c+dx} + \frac{bx}{c+dx}\right)^n\right)^2}{a^3+3a^2bx+3ab^2x^2+b^3x^3} dx + \int \frac{2ABc \log\left(e\left(\frac{a}{c+dx} + \frac{bx}{c+dx}\right)^n\right)}{a^3+3a^2bx+3ab^2x^2+b^3x^3} dx + \dots\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)**3,x)

[Out] i*(Integral(A**2*c/(a**3 + 3*a**2*b*x + 3*a*b**2*x**2 + b**3*x**3), x) + Integral(A**2*d*x/(a**3 + 3*a**2*b*x + 3*a*b**2*x**2 + b**3*x**3), x) + Integral(B**2*c*log(e*(a/(c + d*x) + b*x/(c + d*x))^n)**2/(a**3 + 3*a**2*b*x + 3*a*b**2*x**2 + b**3*x**3), x) + Integral(2*A*B*c*log(e*(a/(c + d*x) + b*x/(c + d*x))^n)/(a**3 + 3*a**2*b*x + 3*a*b**2*x**2 + b**3*x**3), x) + Integral(B**2*d*x*log(e*(a/(c + d*x) + b*x/(c + d*x))^n)**2/(a**3 + 3*a**2*b*x + 3*a*b**2*x**2 + b**3*x**3), x) + Integral(2*A*B*d*x*log(e*(a/(c + d*x) + b*x/(c + d*x))^n)/(a**3 + 3*a**2*b*x + 3*a*b**2*x**2 + b**3*x**3), x))/g**3

$$3.166 \quad \int \frac{(ci+dx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag+bgx)^4} dx$$

Optimal. Leaf size=307

$$\frac{bi(c+dx)^3 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)^2}{3g^4(a+bx)^3(bc-ad)^2} - \frac{2bBin(c+dx)^3 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{9g^4(a+bx)^3(bc-ad)^2} + \frac{di(c+dx)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{2g^4(a+bx)^2(bc-ad)^2}$$

[Out] $1/4*B^2*d*i*n^2*(d*x+c)^2/(-a*d+b*c)^2/g^4/(b*x+a)^2-2/27*b*B^2*i*n^2*(d*x+c)^3/(-a*d+b*c)^2/g^4/(b*x+a)^3+1/2*B*d*i*n*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^2/g^4/(b*x+a)^2-2/9*b*B*i*n*(d*x+c)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^2/g^4/(b*x+a)^3+1/2*d*i*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^2/g^4/(b*x+a)^2-1/3*b*i*(d*x+c)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^2/g^4/(b*x+a)^3$

Rubi [C] time = 2.43, antiderivative size = 800, normalized size of antiderivative = 2.61, number of steps used = 62, number of rules used = 11, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.256$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{B^2in^2 \log^2(a+bx)d^3}{6b^2(bc-ad)^2g^4} - \frac{B^2in^2 \log^2(c+dx)d^3}{6b^2(bc-ad)^2g^4} + \frac{5B^2in^2 \log(a+bx)d^3}{18b^2(bc-ad)^2g^4} + \frac{Bin \log(a+bx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{3b^2(bc-ad)^2g^4}$$

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b*g*x)^4,x]

[Out] $(-2*B^2*(b*c - a*d)*i*n^2)/(27*b^2*g^4*(a + b*x)^3) + (B^2*d*i*n^2)/(36*b^2*g^4*(a + b*x)^2) + (5*B^2*d^2*i*n^2)/(18*b^2*(b*c - a*d)*g^4*(a + b*x)) + (5*B^2*d^3*i*n^2*Log[a + b*x])/(18*b^2*(b*c - a*d)^2*g^4) - (B^2*d^3*i*n^2*Log[a + b*x]^2)/(6*b^2*(b*c - a*d)^2*g^4) - (2*B*(b*c - a*d)*i*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(9*b^2*g^4*(a + b*x)^3) - (B*d*i*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(6*b^2*g^4*(a + b*x)^2) + (B*d^2*i*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(3*b^2*(b*c - a*d)*g^4*(a + b*x)) + (B*d^3*i*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(3*b^2*(b*c - a*d)^2*g^4) - ((b*c - a*d)*i*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(3*b^2*g^4*(a + b*x)^3) - (d*i*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(2*b^2*g^4*(a + b*x)^2) - (5*B^2*d^3*i*n^2*Log[c + d*x])/(18*b^2*(b*c - a*d)^2*g^4) + (B^2*d^3*i*n^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(3*b^2*(b*c - a*d)^2*g^4) - (B*d^3*i*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c +$

$$\frac{d*x]}{(3*b^2*(b*c - a*d)^2*g^4) - (B^2*d^3*i*n^2*Log[c + d*x]^2)/(6*b^2*(b*c - a*d)^2*g^4) + (B^2*d^3*i*n^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(3*b^2*(b*c - a*d)^2*g^4) + (B^2*d^3*i*n^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(3*b^2*(b*c - a*d)^2*g^4) + (B^2*d^3*i*n^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(3*b^2*(b*c - a*d)^2*g^4)}$$
Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 44

```
Int[((a_) + (b_)*(x_))^(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_) + Log[(c_)*(x_)]^(n_))* (b_)]/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_))* (b_)]^(p_)*((f_) + (g_)*(x_))^(q_), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_)*((d_) + (e_)*(x_))^(n_)]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))])* (b_)]/((f_) + (g_)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_))* (b_)]/((f_) + (g_)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
```



```
)^n))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n]^p, RFx, x]}, Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(166c + 166dx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag + bgx)^4} dx &= \int \left[\frac{166(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{bg^4(a + bx)^4} + \frac{166d \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{bg^4(a + bx)^4} \right] dx \\
&= \frac{(166d) \int \frac{\left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(a+bx)^3} dx}{bg^4} + \frac{(166(bc - ad)) \int \frac{\left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(a+bx)^4} dx}{bg^4} \\
&= -\frac{166(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{3b^2g^4(a + bx)^3} - \frac{83d \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^2g^4(a + bx)^3} \\
&= -\frac{166(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{3b^2g^4(a + bx)^3} - \frac{83d \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^2g^4(a + bx)^3} \\
&= -\frac{166(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{3b^2g^4(a + bx)^3} - \frac{83d \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^2g^4(a + bx)^3} \\
&= -\frac{166(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{3b^2g^4(a + bx)^3} - \frac{83d \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^2g^4(a + bx)^3} \\
&= -\frac{332B(bc - ad)n \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{9b^2g^4(a + bx)^3} - \frac{83Bdn \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{3b^2g^4(a + bx)^3} \\
&= -\frac{332B(bc - ad)n \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{9b^2g^4(a + bx)^3} - \frac{83Bdn \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{3b^2g^4(a + bx)^3} \\
&= -\frac{332B(bc - ad)n \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{9b^2g^4(a + bx)^3} - \frac{83Bdn \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{3b^2g^4(a + bx)^3} \\
&= -\frac{332B^2(bc - ad)n^2}{27b^2g^4(a + bx)^3} + \frac{83B^2dn^2}{18b^2g^4(a + bx)^2} + \frac{415B^2d^2n^2}{9b^2(bc - ad)g^4(a + bx)} \\
&= -\frac{332B^2(bc - ad)n^2}{27b^2g^4(a + bx)^3} + \frac{83B^2dn^2}{18b^2g^4(a + bx)^2} + \frac{415B^2d^2n^2}{9b^2(bc - ad)g^4(a + bx)} \\
&= -\frac{332B^2(bc - ad)n^2}{27b^2g^4(a + bx)^3} + \frac{83B^2dn^2}{18b^2g^4(a + bx)^2} + \frac{415B^2d^2n^2}{9b^2(bc - ad)g^4(a + bx)}
\end{aligned}$$

Mathematica [C] time = 1.22, size = 1079, normalized size = 3.51

$$i \left(36 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) \right)^2 (bc - ad)^3 + 54d(a + bx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 (bc - ad)^2 + 27Bdn(a + bx) \left(\dots \right)$$

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b*g*x)^4,x]

[Out] -1/108*(i*(36*(b*c - a*d)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 + 54*d*(b*c - a*d)^2*(a + b*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 + 27*B*d*n*(a + b*x)*(2*(b*c - a*d)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 4*d*(-(b*c) + a*d)*(a + b*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 4*d^2*(a + b*x)^2*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 4*d^2*(a + b*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] - 4*B*d*n*(a + b*x)*(b*c - a*d + d*(a + b*x)*Log[a + b*x] - d*(a + b*x)*Log[c + d*x]) + B*n*((b*c - a*d)^2 + 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d^2*(a + b*x)^2*Log[a + b*x] + 2*d^2*(a + b*x)^2*Log[c + d*x]) + 2*B*d^2*n*(a + b*x)^2*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])) + 2*B*n*(12*(b*c - a*d)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 18*d*(b*c - a*d)^2*(a + b*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 36*d^2*(b*c - a*d)*(a + b*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 36*d^3*(a + b*x)^3*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 36*d^3*(a + b*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] + 36*B*d^2*n*(a + b*x)^2*(b*c - a*d + d*(a + b*x)*Log[a + b*x] - d*(a + b*x)*Log[c + d*x]) - 9*B*d*n*(a + b*x)*((b*c - a*d)^2 + 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d^2*(a + b*x)^2*Log[a + b*x] + 2*d^2*(a + b*x)^2*Log[c + d*x]) + 2*B*n*(2*(b*c - a*d)^3 - 3*d*(b*c - a*d)^2*(a + b*x) + 6*d^2*(b*c - a*d)*(a + b*x)^2 + 6*d^3*(a + b*x)^3*Log[a + b*x] - 6*d^3*(a + b*x)^3*Log[c + d*x]) - 18*B*d^3*n*(a + b*x)^3*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + 18*B*d^3*n*(a + b*x)^3*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(b^2*(b*c - a*d)^2*g^4*(a + b*x)^3)

fricas [B] time = 0.74, size = 1167, normalized size = 3.80

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^4,x, algorithm="fricas")

```
[Out] -1/108*((8*B^2*b^3*c^3 - 27*B^2*a*b^2*c^2*d + 19*B^2*a^3*d^3)*i^n^2 + 6*(4*
A*B*b^3*c^3 - 9*A*B*a*b^2*c^2*d + 5*A*B*a^3*d^3)*i^n - 6*(5*(B^2*b^3*c*d^2
- B^2*a*b^2*d^3)*i^n^2 + 6*(A*B*b^3*c*d^2 - A*B*a*b^2*d^3)*i^n)*x^2 + 18*(3
*(B^2*b^3*c^2*d - 2*B^2*a*b^2*c*d^2 + B^2*a^2*b*d^3)*i*x + (2*B^2*b^3*c^3 -
3*B^2*a*b^2*c^2*d + B^2*a^3*d^3)*i)*log(e)^2 - 18*(B^2*b^3*d^3*i^n^2*x^3 +
3*B^2*a*b^2*d^3*i^n^2*x^2 - 3*(B^2*b^3*c^2*d - 2*B^2*a*b^2*c*d^2)*i^n^2*x
- (2*B^2*b^3*c^3 - 3*B^2*a*b^2*c^2*d)*i^n^2)*log((b*x + a)/(d*x + c))^2 + 1
8*(2*A^2*b^3*c^3 - 3*A^2*a*b^2*c^2*d + A^2*a^3*d^3)*i - 3*((B^2*b^3*c^2*d +
18*B^2*a*b^2*c*d^2 - 19*B^2*a^2*b*d^3)*i^n^2 - 6*(A*B*b^3*c^2*d - 6*A*B*a*
b^2*c*d^2 + 5*A*B*a^2*b*d^3)*i^n - 18*(A^2*b^3*c^2*d - 2*A^2*a*b^2*c*d^2 +
A^2*a^2*b*d^3)*i)*x - 6*(6*(B^2*b^3*c*d^2 - B^2*a*b^2*d^3)*i^n*x^2 - (4*B^2
*b^3*c^3 - 9*B^2*a*b^2*c^2*d + 5*B^2*a^3*d^3)*i^n - 6*(2*A*B*b^3*c^3 - 3*A*
B*a*b^2*c^2*d + A*B*a^3*d^3)*i - 3*((B^2*b^3*c^2*d - 6*B^2*a*b^2*c*d^2 + 5*
B^2*a^2*b*d^3)*i^n + 6*(A*B*b^3*c^2*d - 2*A*B*a*b^2*c*d^2 + A*B*a^2*b*d^3)*
i)*x + 6*(B^2*b^3*d^3*i^n*x^3 + 3*B^2*a*b^2*d^3*i^n*x^2 - 3*(B^2*b^3*c^2*d
- 2*B^2*a*b^2*c*d^2)*i^n*x - (2*B^2*b^3*c^3 - 3*B^2*a*b^2*c^2*d)*i^n)*log((
b*x + a)/(d*x + c))*log(e) + 6*((4*B^2*b^3*c^3 - 9*B^2*a*b^2*c^2*d)*i^n^2
- (5*B^2*b^3*d^3*i^n^2 + 6*A*B*b^3*d^3*i^n)*x^3 + 6*(2*A*B*b^3*c^3 - 3*A*B*
a*b^2*c^2*d)*i^n - 3*(6*A*B*a*b^2*d^3*i^n + (2*B^2*b^3*c*d^2 + 3*B^2*a*b^2*
d^3)*i^n^2)*x^2 + 3*((B^2*b^3*c^2*d - 6*B^2*a*b^2*c*d^2)*i^n^2 + 6*(A*B*b^3
*c^2*d - 2*A*B*a*b^2*c*d^2)*i^n)*x)*log((b*x + a)/(d*x + c))/((b^7*c^2 - 2
*a*b^6*c*d + a^2*b^5*d^2)*g^4*x^3 + 3*(a*b^6*c^2 - 2*a^2*b^5*c*d + a^3*b^4*
d^2)*g^4*x^2 + 3*(a^2*b^5*c^2 - 2*a^3*b^4*c*d + a^4*b^3*d^2)*g^4*x + (a^3*b
^4*c^2 - 2*a^4*b^3*c*d + a^5*b^2*d^2)*g^4)
```

giac [A] time = 25.97, size = 481, normalized size = 1.57

$$-\frac{1}{108} \left(\frac{18 \left(2 B^2 b i n^2 - \frac{3 (b x + a) B^2 d i n^2}{d x + c} \right) \log \left(\frac{b x + a}{d x + c} \right)^2}{\frac{(b x + a)^3 b c g^4}{(d x + c)^3} - \frac{(b x + a)^3 a d g^4}{(d x + c)^3}} + \frac{6 \left(4 B^2 b i n^2 - \frac{9 (b x + a) B^2 d i n^2}{d x + c} + 12 A B b i n + 12 B^2 b i n - \frac{18 (b x + a) A B a}{d x + c} \right) \log \left(\frac{b x + a}{d x + c} \right)}{\frac{(b x + a)^3 b c g^4}{(d x + c)^3} - \frac{(b x + a)^3 a d g^4}{(d x + c)^3}} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^4,x, a
lgorithm="giac")
```

```
[Out] -1/108*(18*(2*B^2*b*i^n^2 - 3*(b*x + a)*B^2*d*i^n^2/(d*x + c))*log((b*x + a
)/(d*x + c))^2/((b*x + a)^3*b*c*g^4/(d*x + c)^3 - (b*x + a)^3*a*d*g^4/(d*x
+ c)^3) + 6*(4*B^2*b*i^n^2 - 9*(b*x + a)*B^2*d*i^n^2/(d*x + c) + 12*A*B*b*i
^n + 12*B^2*b*i^n - 18*(b*x + a)*A*B*d*i^n/(d*x + c) - 18*(b*x + a)*B^2*d*i
^n/(d*x + c))*log((b*x + a)/(d*x + c))/((b*x + a)^3*b*c*g^4/(d*x + c)^3 - (
b*x + a)^3*a*d*g^4/(d*x + c)^3) + (8*B^2*b*i^n^2 - 27*(b*x + a)*B^2*d*i^n^2
/(d*x + c) + 24*A*B*b*i^n + 24*B^2*b*i^n - 54*(b*x + a)*A*B*d*i^n/(d*x + c)
- 54*(b*x + a)*B^2*d*i^n/(d*x + c) + 36*A^2*b*i + 72*A*B*b*i + 36*B^2*b*i
- 54*(b*x + a)*A^2*d*i/(d*x + c) - 108*(b*x + a)*A*B*d*i/(d*x + c) - 54*(b
```

$x + a) * B^2 * d * i / (d * x + c) / ((b * x + a)^3 * b * c * g^4 / (d * x + c)^3 - (b * x + a)^3 * a * d * g^4 / (d * x + c)^3) * (b * c / (b * c - a * d)^2 - a * d / (b * c - a * d)^2)$

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci) \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)^2}{(bgx + ag)^4} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^4,x)`

[Out] `int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^4,x)`

maxima [B] time = 3.50, size = 3312, normalized size = 10.79

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^4,x, algorithm="maxima")`

[Out] `-1/9*A*B*c*i*n*((6*b^2*d^2*x^2 + 2*b^2*c^2 - 7*a*b*c*d + 11*a^2*d^2 - 3*(b^2*c*d - 5*a*b*d^2)*x)/((b^6*c^2 - 2*a*b^5*c*d + a^2*b^4*d^2)*g^4*x^3 + 3*(a*b^5*c^2 - 2*a^2*b^4*c*d + a^3*b^3*d^2)*g^4*x^2 + 3*(a^2*b^4*c^2 - 2*a^3*b^3*c*d + a^4*b^2*d^2)*g^4*x + (a^3*b^3*c^2 - 2*a^4*b^2*c*d + a^5*b*d^2)*g^4) + 6*d^3*log(b*x + a)/((b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^3)*g^4) - 6*d^3*log(d*x + c)/((b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^3)*g^4) - 1/18*A*B*d*i*n*((5*a*b^2*c^2 - 22*a^2*b*c*d + 5*a^3*d^2 - 6*(3*b^3*c*d - a*b^2*d^2)*x^2 + 3*(3*b^3*c^2 - 16*a*b^2*c*d + 5*a^2*b*d^2)*x)/((b^7*c^2 - 2*a*b^6*c*d + a^2*b^5*d^2)*g^4*x^3 + 3*(a*b^6*c^2 - 2*a^2*b^5*c*d + a^3*b^4*d^2)*g^4*x^2 + 3*(a^2*b^5*c^2 - 2*a^3*b^4*c*d + a^4*b^3*d^2)*g^4*x + (a^3*b^4*c^2 - 2*a^4*b^3*c*d + a^5*b^2*d^2)*g^4) - 6*(3*b*c*d^2 - a*d^3)*log(b*x + a)/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*g^4) + 6*(3*b*c*d^2 - a*d^3)*log(d*x + c)/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*g^4) - 1/6*(3*b*x + a)*B^2*d*i*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)^2/(b^5*g^4*x^3 + 3*a*b^4*g^4*x^2 + 3*a^2*b^3*g^4*x + a^3*b^2*g^4) - 1/54*(6*n*((6*b^2*d^2*x^2 + 2*b^2*c^2 - 7*a*b*c*d + 11*a^2*d^2 - 3*(b^2*c*d - 5*a*b*d^2)*x)/((b^6*c^2 - 2*a*b^5*c*d + a^2*b^4*d^2)*g^4*x^3 + 3*(a*b^5*c^2 - 2*a^2*b^4*c*d + a^3*b^3*d^2)*g^4*x^2 + 3*(a^2*b^4*c^2 - 2*a^3*b^3*c*d + a^4*b^2*d^2)*g^4*x + (a^3*b^3*c^2 - 2*a^4*b^2*c*d + a^5*b*d^2)*g^4) + 6*d^3*log(b*x + a)/((b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^3)*g^4) - 6*d^3*log(d*x + c)/((b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^3)*g^4))*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)`

$$\begin{aligned}
& + (4*b^3*c^3 - 27*a*b^2*c^2*d + 108*a^2*b*c*d^2 - 85*a^3*d^3 + 66*(b^3*c*d^2 - a*b^2*d^3)*x^2 - 18*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*\log(b*x + a)^2 - 18*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*\log(d*x + c)^2 - 3*(5*b^3*c^2*d - 54*a*b^2*c*d^2 + 49*a^2*b*d^3)*x + 66*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*\log(b*x + a) - 6*(11*b^3*d^3*x^3 + 33*a*b^2*d^3*x^2 + 33*a^2*b*d^3*x + 11*a^3*d^3 - 6*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*\log(b*x + a))*\log(d*x + c))^n^2/(a^3*b^4*c^3*g^4 - 3*a^4*b^3*c^2*d*g^4 + 3*a^5*b^2*c*d^2*g^4 - a^6*b*d^3*g^4 + (b^7*c^3*g^4 - 3*a*b^6*c^2*d*g^4 + 3*a^2*b^5*c*d^2*g^4 - a^3*b^4*d^3*g^4)*x^3 + 3*(a*b^6*c^3*g^4 - 3*a^2*b^5*c^2*d*g^4 + 3*a^3*b^4*c*d^2*g^4 - a^4*b^3*d^3*g^4)*x^2 + 3*(a^2*b^5*c^3*g^4 - 3*a^3*b^4*c^2*d*g^4 + 3*a^4*b^3*c*d^2*g^4 - a^5*b^2*d^3*g^4)*x)) * B^2*c*i - 1/108*(6*n*((5*a*b^2*c^2 - 22*a^2*b*c*d + 5*a^3*d^2 - 6*(3*b^3*c*d - a*b^2*d^2)*x^2 + 3*(3*b^3*c^2 - 16*a*b^2*c*d + 5*a^2*b*d^2)*x)/(b^7*c^2 - 2*a*b^6*c*d + a^2*b^5*d^2)*g^4*x^3 + 3*(a*b^6*c^2 - 2*a^2*b^5*c*d + a^3*b^4*d^2)*g^4*x^2 + 3*(a^2*b^5*c^2 - 2*a^3*b^4*c*d + a^4*b^3*d^2)*g^4*x + (a^3*b^4*c^2 - 2*a^4*b^3*c*d + a^5*b^2*d^2)*g^4) - 6*(3*b*c*d^2 - a*d^3)*\log(b*x + a)/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*g^4) + 6*(3*b*c*d^2 - a*d^3)*\log(d*x + c)/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*g^4))*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + (19*a*b^3*c^3 - 189*a^2*b^2*c^2*d + 189*a^3*b*c*d^2 - 19*a^4*d^3 - 6*(27*b^4*c^2*d - 32*a*b^3*c*d^2 + 5*a^2*b^2*d^3)*x^2 + 18*(3*a^3*b*c*d^2 - a^4*d^3 + (3*b^4*c*d^2 - a*b^3*d^3)*x^3 + 3*(3*a*b^3*c*d^2 - a^2*b^2*d^3)*x^2 + 3*(3*a^2*b^2*c*d^2 - a^3*b*d^3)*x)*\log(b*x + a)^2 + 18*(3*a^3*b*c*d^2 - a^4*d^3 + (3*b^4*c*d^2 - a*b^3*d^3)*x^3 + 3*(3*a*b^3*c*d^2 - a^2*b^2*d^3)*x^2 + 3*(3*a^2*b^2*c*d^2 - a^3*b*d^3)*x)*\log(d*x + c)^2 + 3*(9*b^4*c^3 - 125*a*b^3*c^2*d + 135*a^2*b^2*c*d^2 - 19*a^3*b*d^3)*x - 6*(27*a^3*b*c*d^2 - 5*a^4*d^3 + (27*b^4*c*d^2 - 5*a*b^3*d^3)*x^3 + 3*(27*a*b^3*c*d^2 - 5*a^2*b^2*d^3)*x^2 + 3*(27*a^2*b^2*c*d^2 - 5*a^3*b*d^3)*x)*\log(b*x + a) + 6*(27*a^3*b*c*d^2 - 5*a^4*d^3 + (27*b^4*c*d^2 - 5*a*b^3*d^3)*x^3 + 3*(27*a*b^3*c*d^2 - 5*a^2*b^2*d^3)*x^2 + 3*(27*a^2*b^2*c*d^2 - 5*a^3*b*d^3)*x - 6*(3*a^3*b*c*d^2 - a^4*d^3 + (3*b^4*c*d^2 - a*b^3*d^3)*x^3 + 3*(3*a*b^3*c*d^2 - a^2*b^2*d^3)*x^2 + 3*(3*a^2*b^2*c*d^2 - a^3*b*d^3)*x)*\log(b*x + a))*\log(d*x + c))^n^2/(a^3*b^5*c^3*g^4 - 3*a^4*b^4*c^2*d*g^4 + 3*a^5*b^3*c*d^2*g^4 - a^6*b^2*d^3*g^4 + (b^8*c^3*g^4 - 3*a*b^7*c^2*d*g^4 + 3*a^2*b^6*c*d^2*g^4 - a^3*b^5*d^3*g^4)*x^3 + 3*(a*b^7*c^3*g^4 - 3*a^2*b^6*c^2*d*g^4 + 3*a^3*b^5*c*d^2*g^4 - a^4*b^4*d^3*g^4)*x^2 + 3*(a^2*b^6*c^3*g^4 - 3*a^3*b^5*c^2*d*g^4 + 3*a^4*b^4*c*d^2*g^4 - a^5*b^3*d^3*g^4)*x)) * B^2*d*i - 1/3*(3*b*x + a)*A*B*d*i*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^5*g^4*x^3 + 3*a*b^4*g^4*x^2 + 3*a^2*b^3*g^4*x + a^3*b^2*g^4) - 1/3*B^2*c*i*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n)^2/(b^4*g^4*x^3 + 3*a*b^3*g^4*x^2 + 3*a^2*b^2*g^4*x + a^3*b*g^4) - 1/6*(3*b*x + a)*A^2*d*i/(b^5*g^4*x^3 + 3*a*b^4*g^4*x^2 + 3*a^2*b^3*g^4*x + a^3*b^2*g^4) - 2/3*A*B*c*i*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^4*g^4*x^3 + 3*a*b^3*g^4*x^2 + 3*a^2*b^2*g^4*x + a^3*b*g^4) - 1/3*A^2*c*i/(b^4*g^4*x^3 + 3*a*b^3*g^4*x^2 + 3*a^2*b^2*g^4*x + a^3*b*g^4)
\end{aligned}$$

mupad [B] time = 7.86, size = 993, normalized size = 3.23

$$\frac{18iA^2a^2d^2+18iA^2abcd-36iA^2b^2c^2+30iABa^2d^2n+30iABabcdn-24iABb^2c^2n+19iB^2a^2d^2n^2+19iB^2abcdn^2-8iB^2b^2c^2n^2}{6(ad-bc)} + \frac{x(18a^3b^2g^4 + 54a^2b^3g^4x + 54ab^4g^4x^2)}{18a^3b^2g^4 + 54a^2b^3g^4x + 54ab^4g^4x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int(((c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x)^4,x)`

[Out] `- ((18*A^2*a^2*d^2*i - 36*A^2*b^2*c^2*i + 19*B^2*a^2*d^2*i*n^2 - 8*B^2*b^2*c^2*i*n^2 + 30*A*B*a^2*d^2*i*n - 24*A*B*b^2*c^2*i*n + 18*A^2*a*b*c*d*i + 19*B^2*a*b*c*d*i*n^2 + 30*A*B*a*b*c*d*i*n)/(6*(a*d - b*c)) + (x*(18*A^2*a*b*d^2*i - 18*A^2*b^2*c*d*i + 19*B^2*a*b*d^2*i*n^2 + B^2*b^2*c*d*i*n^2 + 30*A*B*a*b*d^2*i*n - 6*A*B*b^2*c*d*i*n))/(2*(a*d - b*c)) + (x^2*(5*B^2*b^2*d^2*i*n^2 + 6*A*B*b^2*d^2*i*n))/(a*d - b*c))/(18*a^3*b^2*g^4 + 18*b^5*g^4*x^3 + 54*a^2*b^3*g^4*x + 54*a*b^4*g^4*x^2) - log(e*((a + b*x)/(c + d*x))^n)^2*((B^2*c*i)/(3*b) + (B^2*d*i*x)/(2*b) + (B^2*a*d*i)/(6*b^2))/(a^3*g^4 + b^3*g^4*x^3 + 3*a*b^2*g^4*x^2 + 3*a^2*b*g^4*x) - (B^2*d^3*i)/(6*b^2*g^4*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) - log(e*((a + b*x)/(c + d*x))^n)*((A*B*a*d*i + 2*A*B*b*c*i - B^2*a*d*i*n + B^2*b*c*i*n + 3*A*B*b*d*i*x)/(3*a^3*b^2*g^4 + 3*b^5*g^4*x^3 + 9*a^2*b^3*g^4*x + 9*a*b^4*g^4*x^2) + (B^2*d^3*i*(x*(b*((a*b^2*g^4*n*(a*d - b*c))/d + (b^2*g^4*n*(a*d - b*c)*(3*a*d - b*c))/(2*d^2)) + (2*a*b^3*g^4*n*(a*d - b*c))/d + (b^3*g^4*n*(a*d - b*c)*(3*a*d - b*c))/d^2) + a*((a*b^2*g^4*n*(a*d - b*c))/d + (b^2*g^4*n*(a*d - b*c)*(3*a*d - b*c))/(2*d^2)) + (3*b^4*g^4*n*x^2*(a*d - b*c))/d + (b^2*g^4*n*(a*d - b*c)*(3*a^2*d^2 + b^2*c^2 - 3*a*b*c*d))/d^3))/(3*b^2*g^4*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)*(3*a^3*b^2*g^4 + 3*b^5*g^4*x^3 + 9*a^2*b^3*g^4*x + 9*a*b^4*g^4*x^2))) - (B*d^3*i*n*atan((B*d^3*i*n*(6*A + 5*B*n)*(2*b*d*x - (b^4*c^2*g^4 - a^2*b^2*d^2*g^4)/(b^2*g^4*(a*d - b*c)))*1i)/((a*d - b*c)*(5*B^2*d^3*i*n^2 + 6*A*B*d^3*i*n)))*1i)/(9*b^2*g^4*(a*d - b*c)^2)`

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((d*i*x+c*i)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)**4,x)`

[Out] Timed out

$$3.167 \quad \int \frac{(ci+dx) \left(A+B \log \left(e^{\left(\frac{a+bx}{c+dx} \right)^n} \right) \right)^2}{(ag+bgx)^5} dx$$

Optimal. Leaf size=475

$$\frac{b^2 i(c+dx)^4 \left(B \log \left(e^{\left(\frac{a+bx}{c+dx} \right)^n} \right) + A \right)^2}{4g^5(a+bx)^4(bc-ad)^3} - \frac{b^2 B i n(c+dx)^4 \left(B \log \left(e^{\left(\frac{a+bx}{c+dx} \right)^n} \right) + A \right)}{8g^5(a+bx)^4(bc-ad)^3} - \frac{d^2 i(c+dx)^2 \left(B \log \left(e^{\left(\frac{a+bx}{c+dx} \right)^n} \right) \right)}{2g^5(a+bx)^2(bc-ad)^3}$$

[Out] $-1/4*B^2*d^2*i*n^2*(d*x+c)^2/(-a*d+b*c)^3/g^5/(b*x+a)^2+4/27*b*B^2*d*i*n^2*(d*x+c)^3/(-a*d+b*c)^3/g^5/(b*x+a)^3-1/32*b^2*B^2*i*n^2*(d*x+c)^4/(-a*d+b*c)^3/g^5/(b*x+a)^4-1/2*B*d^2*i*n*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^3/g^5/(b*x+a)^2+4/9*b*B*d*i*n*(d*x+c)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^3/g^5/(b*x+a)^3-1/8*b^2*B*i*n*(d*x+c)^4*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^3/g^5/(b*x+a)^4-1/2*d^2*i*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^3/g^5/(b*x+a)^2+2/3*b*d*i*(d*x+c)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^3/g^5/(b*x+a)^3-1/4*b^2*i*(d*x+c)^4*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^3/g^5/(b*x+a)^4$

Rubi [C] time = 2.87, antiderivative size = 892, normalized size of antiderivative = 1.88, number of steps used = 70, number of rules used = 11, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.256$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{B^2 i n^2 \log^2(a+bx) d^4}{12b^2(bc-ad)^3 g^5} + \frac{B^2 i n^2 \log^2(c+dx) d^4}{12b^2(bc-ad)^3 g^5} - \frac{13B^2 i n^2 \log(a+bx) d^4}{72b^2(bc-ad)^3 g^5} - \frac{B i n \log(a+bx) \left(A + B \log \left(e^{\left(\frac{a+bx}{c+dx} \right)^n} \right) \right) d^4}{6b^2(bc-ad)^3 g^5}$$

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b*g*x)^5, x]

[Out] $-(B^2*(b*c - a*d)*i*n^2)/(32*b^2*g^5*(a + b*x)^4) + (5*B^2*d*i*n^2)/(216*b^2*g^5*(a + b*x)^3) + (B^2*d^2*i*n^2)/(144*b^2*(b*c - a*d)*g^5*(a + b*x)^2) - (13*B^2*d^3*i*n^2)/(72*b^2*(b*c - a*d)^2*g^5*(a + b*x)) - (13*B^2*d^4*i*n^2*Log[a + b*x])/(72*b^2*(b*c - a*d)^3*g^5) + (B^2*d^4*i*n^2*Log[a + b*x]^2)/(12*b^2*(b*c - a*d)^3*g^5) - (B*(b*c - a*d)*i*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(8*b^2*g^5*(a + b*x)^4) - (B*d*i*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(18*b^2*g^5*(a + b*x)^3) + (B*d^2*i*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(12*b^2*(b*c - a*d)*g^5*(a + b*x)^2) - (B*d^3*i*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(6*b^2*(b*c - a*d)^2*g^5*(a + b*x)) - (B*d^4*i*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(6*b^2*(b*c - a$

$$\begin{aligned}
& *d)^3g^5) - ((b*c - a*d)*i*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2)/(4*b^2*g^5*(a + b*x)^4) - (d*i*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2)/(3*b^2*g^5*(a + b*x)^3) + (13*B^2*d^4*i*n^2*\text{Log}[c + d*x])/(72*b^2*(b*c - a*d)^3*g^5) - (B^2*d^4*i*n^2*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c + d*x])/(6*b^2*(b*c - a*d)^3*g^5) + (B*d^4*i*n*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])*\text{Log}[c + d*x])/(6*b^2*(b*c - a*d)^3*g^5) + (B^2*d^4*i*n^2*\text{Log}[c + d*x]^2)/(12*b^2*(b*c - a*d)^3*g^5) - (B^2*d^4*i*n^2*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)])/(6*b^2*(b*c - a*d)^3*g^5) - (B^2*d^4*i*n^2*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))])/(6*b^2*(b*c - a*d)^3*g^5) - (B^2*d^4*i*n^2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/(6*b^2*(b*c - a*d)^3*g^5)
\end{aligned}$$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_) /; FreeQ[b, x]]

Rule 44

Int[((a_) + (b_)*(x_))^(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])

Rule 2301

Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2390

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)])*(b_)^(p_)*((f_) + (g_)*(x_))^(q_), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_)*((d_) + (e_)*(x_))^(n_)]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))])*(b_)/((f_) + (g_)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*

$(e*f - d*g), 0]$

Rule 2394

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2418

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]

Rule 2524

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]

Rule 2525

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]

Rule 2528

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]

Rubi steps

$$\begin{aligned}
\int \frac{(167c + 167dx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag + bgx)^5} dx &= \int \left(\frac{167(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{bg^5(a + bx)^5} + \frac{167d \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{bg^5(a + bx)^5} \right) dx \\
&= \frac{(167d) \int \frac{\left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(a+bx)^4} dx}{bg^5} + \frac{(167(bc - ad)) \int \frac{\left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(a+bx)^4} dx}{bg^5} \\
&= -\frac{167(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{4b^2g^5(a + bx)^4} - \frac{167d \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{3b^2g^5(a + bx)^4} \\
&= -\frac{167(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{4b^2g^5(a + bx)^4} - \frac{167d \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{3b^2g^5(a + bx)^4} \\
&= -\frac{167(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{4b^2g^5(a + bx)^4} - \frac{167d \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{3b^2g^5(a + bx)^4} \\
&= -\frac{167(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{4b^2g^5(a + bx)^4} - \frac{167d \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{3b^2g^5(a + bx)^4} \\
&= -\frac{167B(bc - ad)n \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{8b^2g^5(a + bx)^4} - \frac{167Bdn \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{18b^2g^5(a + bx)^4} \\
&= -\frac{167B(bc - ad)n \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{8b^2g^5(a + bx)^4} - \frac{167Bdn \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{18b^2g^5(a + bx)^4} \\
&= -\frac{167B(bc - ad)n \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{8b^2g^5(a + bx)^4} - \frac{167Bdn \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{18b^2g^5(a + bx)^4} \\
&= -\frac{167B^2(bc - ad)n^2}{32b^2g^5(a + bx)^4} + \frac{835B^2dn^2}{216b^2g^5(a + bx)^3} + \frac{167B^2d^2n^2}{144b^2(bc - ad)g^5(a + bx)^2} \\
&= -\frac{167B^2(bc - ad)n^2}{32b^2g^5(a + bx)^4} + \frac{835B^2dn^2}{216b^2g^5(a + bx)^3} + \frac{167B^2d^2n^2}{144b^2(bc - ad)g^5(a + bx)^2} \\
&= -\frac{167B^2(bc - ad)n^2}{32b^2g^5(a + bx)^4} + \frac{835B^2dn^2}{216b^2g^5(a + bx)^3} + \frac{167B^2d^2n^2}{144b^2(bc - ad)g^5(a + bx)^2}
\end{aligned}$$

Mathematica [C] time = 1.36, size = 1392, normalized size = 2.93

$$i \left(216 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 (bc - ad)^4 - 288d(ad - bc)^3(a + bx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 + 16Bdn(a + bx) \right)$$

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b*g*x)^5,x]

[Out]
$$\begin{aligned} & -1/864*(i*(216*(b*c - a*d)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 - 288 \\ & *d*(-(b*c) + a*d)^3*(a + b*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 + 16 \\ & *B*d*n*(a + b*x)*(12*(b*c - a*d)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - \\ & 18*d*(b*c - a*d)^2*(a + b*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 36*d \\ & ^2*(b*c - a*d)*(a + b*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 36*d^3* \\ & (a + b*x)^3*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 36*d^3*(a \\ & + b*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] + 36*B*d^2*n* \\ & (a + b*x)^2*(b*c - a*d + d*(a + b*x)*Log[a + b*x] - d*(a + b*x)*Log[c + d*x \\ &]) - 9*B*d*n*(a + b*x)*((b*c - a*d)^2 + 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d^ \\ & 2*(a + b*x)^2*Log[a + b*x] + 2*d^2*(a + b*x)^2*Log[c + d*x]) + 2*B*n*(2*(b \\ & c - a*d)^3 - 3*d*(b*c - a*d)^2*(a + b*x) + 6*d^2*(b*c - a*d)*(a + b*x)^2 + \\ & 6*d^3*(a + b*x)^3*Log[a + b*x] - 6*d^3*(a + b*x)^3*Log[c + d*x]) - 18*B*d^3 \\ & *n*(a + b*x)^3*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d \\ &)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + 18*B*d^3*n*(a + b*x)^3* \\ & ((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*Poly \\ & Log[2, (b*(c + d*x))/(b*c - a*d)]) + 3*B*n*(36*(b*c - a*d)^4*(A + B*Log[e* \\ & ((a + b*x)/(c + d*x))^n]) + 48*d*(-(b*c) + a*d)^3*(a + b*x)*(A + B*Log[e* \\ & (a + b*x)/(c + d*x))^n]) + 72*d^2*(b*c - a*d)^2*(a + b*x)^2*(A + B*Log[e* \\ & (a + b*x)/(c + d*x))^n]) + 144*d^3*(-(b*c) + a*d)*(a + b*x)^3*(A + B*Log[e* \\ & (a + b*x)/(c + d*x))^n]) - 144*d^4*(a + b*x)^4*Log[a + b*x]*(A + B*Log[e* \\ & (a + b*x)/(c + d*x))^n]) + 144*d^4*(a + b*x)^4*(A + B*Log[e* \\ & (a + b*x)/(c + d*x))^n])*Log[c + d*x] - 144*B*d^3*n*(a + b*x)^3*(b*c - a*d + d*(a + b*x)*Lo \\ & g[a + b*x] - d*(a + b*x)*Log[c + d*x]) + 36*B*d^2*n*(a + b*x)^2*((b*c - a*d \\ &)^2 + 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d^2*(a + b*x)^2*Log[a + b*x] + 2*d^2 \\ & *(a + b*x)^2*Log[c + d*x]) - 8*B*d*n*(a + b*x)*(2*(b*c - a*d)^3 - 3*d*(b*c \\ & - a*d)^2*(a + b*x) + 6*d^2*(b*c - a*d)*(a + b*x)^2 + 6*d^3*(a + b*x)^3*Log[\\ & a + b*x] - 6*d^3*(a + b*x)^3*Log[c + d*x]) + 3*B*n*(3*(b*c - a*d)^4 + 4*d*(\\ & -(b*c) + a*d)^3*(a + b*x) + 6*d^2*(b*c - a*d)^2*(a + b*x)^2 + 12*d^3*(-(b*c \\ &) + a*d)*(a + b*x)^3 - 12*d^4*(a + b*x)^4*Log[a + b*x] + 12*d^4*(a + b*x)^4 \\ & *Log[c + d*x]) + 72*B*d^4*n*(a + b*x)^4*(Log[a + b*x]*(Log[a + b*x] - 2*Log \\ & [(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) \\ & - 72*B*d^4*n*(a + b*x)^4*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d \\ & x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(b^2*(b*c - \\ & a*d)^3*g^5*(a + b*x)^4) \end{aligned}$$

fricas [B] time = 1.14, size = 1868, normalized size = 3.93

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^5,x, algorithm="fricas")

[Out]
$$-1/864 * ((27*B^2*b^4*c^4 - 128*B^2*a*b^3*c^3*d + 216*B^2*a^2*b^2*c^2*d^2 - 15*B^2*a^4*d^4) * i^n^2 + 12*(13*(B^2*b^4*c*d^3 - B^2*a*b^3*d^4) * i^n^2 + 12*(A*B*b^4*c*d^3 - A*B*a*b^3*d^4) * i^n) * x^3 + 12*(9*A*B*b^4*c^4 - 32*A*B*a*b^3*c^3*d + 36*A*B*a^2*b^2*c^2*d^2 - 13*A*B*a^4*d^4) * i^n - 6*((B^2*b^4*c^2*d^2 - 80*B^2*a*b^3*c*d^3 + 79*B^2*a^2*b^2*d^4) * i^n^2 + 12*(A*B*b^4*c^2*d^2 - 8*A*B*a*b^3*c*d^3 + 7*A*B*a^2*b^2*d^4) * i^n) * x^2 + 72*(4*(B^2*b^4*c^3*d - 3*B^2*a*b^3*c^2*d^2 + 3*B^2*a^2*b^2*c*d^3 - B^2*a^3*b*d^4) * i*x + (3*B^2*b^4*c^4 - 8*B^2*a*b^3*c^3*d + 6*B^2*a^2*b^2*c^2*d^2 - B^2*a^4*d^4) * i) * \log(e)^2 + 72*(B^2*b^4*d^4 * i^n^2 * x^4 + 4*B^2*a*b^3*d^4 * i^n^2 * x^3 + 6*B^2*a^2*b^2*d^4 * i^n^2 * x^2 + 4*(B^2*b^4*c^3*d - 3*B^2*a*b^3*c^2*d^2 + 3*B^2*a^2*b^2*c*d^3) * i^n^2 * x + (3*B^2*b^4*c^4 - 8*B^2*a*b^3*c^3*d + 6*B^2*a^2*b^2*c^2*d^2) * i^n^2) * \log((b*x + a)/(d*x + c))^2 + 72*(3*A^2*b^4*c^4 - 8*A^2*a*b^3*c^3*d + 6*A^2*a^2*b^2*c^2*d^2 - A^2*a^4*d^4) * i - 4*((5*B^2*b^4*c^3*d - 12*B^2*a*b^3*c^2*d^2 - 108*B^2*a^2*b^2*c*d^3 + 115*B^2*a^3*b*d^4) * i^n^2 - 12*(A*B*b^4*c^3*d - 6*A*B*a*b^3*c^2*d^2 + 18*A*B*a^2*b^2*c*d^3 - 13*A*B*a^3*b*d^4) * i^n - 72*(A^2*b^4*c^3*d - 3*A^2*a*b^3*c^2*d^2 + 3*A^2*a^2*b^2*c*d^3 - A^2*a^3*b*d^4) * i) * x + 12*(12*(B^2*b^4*c*d^3 - B^2*a*b^3*d^4) * i^n * x^3 - 6*(B^2*b^4*c^2*d^2 - 8*B^2*a*b^3*c*d^3 + 7*B^2*a^2*b^2*d^4) * i^n * x^2 + (9*B^2*b^4*c^4 - 32*B^2*a*b^3*c^3*d + 36*B^2*a^2*b^2*c^2*d^2 - 13*B^2*a^4*d^4) * i^n + 12*(3*A*B*b^4*c^4 - 8*A*B*a*b^3*c^3*d + 6*A*B*a^2*b^2*c^2*d^2 - A*B*a^4*d^4) * i + 4*((B^2*b^4*c^3*d - 6*B^2*a*b^3*c^2*d^2 + 18*B^2*a^2*b^2*c*d^3 - 13*B^2*a^3*b*d^4) * i^n + 12*(A*B*b^4*c^3*d - 3*A*B*a*b^3*c^2*d^2 + 3*A*B*a^2*b^2*c*d^3 - A*B*a^3*b*d^4) * i) * x + 12*(B^2*b^4*d^4 * i^n * x^4 + 4*B^2*a*b^3*d^4 * i^n * x^3 + 6*B^2*a^2*b^2*d^4 * i^n * x^2 + 4*(B^2*b^4*c^3*d - 3*B^2*a*b^3*c^2*d^2 + 3*B^2*a^2*b^2*c*d^3) * i^n * x + (3*B^2*b^4*c^4 - 8*B^2*a*b^3*c^3*d + 6*B^2*a^2*b^2*c^2*d^2) * i^n) * \log((b*x + a)/(d*x + c)) * \log(e) + 12*((13*B^2*b^4*d^4 * i^n^2 + 12*A*B*b^4*d^4 * i^n) * x^4 + (9*B^2*b^4*c^4 - 32*B^2*a*b^3*c^3*d + 36*B^2*a^2*b^2*c^2*d^2) * i^n^2 + 4*(12*A*B*a*b^3*d^4 * i^n + (3*B^2*b^4*c*d^3 + 10*B^2*a*b^3*d^4) * i^n^2) * x^3 + 12*(3*A*B*b^4*c^4 - 8*A*B*a*b^3*c^3*d + 6*A*B*a^2*b^2*c^2*d^2) * i^n + 6*(12*A*B*a^2*b^2*d^4 * i^n - (B^2*b^4*c^2*d^2 - 8*B^2*a*b^3*c*d^3 - 6*B^2*a^2*b^2*d^4) * i^n^2) * x^2 + 4*((B^2*b^4*c^3*d - 6*B^2*a*b^3*c^2*d^2 + 18*B^2*a^2*b^2*c*d^3) * i^n^2 + 12*(A*B*b^4*c^3*d - 3*A*B*a*b^3*c^2*d^2 + 3*A*B*a^2*b^2*c*d^3) * i^n) * x) * \log((b*x + a)/(d*x + c)) / ((b^9*c^3 - 3*a*b^8*c^2*d + 3*a^2*b^7*c*d^2 - a^3*b^6*d^3) * g^5 * x^4 + 4*(a*b^8*c^3 - 3*a^2*b^7*c^2*d + 3*a^3*b^6*c*d^2 - a^4*b^5*d^3) * g^5 * x^3 + 6*(a^2*b^7*c^3 - 3*a^3*b^6*c^2*d + 3*a^4*b^5*c*d^2 - a^5*b^4*d^3) * g^5 * x^2 + 4*(a^3*b^6*c^3 - 3*a^4*b^5*c^2$$

$$2*d + 3*a^5*b^4*c*d^2 - a^6*b^3*d^3)*g^5*x + (a^4*b^5*c^3 - 3*a^5*b^4*c^2*d + 3*a^6*b^3*c*d^2 - a^7*b^2*d^3)*g^5)$$

giac [A] time = 38.00, size = 841, normalized size = 1.77

$$-\frac{1}{864} \left(\frac{72 \left(3 B^2 b^2 i n^2 - \frac{8 (b x+a) B^2 b d i n^2}{d x+c} + \frac{6 (b x+a)^2 B^2 d^2 i n^2}{(d x+c)^2} \right) \log \left(\frac{b x+a}{d x+c} \right)^2}{\frac{(b x+a)^4 b^2 c^2 g^5}{(d x+c)^4} - \frac{2 (b x+a)^4 a b c d g^5}{(d x+c)^4} + \frac{(b x+a)^4 a^2 d^2 g^5}{(d x+c)^4}} + \frac{12 \left(9 B^2 b^2 i n^2 - \frac{32 (b x+a) B^2 b d i n^2}{d x+c} + \frac{36 (b x+a)^2 B^2 d^2 i n^2}{(d x+c)^2} \right)}{\frac{(b x+a)^4 b^2 c^2 g^5}{(d x+c)^4} - \frac{2 (b x+a)^4 a b c d g^5}{(d x+c)^4} + \frac{(b x+a)^4 a^2 d^2 g^5}{(d x+c)^4}} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^5,x, algorithm="giac")

[Out] -1/864*(72*(3*B^2*b^2*i*n^2 - 8*(b*x + a)*B^2*b*d*i*n^2/(d*x + c) + 6*(b*x + a)^2*B^2*d^2*i*n^2/(d*x + c)^2)*log((b*x + a)/(d*x + c))^2/((b*x + a)^4*b^2*c^2*g^5/(d*x + c)^4 - 2*(b*x + a)^4*a*b*c*d*g^5/(d*x + c)^4 + (b*x + a)^4*a^2*d^2*g^5/(d*x + c)^4) + 12*(9*B^2*b^2*i*n^2 - 32*(b*x + a)*B^2*b*d*i*n^2/(d*x + c) + 36*(b*x + a)^2*B^2*d^2*i*n^2/(d*x + c)^2 + 36*A*B*b^2*i*n + 36*B^2*b^2*i*n - 96*(b*x + a)*A*B*b*d*i*n/(d*x + c) - 96*(b*x + a)*B^2*b*d*i*n/(d*x + c) + 72*(b*x + a)^2*A*B*d^2*i*n/(d*x + c)^2 + 72*(b*x + a)^2*B^2*d^2*i*n/(d*x + c)^2)*log((b*x + a)/(d*x + c))/((b*x + a)^4*b^2*c^2*g^5/(d*x + c)^4 - 2*(b*x + a)^4*a*b*c*d*g^5/(d*x + c)^4 + (b*x + a)^4*a^2*d^2*g^5/(d*x + c)^4) + (27*B^2*b^2*i*n^2 - 128*(b*x + a)*B^2*b*d*i*n^2/(d*x + c) + 216*(b*x + a)^2*B^2*d^2*i*n^2/(d*x + c)^2 + 108*A*B*b^2*i*n + 108*B^2*b^2*i*n - 384*(b*x + a)*A*B*b*d*i*n/(d*x + c) - 384*(b*x + a)*B^2*b*d*i*n/(d*x + c) + 432*(b*x + a)^2*A*B*d^2*i*n/(d*x + c)^2 + 432*(b*x + a)^2*B^2*d^2*i*n/(d*x + c)^2 + 216*A^2*b^2*i + 432*A*B*b^2*i + 216*B^2*b^2*i - 576*(b*x + a)*A^2*b*d*i/(d*x + c) - 1152*(b*x + a)*A*B*b*d*i/(d*x + c) - 576*(b*x + a)*B^2*b*d*i/(d*x + c) + 432*(b*x + a)^2*A^2*d^2*i/(d*x + c)^2 + 864*(b*x + a)^2*A*B*d^2*i/(d*x + c)^2 + 432*(b*x + a)^2*B^2*d^2*i/(d*x + c)^2)/((b*x + a)^4*b^2*c^2*g^5/(d*x + c)^4 - 2*(b*x + a)^4*a*b*c*d*g^5/(d*x + c)^4 + (b*x + a)^4*a^2*d^2*g^5/(d*x + c)^4)*(b*c/(b*c - a*d)^2 - a*d/(b*c - a*d)^2)

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci) \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)^2}{(bgx + ag)^5} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^5,x)

[Out] $\int ((d*i*x+c*i)*(B*\ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^5, x)$

maxima [B] time = 4.87, size = 4838, normalized size = 10.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^5, x, algorithm="maxima")`

[Out]
$$\frac{1}{24} A B c i n \left((12 b^3 d^3 x^3 - 3 b^3 c^3 + 13 a b^2 c^2 d - 23 a^2 b c d^2 + 25 a^3 d^3 - 6 (b^3 c d^2 - 7 a b^2 d^3) x^2 + 4 (b^3 c^2 d - 5 a b^2 c d^2 + 13 a^2 b d^3) x) / ((b^8 c^3 - 3 a b^7 c^2 d + 3 a^2 b^6 c d^2 - a^3 b^5 d^3) g^5 x^4 + 4 (a b^7 c^3 - 3 a^2 b^6 c^2 d + 3 a^3 b^5 c d^2 - a^4 b^4 d^3) g^5 x^3 + 6 (a^2 b^6 c^3 - 3 a^3 b^5 c^2 d + 3 a^4 b^4 c d^2 - a^5 b^3 d^3) g^5 x^2 + 4 (a^3 b^5 c^3 - 3 a^4 b^4 c^2 d + 3 a^5 b^3 c d^2 - a^6 b^2 d^3) g^5 x + (a^4 b^4 c^3 - 3 a^5 b^3 c^2 d + 3 a^6 b^2 c d^2 - a^7 b d^3) g^5 \right) + 12 d^4 \log(b x + a) / ((b^5 c^4 - 4 a b^4 c^3 d + 6 a^2 b^3 c^2 d^2 - 4 a^3 b^2 c d^3 + a^4 b d^4) g^5) - 12 d^4 \log(d x + c) / ((b^5 c^4 - 4 a b^4 c^3 d + 6 a^2 b^3 c^2 d^2 - 4 a^3 b^2 c d^3 + a^4 b d^4) g^5) - 1/72 A B d i n \left((7 a b^3 c^3 - 33 a^2 b^2 c^2 d + 75 a^3 b c d^2 - 13 a^4 d^3 + 12 (4 b^4 c d^2 - a b^3 d^3) x^3 - 6 (4 b^4 c^2 d - 29 a b^3 c d^2 + 7 a^2 b^2 d^3) x^2 + 4 (4 b^4 c^3 - 21 a b^3 c^2 d + 57 a^2 b^2 c d^2 - 13 a^3 b d^3) x) / ((b^9 c^3 - 3 a b^8 c^2 d + 3 a^2 b^7 c d^2 - a^3 b^6 d^3) g^5 x^4 + 4 (a b^8 c^3 - 3 a^2 b^7 c^2 d + 3 a^3 b^6 c d^2 - a^4 b^5 d^3) g^5 x^3 + 6 (a^2 b^7 c^3 - 3 a^3 b^6 c^2 d + 3 a^4 b^5 c d^2 - a^5 b^4 d^3) g^5 x^2 + 4 (a^3 b^6 c^3 - 3 a^4 b^5 c^2 d + 3 a^5 b^4 c d^2 - a^6 b^3 d^3) g^5 x + (a^4 b^5 c^3 - 3 a^5 b^4 c^2 d + 3 a^6 b^3 c d^2 - a^7 b^2 d^3) g^5 \right) + 12 (4 b c d^3 - a d^4) \log(b x + a) / ((b^6 c^4 - 4 a b^5 c^3 d + 6 a^2 b^4 c^2 d^2 - 4 a^3 b^3 c d^3 + a^4 b^2 d^4) g^5) - 12 (4 b c d^3 - a d^4) \log(d x + c) / ((b^6 c^4 - 4 a b^5 c^3 d + 6 a^2 b^4 c^2 d^2 - 4 a^3 b^3 c d^3 + a^4 b^2 d^4) g^5) - 1/12 (4 b x + a) B^2 d i \log(e (b x / (d x + c) + a / (d x + c))^n)^2 / (b^6 g^5 x^4 + 4 a b^5 g^5 x^3 + 6 a^2 b^4 g^5 x^2 + 4 a^3 b^3 g^5 x + a^4 b^2 g^5) + 1/288 (12 n \left((12 b^3 d^3 x^3 - 3 b^3 c^3 + 13 a b^2 c^2 d - 23 a^2 b c d^2 + 25 a^3 d^3 - 6 (b^3 c d^2 - 7 a b^2 d^3) x^2 + 4 (b^3 c^2 d - 5 a b^2 c d^2 + 13 a^2 b d^3) x) / ((b^8 c^3 - 3 a b^7 c^2 d + 3 a^2 b^6 c d^2 - a^3 b^5 d^3) g^5 x^4 + 4 (a b^7 c^3 - 3 a^2 b^6 c^2 d + 3 a^3 b^5 c d^2 - a^4 b^4 d^3) g^5 x^3 + 6 (a^2 b^6 c^3 - 3 a^3 b^5 c^2 d + 3 a^4 b^4 c d^2 - a^5 b^3 d^3) g^5 x^2 + 4 (a^3 b^5 c^3 - 3 a^4 b^4 c^2 d + 3 a^5 b^3 c d^2 - a^6 b^2 d^3) g^5 x + (a^4 b^4 c^3 - 3 a^5 b^3 c^2 d + 3 a^6 b^2 c d^2 - a^7 b d^3) g^5 \right) + 12 d^4 \log(b x + a) / ((b^5 c^4 - 4 a b^4 c^3 d + 6 a^2 b^3 c^2 d^2 - 4 a^3 b^2 c d^3 + a^4 b d^4) g^5) - 12 d^4 \log(d x + c) / ((b^5 c^4 - 4 a b^4 c^3 d + 6 a^2 b^3 c^2 d^2 - 4 a^3 b^2 c d^3 + a^4 b d^4) g^5) \right) \log(e (b x / (d x + c) + a / (d x + c))^n) - (9 b^4 c^4 - 64 a b^3 c^3 d + 216 a^2 b^2 c^2 d^2 - 576 a^3 b c d^3 + 415 a^4 d^4 - 300 (b^4 c d^3$$

$$\begin{aligned}
& - a*b^3*d^4)*x^3 + 6*(13*b^4*c^2*d^2 - 176*a*b^3*c*d^3 + 163*a^2*b^2*d^4)* \\
& x^2 + 72*(b^4*d^4*x^4 + 4*a*b^3*d^4*x^3 + 6*a^2*b^2*d^4*x^2 + 4*a^3*b*d^4*x \\
& + a^4*d^4)*\log(b*x + a)^2 + 72*(b^4*d^4*x^4 + 4*a*b^3*d^4*x^3 + 6*a^2*b^2* \\
& d^4*x^2 + 4*a^3*b*d^4*x + a^4*d^4)*\log(d*x + c)^2 - 4*(7*b^4*c^3*d - 60*a*b \\
& ^3*c^2*d^2 + 324*a^2*b^2*c*d^3 - 271*a^3*b*d^4)*x - 300*(b^4*d^4*x^4 + 4*a* \\
& b^3*d^4*x^3 + 6*a^2*b^2*d^4*x^2 + 4*a^3*b*d^4*x + a^4*d^4)*\log(b*x + a) + 1 \\
& 2*(25*b^4*d^4*x^4 + 100*a*b^3*d^4*x^3 + 150*a^2*b^2*d^4*x^2 + 100*a^3*b*d^4 \\
& *x + 25*a^4*d^4 - 12*(b^4*d^4*x^4 + 4*a*b^3*d^4*x^3 + 6*a^2*b^2*d^4*x^2 + 4 \\
& *a^3*b*d^4*x + a^4*d^4)*\log(b*x + a))*\log(d*x + c))*n^2/(a^4*b^5*c^4*g^5 - \\
& 4*a^5*b^4*c^3*d*g^5 + 6*a^6*b^3*c^2*d^2*g^5 - 4*a^7*b^2*c*d^3*g^5 + a^8*b*d \\
& ^4*g^5 + (b^9*c^4*g^5 - 4*a*b^8*c^3*d*g^5 + 6*a^2*b^7*c^2*d^2*g^5 - 4*a^3*b \\
& ^6*c*d^3*g^5 + a^4*b^5*d^4*g^5)*x^4 + 4*(a*b^8*c^4*g^5 - 4*a^2*b^7*c^3*d*g^ \\
& 5 + 6*a^3*b^6*c^2*d^2*g^5 - 4*a^4*b^5*c*d^3*g^5 + a^5*b^4*d^4*g^5)*x^3 + 6* \\
& (a^2*b^7*c^4*g^5 - 4*a^3*b^6*c^3*d*g^5 + 6*a^4*b^5*c^2*d^2*g^5 - 4*a^5*b^4* \\
& c*d^3*g^5 + a^6*b^3*d^4*g^5)*x^2 + 4*(a^3*b^6*c^4*g^5 - 4*a^4*b^5*c^3*d*g^5 \\
& + 6*a^5*b^4*c^2*d^2*g^5 - 4*a^6*b^3*c*d^3*g^5 + a^7*b^2*d^4*g^5)*x) * B^2*c \\
& *i - 1/864*(12*n*((7*a*b^3*c^3 - 33*a^2*b^2*c^2*d + 75*a^3*b*c*d^2 - 13*a^4 \\
& *d^3 + 12*(4*b^4*c*d^2 - a*b^3*d^3))*x^3 - 6*(4*b^4*c^2*d - 29*a*b^3*c*d^2 + \\
& 7*a^2*b^2*d^3))*x^2 + 4*(4*b^4*c^3 - 21*a*b^3*c^2*d + 57*a^2*b^2*c*d^2 - 13 \\
& *a^3*b*d^3)*x)/((b^9*c^3 - 3*a*b^8*c^2*d + 3*a^2*b^7*c*d^2 - a^3*b^6*d^3)*g \\
& ^5*x^4 + 4*(a*b^8*c^3 - 3*a^2*b^7*c^2*d + 3*a^3*b^6*c*d^2 - a^4*b^5*d^3)*g^ \\
& 5*x^3 + 6*(a^2*b^7*c^3 - 3*a^3*b^6*c^2*d + 3*a^4*b^5*c*d^2 - a^5*b^4*d^3)*g \\
& ^5*x^2 + 4*(a^3*b^6*c^3 - 3*a^4*b^5*c^2*d + 3*a^5*b^4*c*d^2 - a^6*b^3*d^3)* \\
& g^5*x + (a^4*b^5*c^3 - 3*a^5*b^4*c^2*d + 3*a^6*b^3*c*d^2 - a^7*b^2*d^3)*g^5 \\
&) + 12*(4*b*c*d^3 - a*d^4)*\log(b*x + a)/((b^6*c^4 - 4*a*b^5*c^3*d + 6*a^2*b \\
& ^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*g^5) - 12*(4*b*c*d^3 - a*d^4)* \\
& \log(d*x + c)/((b^6*c^4 - 4*a*b^5*c^3*d + 6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 \\
& + a^4*b^2*d^4)*g^5))*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + (37*a*b^4*c^ \\
& 4 - 304*a^2*b^3*c^3*d + 1512*a^3*b^2*c^2*d^2 - 1360*a^4*b*c*d^3 + 115*a^5*d \\
& ^4 + 12*(88*b^5*c^2*d^2 - 101*a*b^4*c*d^3 + 13*a^2*b^3*d^4)*x^3 - 6*(40*b^5 \\
& *c^3*d - 609*a*b^4*c^2*d^2 + 648*a^2*b^3*c*d^3 - 79*a^3*b^2*d^4)*x^2 - 72*(\\
& 4*a^4*b*c*d^3 - a^5*d^4 + (4*b^5*c*d^3 - a*b^4*d^4)*x^4 + 4*(4*a*b^4*c*d^3 \\
& - a^2*b^3*d^4)*x^3 + 6*(4*a^2*b^3*c*d^3 - a^3*b^2*d^4)*x^2 + 4*(4*a^3*b^2*c \\
& *d^3 - a^4*b*d^4)*x)*\log(b*x + a)^2 - 72*(4*a^4*b*c*d^3 - a^5*d^4 + (4*b^5* \\
& c*d^3 - a*b^4*d^4)*x^4 + 4*(4*a*b^4*c*d^3 - a^2*b^3*d^4)*x^3 + 6*(4*a^2*b^3 \\
& *c*d^3 - a^3*b^2*d^4)*x^2 + 4*(4*a^3*b^2*c*d^3 - a^4*b*d^4)*x)*\log(d*x + c) \\
& ^2 + 4*(16*b^5*c^4 - 163*a*b^4*c^3*d + 1068*a^2*b^3*c^2*d^2 - 1036*a^3*b^2* \\
& c*d^3 + 115*a^4*b*d^4)*x + 12*(88*a^4*b*c*d^3 - 13*a^5*d^4 + (88*b^5*c*d^3 \\
& - 13*a*b^4*d^4)*x^4 + 4*(88*a*b^4*c*d^3 - 13*a^2*b^3*d^4)*x^3 + 6*(88*a^2*b \\
& ^3*c*d^3 - 13*a^3*b^2*d^4)*x^2 + 4*(88*a^3*b^2*c*d^3 - 13*a^4*b*d^4)*x)*\log \\
& (b*x + a) - 12*(88*a^4*b*c*d^3 - 13*a^5*d^4 + (88*b^5*c*d^3 - 13*a*b^4*d^4) \\
& *x^4 + 4*(88*a*b^4*c*d^3 - 13*a^2*b^3*d^4)*x^3 + 6*(88*a^2*b^3*c*d^3 - 13*a \\
& ^3*b^2*d^4)*x^2 + 4*(88*a^3*b^2*c*d^3 - 13*a^4*b*d^4)*x - 12*(4*a^4*b*c*d^3 \\
& - a^5*d^4 + (4*b^5*c*d^3 - a*b^4*d^4)*x^4 + 4*(4*a*b^4*c*d^3 - a^2*b^3*d^4) \\
&) * x^3 + 6*(4*a^2*b^3*c*d^3 - a^3*b^2*d^4)*x^2 + 4*(4*a^3*b^2*c*d^3 - a^4*b*
\end{aligned}$$

$$d^4) * x) * \log(b * x + a) * \log(d * x + c) * n^2 / (a^4 * b^6 * c^4 * g^5 - 4 * a^5 * b^5 * c^3 * d * g^5 + 6 * a^6 * b^4 * c^2 * d^2 * g^5 - 4 * a^7 * b^3 * c * d^3 * g^5 + a^8 * b^2 * d^4 * g^5 + (b^{10} * c^4 * g^5 - 4 * a * b^9 * c^3 * d * g^5 + 6 * a^2 * b^8 * c^2 * d^2 * g^5 - 4 * a^3 * b^7 * c * d^3 * g^5 + a^4 * b^6 * d^4 * g^5) * x^4 + 4 * (a * b^9 * c^4 * g^5 - 4 * a^2 * b^8 * c^3 * d * g^5 + 6 * a^3 * b^7 * c^2 * d^2 * g^5 - 4 * a^4 * b^6 * c * d^3 * g^5 + a^5 * b^5 * d^4 * g^5) * x^3 + 6 * (a^2 * b^8 * c^4 * g^5 - 4 * a^3 * b^7 * c^3 * d * g^5 + 6 * a^4 * b^6 * c^2 * d^2 * g^5 - 4 * a^5 * b^5 * c * d^3 * g^5 + a^6 * b^4 * d^4 * g^5) * x^2 + 4 * (a^3 * b^7 * c^4 * g^5 - 4 * a^4 * b^6 * c^3 * d * g^5 + 6 * a^5 * b^5 * c^2 * d^2 * g^5 - 4 * a^6 * b^4 * c * d^3 * g^5 + a^7 * b^3 * d^4 * g^5) * x) * B^2 * d * i - 1 / 6 * (4 * b * x + a) * A * B * d * i * \log(e * (b * x / (d * x + c) + a / (d * x + c))^n) / (b^6 * g^5 * x^4 + 4 * a * b^5 * g^5 * x^3 + 6 * a^2 * b^4 * g^5 * x^2 + 4 * a^3 * b^3 * g^5 * x + a^4 * b^2 * g^5) - 1 / 4 * B^2 * c * i * \log(e * (b * x / (d * x + c) + a / (d * x + c))^n)^2 / (b^5 * g^5 * x^4 + 4 * a * b^4 * g^5 * x^3 + 6 * a^2 * b^3 * g^5 * x^2 + 4 * a^3 * b^2 * g^5 * x + a^4 * b * g^5) - 1 / 12 * (4 * b * x + a) * A^2 * d * i / (b^6 * g^5 * x^4 + 4 * a * b^5 * g^5 * x^3 + 6 * a^2 * b^4 * g^5 * x^2 + 4 * a^3 * b^3 * g^5 * x + a^4 * b^2 * g^5) - 1 / 2 * A * B * c * i * \log(e * (b * x / (d * x + c) + a / (d * x + c))^n) / (b^5 * g^5 * x^4 + 4 * a * b^4 * g^5 * x^3 + 6 * a^2 * b^3 * g^5 * x^2 + 4 * a^3 * b^2 * g^5 * x + a^4 * b * g^5) - 1 / 4 * A^2 * c * i / (b^5 * g^5 * x^4 + 4 * a * b^4 * g^5 * x^3 + 6 * a^2 * b^3 * g^5 * x^2 + 4 * a^3 * b^2 * g^5 * x + a^4 * b * g^5)$$

mupad [B] time = 9.74, size = 1794, normalized size = 3.78

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{int}(((c * i + d * i * x) * (A + B * \log(e * ((a + b * x) / (c + d * x))^n))^2) / (a * g + b * g * x)^5, x)$

[Out] $((72 * A^2 * a^3 * d^3 * i + 216 * A^2 * b^3 * c^3 * i + 115 * B^2 * a^3 * d^3 * i * n^2 + 27 * B^2 * b^3 * c^3 * i * n^2 + 156 * A * B * a^3 * d^3 * i * n + 108 * A * B * b^3 * c^3 * i * n - 360 * A^2 * a * b^2 * c^2 * d * i + 72 * A^2 * a^2 * b * c * d^2 * i - 101 * B^2 * a * b^2 * c^2 * d * i * n^2 + 115 * B^2 * a^2 * b * c * d^2 * i * n^2 - 276 * A * B * a * b^2 * c^2 * d * i * n + 156 * A * B * a^2 * b * c * d^2 * i * n) / (12 * (a * d - b * c)) + (x^2 * (79 * B^2 * a * b^2 * d^3 * i * n^2 - B^2 * b^3 * c * d^2 * i * n^2 + 84 * A * B * a * b^2 * d^3 * i * n - 12 * A * B * b^3 * c * d^2 * i * n) / (2 * (a * d - b * c)) + (x * (72 * A^2 * a^2 * b * d^3 * i + 72 * A^2 * b^3 * c^2 * d * i + 115 * B^2 * a^2 * b * d^3 * i * n^2 - 5 * B^2 * b^3 * c^2 * d * i * n^2 - 144 * A^2 * a * b^2 * c * d^2 * i + 7 * B^2 * a * b^2 * c * d^2 * i * n^2 + 156 * A * B * a^2 * b * d^3 * i * n + 12 * A * B * b^3 * c^2 * d * i * n - 60 * A * B * a * b^2 * c * d^2 * i * n) / (3 * (a * d - b * c)) + (d * x^3 * (13 * B^2 * b^3 * d^2 * i * n^2 + 12 * A * B * b^3 * d^2 * i * n) / (a * d - b * c)) / (x * (288 * a^3 * b^4 * c * g^5 - 288 * a^4 * b^3 * d * g^5) - x^3 * (288 * a^2 * b^5 * d * g^5 - 288 * a * b^6 * c * g^5) + x^4 * (72 * b^7 * c * g^5 - 72 * a * b^6 * d * g^5) + x^2 * (432 * a^2 * b^5 * c * g^5 - 432 * a^3 * b^4 * d * g^5) + 72 * a^4 * b^3 * c * g^5 - 72 * a^5 * b^2 * d * g^5) - \log(e * ((a + b * x) / (c + d * x))^n)^2 * ((B^2 * c * i) / (4 * b) + (B^2 * d * i * x) / (3 * b) + (B^2 * a * d * i) / (12 * b^2)) / (a^4 * g^5 + b^4 * g^5 * x^4 + 4 * a * b^3 * g^5 * x^3 + 6 * a^2 * b^2 * g^5 * x^2 + 4 * a^3 * b * g^5 * x) - (B^2 * d^4 * i) / (12 * b^2 * g^5 * (a^3 * d^3 - b^3 * c^3 + 3 * a * b^2 * c^2 * d - 3 * a^2 * b * c * d^2))) - \log(e * ((a + b * x) / (c + d * x))^n) * ((A * B * a * d * i + 3 * A * B * b * c * i - B^2 * a * d * i * n + B^2 * b * c * i * n + 4 * A * B * b * d * i * x) / (6 * a^4 * b^2 * g^5 + 6 * b^6 * g^5 * x^4 + 24 * a^3 * b^3 * g^5 * x + 24 * a * b^5 * g^5 * x^3 + 36 * a^2 * b^4 * g^5 * x^2) + (B^2 * d^4 * i * (x^2 * (b * (b * ((3 * a * b^2 * g^5 * n * (a$

$$\begin{aligned} & *d - b*c)) / (2*d) + (b^2*g^5*n*(a*d - b*c)*(4*a*d - b*c)) / (2*d^2) + (3*a*b^3*g^5*n*(a*d - b*c)) / d + (b^3*g^5*n*(a*d - b*c)*(4*a*d - b*c)) / d^2 + (9*a*b^4*g^5*n*(a*d - b*c)) / (2*d) + (3*b^4*g^5*n*(a*d - b*c)*(4*a*d - b*c)) / (2*d^2) \\ & + a*(a*((3*a*b^2*g^5*n*(a*d - b*c)) / (2*d) + (b^2*g^5*n*(a*d - b*c)*(4*a*d - b*c)) / (2*d^2)) + (b^2*g^5*n*(a*d - b*c)*(6*a^2*d^2 + b^2*c^2 - 4*a*b*c*d)) / (2*d^3)) \\ & + x*(a*(b*((3*a*b^2*g^5*n*(a*d - b*c)) / (2*d) + (b^2*g^5*n*(a*d - b*c)*(4*a*d - b*c)) / (2*d^2)) + (3*a*b^3*g^5*n*(a*d - b*c)) / d + (b^3*g^5*n*(a*d - b*c)*(4*a*d - b*c)) / d^2) \\ & + b*(a*((3*a*b^2*g^5*n*(a*d - b*c)) / (2*d) + (b^2*g^5*n*(a*d - b*c)*(4*a*d - b*c)) / (2*d^2)) + (b^2*g^5*n*(a*d - b*c)*(6*a^2*d^2 + b^2*c^2 - 4*a*b*c*d)) / (2*d^3)) \\ & + (3*b^3*g^5*n*(a*d - b*c)*(6*a^2*d^2 + b^2*c^2 - 4*a*b*c*d)) / (2*d^3) + (3*b^2*g^5*n*(a*d - b*c)*(4*a^3*d^3 - b^3*c^3 + 4*a*b^2*c^2*d - 6*a^2*b*c*d^2)) / (2*d^4) \\ & + (6*b^5*g^5*n*x^3*(a*d - b*c)) / d) / (6*b^2*g^5*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2)*(6*a^4*b^2*g^5 + 6*b^6*g^5*x^4 + 24*a^3*b^3*g^5*x + 24*a*b^5*g^5*x^3 + 36*a^2*b^4*g^5*x^2)) \\ & - (B*d^4*i*n*atan((B*d^4*i*n*(12*A + 13*B*n)*((b^5*c^3*g^5 + a^3*b^2*d^3*g^5 - a*b^4*c^2*d*g^5 - a^2*b^3*c*d^2*g^5) / (b^4*c^2*g^5 + a^2*b^2*d^2*g^5 - 2*a*b^3*c*d*g^5) + 2*b*d*x)*(b^4*c^2*g^5 + a^2*b^2*d^2*g^5 - 2*a*b^3*c*d*g^5)*1i) / (b^2*g^5*(a*d - b*c)^3*(13*B^2*d^4*i*n^2 + 12*A*B*d^4*i*n))) * (12*A + 13*B*n)*1i) / (36*b^2*g^5*(a*d - b*c)^3) \end{aligned}$$

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(b*g*x+a*g)**5,x)

[Out] Timed out

$$3.168 \quad \int (ag+bgx)^3 (ci+dix)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx$$

Optimal. Leaf size=766

$$\frac{Bg^3i^2n(bc-ad)^6 \log\left(\frac{bc-ad}{b(c+dx)}\right) \left(6B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + 6A + 11Bn\right)}{180b^3d^4} - \frac{Bg^3i^2n(a+bx)(bc-ad)^5 \left(6B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{180b^3d^3}$$

[Out] $3/20*B^2*(-a*d+b*c)^5*g^3*i^2*n^2*x/b^2/d^3+1/60*B^2*(-a*d+b*c)^2*g^3*i^2*n^2*(b*x+a)^4/b^3-3/40*B^2*(-a*d+b*c)^4*g^3*i^2*n^2*(d*x+c)^2/b/d^4+1/60*B^2*(-a*d+b*c)^3*g^3*i^2*n^2*(d*x+c)^3/d^4-1/90*B*(-a*d+b*c)^3*g^3*i^2*n*(b*x+a)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^3/d-1/20*B*(-a*d+b*c)^2*g^3*i^2*n*(b*x+a)^4*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^3-1/15*B*(-a*d+b*c)*g^3*i^2*n*(b*x+a)^4*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^2+1/60*(-a*d+b*c)^2*g^3*i^2*(b*x+a)^4*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/b^3+1/15*(-a*d+b*c)*g^3*i^2*(b*x+a)^4*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/b^2+1/6*g^3*i^2*(b*x+a)^4*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/b+1/180*B*(-a*d+b*c)^4*g^3*i^2*n*(b*x+a)^2*(3*A+B*n+3*B*\ln(e*((b*x+a)/(d*x+c))^n))/b^3/d^2-1/180*B*(-a*d+b*c)^5*g^3*i^2*n*(b*x+a)*(6*A+5*B*n+6*B*\ln(e*((b*x+a)/(d*x+c))^n))/b^3/d^3-1/180*B*(-a*d+b*c)^6*g^3*i^2*n*(6*A+11*B*n+6*B*\ln(e*((b*x+a)/(d*x+c))^n))*\ln((-a*d+b*c)/b/(d*x+c))/b^3/d^4-1/20*B^2*(-a*d+b*c)^6*g^3*i^2*n^2*\ln(d*x+c)/b^3/d^4-1/30*B^2*(-a*d+b*c)^6*g^3*i^2*n^2*\text{polylog}(2,d*(b*x+a)/b/(d*x+c))/b^3/d^4$

Rubi [A] time = 3.35, antiderivative size = 848, normalized size of antiderivative = 1.11, number of steps used = 83, number of rules used = 13, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}} = 0.289$, Rules used = {2528, 2525, 12, 2486, 31, 43, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$\frac{B^2g^3i^2n^2 \log^2(c+dx)(bc-ad)^6}{60b^3d^4} + \frac{B^2g^3i^2n^2 \log(c+dx)(bc-ad)^6}{90b^3d^4} - \frac{B^2g^3i^2n^2 \log\left(-\frac{d(a+bx)}{bc-ad}\right) \log(c+dx)(bc-ad)^6}{30b^3d^4}$$

Antiderivative was successfully verified.

[In] Int[(a*g + b*g*x)^3*(c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2,x]

[Out] $-(A*B*(b*c - a*d)^5*g^3*i^2*n*x)/(30*b^2*d^3) + (B^2*(b*c - a*d)^5*g^3*i^2*n^2*x)/(45*b^2*d^3) - (7*B^2*(b*c - a*d)^4*g^3*i^2*n^2*(a + b*x)^2)/(360*b^3*d^2) + (B^2*(b*c - a*d)^3*g^3*i^2*n^2*(a + b*x)^3)/(60*b^3*d) + (B^2*(b*c - a*d)^2*g^3*i^2*n^2*(a + b*x)^4)/(60*b^3) - (B^2*(b*c - a*d)^5*g^3*i^2*n*(a + b*x)*\text{Log}[e*((a + b*x)/(c + d*x))^n])/(30*b^3*d^3) + (B*(b*c - a*d)^4*g$

$$\begin{aligned} & ^3i^2n*(a + b*x)^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])/(60*b^3*d^2) - \\ & (B*(b*c - a*d)^3*g^3i^2n*(a + b*x)^3*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(90*b^3*d) - \\ & (7*B*(b*c - a*d)^2*g^3i^2n*(a + b*x)^4*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(60*b^3) - \\ & (B*d*(b*c - a*d)*g^3i^2n*(a + b*x)^5*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(15*b^3) + \\ & ((b*c - a*d)^2*g^3i^2n*(a + b*x)^4*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2)/(4*b^3) + \\ & (2*d*(b*c - a*d)*g^3i^2n*(a + b*x)^5*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2)/(5*b^3) + \\ & (d^2*g^3i^2n*(a + b*x)^6*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2)/(6*b^3) + \\ & (B^2*(b*c - a*d)^6*g^3i^2n^2*\text{Log}[c + d*x])/(90*b^3*d^4) - (B^2*(b*c - a*d)^6*g^3i^2n^2*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c + d*x])/(30*b^3*d^4) + \\ & (B*(b*c - a*d)^6*g^3i^2n*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])*\text{Log}[c + d*x])/(30*b^3*d^4) + \\ & (B^2*(b*c - a*d)^6*g^3i^2n^2*\text{Log}[c + d*x]^2)/(60*b^3*d^4) - (B^2*(b*c - a*d)^6*g^3i^2n^2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/(30*b^3*d^4) \end{aligned}$$
Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^-1, x_Symbol] := Simp[Log[RemoveContent[a + b*x, x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && (!IntegerQ[n] || (EqQ[c, 0] && LeQ[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)]^(n_.))*(b_.)/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^p_.)*((f_) + (g_.)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]
```

Rule 2391

Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2418

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]

Rule 2486

Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_)^(p_.))*((c_.) + (d_.)*(x_)^(q_.))^(r_.))^(s_.), x_Symbol] := Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s, x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]

Rule 2524

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]

Rule 2525

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_)^(m_.)), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d

```
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunci
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int (168c + 168dx)^2 (ag + bgx)^3 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2 dx &= \int \left(\frac{28224(bc - ad)^2 (ag + bgx)^3 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2}{b^2} \right) dx \\
&= \frac{(28224(bc - ad)^2) \int (ag + bgx)^3 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2}{b^2} \\
&= \frac{7056(bc - ad)^2 g^3 (a + bx)^4 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2}{b^3} \\
&= \frac{7056(bc - ad)^2 g^3 (a + bx)^4 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2}{b^3} \\
&= \frac{7056(bc - ad)^2 g^3 (a + bx)^4 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2}{b^3} \\
&= \frac{7056(bc - ad)^2 g^3 (a + bx)^4 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2}{b^3} \\
&= -\frac{4704AB(bc - ad)^5 g^3 nx}{5b^2 d^3} + \frac{2352B(bc - ad)^4 g^3}{5b^2 d^3} \\
&= -\frac{4704AB(bc - ad)^5 g^3 nx}{5b^2 d^3} - \frac{4704B^2(bc - ad)^5 g^3}{5b^2 d^3} \\
&= -\frac{4704AB(bc - ad)^5 g^3 nx}{5b^2 d^3} - \frac{4704B^2(bc - ad)^5 g^3}{5b^2 d^3} \\
&= -\frac{4704AB(bc - ad)^5 g^3 nx}{5b^2 d^3} + \frac{3136B^2(bc - ad)^5 g^3}{5b^2 d^3} \\
&= -\frac{4704AB(bc - ad)^5 g^3 nx}{5b^2 d^3} + \frac{3136B^2(bc - ad)^5 g^3}{5b^2 d^3} \\
&= -\frac{4704AB(bc - ad)^5 g^3 nx}{5b^2 d^3} + \frac{3136B^2(bc - ad)^5 g^3}{5b^2 d^3}
\end{aligned}$$

Mathematica [B] time = 1.54, size = 1634, normalized size = 2.13

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)^3*(c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))
^n])^2,x]
```

```
[Out] (g^3*i^2*(15*(b*c - a*d)^2*(a + b*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))
^2 + 24*d*(b*c - a*d)*(a + b*x)^5*(A + B*Log[e*((a + b*x)/(c + d*x))
^2 + 10*d^2*(a + b*x)^6*(A + B*Log[e*((a + b*x)/(c + d*x))
^2 - (5*B*(b*c - a*d)^3*n*(6*A*b*d*(b*c - a*d)^2*x + 6*B*d*(b*c - a*d)^2*(a + b*x)*Log[e*
((a + b*x)/(c + d*x))^n] + 3*d^2*(-(b*c) + a*d)*(a + b*x)^2*(A + B*Log[e*((
a + b*x)/(c + d*x))^n] + 2*d^3*(a + b*x)^3*(A + B*Log[e*((a + b*x)/(c + d*
x))^n]) - 6*B*(b*c - a*d)^3*n*Log[c + d*x] - 6*(b*c - a*d)^3*(A + B*Log[e*((
a + b*x)/(c + d*x))^n])*Log[c + d*x] + B*(b*c - a*d)*n*(2*b*d*(b*c - a*d)*
x - d^2*(a + b*x)^2 - 2*(b*c - a*d)^2*Log[c + d*x]) + 3*B*(b*c - a*d)^2*n*(
b*d*x + -(b*c) + a*d)*Log[c + d*x]) + 3*B*(b*c - a*d)^3*n*((2*Log[(d*(a +
b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d
*x))/(b*c - a*d)]))/d^4 + (2*B*(b*c - a*d)^2*n*(24*A*b*d*(b*c - a*d)^3*x +
24*B*d*(b*c - a*d)^3*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n] - 12*d^2*(b*c
- a*d)^2*(a + b*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n] + 8*d^3*(b*c
- a*d)*(a + b*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - 6*d^4*(a + b*x)
^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - 24*B*(b*c - a*d)^4*n*Log[c + d*
x] - 24*(b*c - a*d)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] +
4*B*(b*c - a*d)^2*n*(2*b*d*(b*c - a*d)*x - d^2*(a + b*x)^2 - 2*(b*c - a*d)
^2*Log[c + d*x]) + B*(b*c - a*d)*n*(6*b*d*(b*c - a*d)^2*x + 3*d^2*(-(b*c) +
a*d)*(a + b*x)^2 + 2*d^3*(a + b*x)^3 - 6*(b*c - a*d)^3*Log[c + d*x]) + 12*
B*(b*c - a*d)^3*n*(b*d*x + -(b*c) + a*d)*Log[c + d*x]) + 12*B*(b*c - a*d)^
4*n*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*
PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))/d^4 - (B*(b*c - a*d)*n*(120*A*b*d*
(b*c - a*d)^4*x + 120*B*d*(b*c - a*d)^4*(a + b*x)*Log[e*((a + b*x)/(c + d*x
))^n] + 60*d^2*(-(b*c) + a*d)^3*(a + b*x)^2*(A + B*Log[e*((a + b*x)/(c + d*
x))^n] + 40*d^3*(b*c - a*d)^2*(a + b*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x
))^n] + 30*d^4*(-(b*c) + a*d)*(a + b*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x
))^n] + 24*d^5*(a + b*x)^5*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - 120*B*
(b*c - a*d)^5*n*Log[c + d*x] - 120*(b*c - a*d)^5*(A + B*Log[e*((a + b*x)/(c
+ d*x))^n])*Log[c + d*x] + 20*B*(b*c - a*d)^3*n*(2*b*d*(b*c - a*d)*x - d^2
*(a + b*x)^2 - 2*(b*c - a*d)^2*Log[c + d*x]) + 5*B*(b*c - a*d)^2*n*(6*b*d*(
b*c - a*d)^2*x + 3*d^2*(-(b*c) + a*d)*(a + b*x)^2 + 2*d^3*(a + b*x)^3 - 6*(
b*c - a*d)^3*Log[c + d*x]) + 2*B*(b*c - a*d)*n*(12*b*d*(b*c - a*d)^3*x - 6*
d^2*(b*c - a*d)^2*(a + b*x)^2 + 4*d^3*(b*c - a*d)*(a + b*x)^3 - 3*d^4*(a +
b*x)^4 - 12*(b*c - a*d)^4*Log[c + d*x]) + 60*B*(b*c - a*d)^4*n*(b*d*x + -(
b*c) + a*d)*Log[c + d*x]) + 60*B*(b*c - a*d)^5*n*((2*Log[(d*(a + b*x))/(-(b
```


$*c) + a*d)] - \text{Log}[c + d*x])*\text{Log}[c + d*x] + 2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])))/(6*d^4))/(60*b^3)$

fricas [F] time = 1.00, size = 0, normalized size = 0.00

integral $\left(A^2 b^3 d^2 g^3 i^2 x^5 + A^2 a^3 c^2 g^3 i^2 + (2 A^2 b^3 c d + 3 A^2 a b^2 d^2) g^3 i^2 x^4 + (A^2 b^3 c^2 + 6 A^2 a b^2 c d + 3 A^2 a^2 b d^2) g^3 i^2 x^3 + (3 A^2 a^2 b^2 c^2 + 2 A^2 a^3 c^2 d + 3 A^2 a^2 b^2 c d + 3 A^2 a^3 d^2) g^3 i^2 x^2 + (3 A^2 a^2 b^2 c^2 + 2 A^2 a^3 c^2 d) g^3 i^2 x + (B^2 b^3 d^2 g^3 i^2 x^5 + B^2 a^3 c^2 g^3 i^2 + (2 B^2 b^3 c d + 3 B^2 a b^2 d^2) g^3 i^2 x^4 + (B^2 b^3 c^2 + 6 B^2 a b^2 c d + 3 B^2 a^2 b d^2) g^3 i^2 x^3 + (3 B^2 a^2 b^2 c^2 + 6 B^2 a^2 b^2 c d + B^2 a^3 d^2) g^3 i^2 x^2 + (3 B^2 a^2 b^2 c^2 + 2 B^2 a^3 c^2 d) g^3 i^2 x) * \log(e*((b*x+a)/(d*x+c))^n) \right)^2, x$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, algorithm="fricas")

[Out] integral(A^2*b^3*d^2*g^3*i^2*x^5 + A^2*a^3*c^2*g^3*i^2 + (2*A^2*b^3*c*d + 3*A^2*a*b^2*d^2)*g^3*i^2*x^4 + (A^2*b^3*c^2 + 6*A^2*a*b^2*c*d + 3*A^2*a^2*b*d^2)*g^3*i^2*x^3 + (3*A^2*a*b^2*c^2 + 6*A^2*a^2*b*c*d + A^2*a^3*d^2)*g^3*i^2*x^2 + (3*A^2*a^2*b*c^2 + 2*A^2*a^3*c*d)*g^3*i^2*x + (B^2*b^3*d^2*g^3*i^2*x^5 + B^2*a^3*c^2*g^3*i^2 + (2*B^2*b^3*c*d + 3*B^2*a*b^2*d^2)*g^3*i^2*x^4 + (B^2*b^3*c^2 + 6*B^2*a*b^2*c*d + 3*B^2*a^2*b*d^2)*g^3*i^2*x^3 + (3*B^2*a*b^2*c^2 + 6*B^2*a^2*b*c*d + B^2*a^3*d^2)*g^3*i^2*x^2 + (3*B^2*a^2*b*c^2 + 2*B^2*a^3*c*d)*g^3*i^2*x)*log(e*((b*x + a)/(d*x + c))^n)^2 + 2*(A*B*b^3*d^2*g^3*i^2*x^5 + A*B*a^3*c^2*g^3*i^2 + (2*A*B*b^3*c*d + 3*A*B*a*b^2*d^2)*g^3*i^2*x^4 + (A*B*b^3*c^2 + 6*A*B*a*b^2*c*d + 3*A*B*a^2*b*d^2)*g^3*i^2*x^3 + (3*A*B*a*b^2*c^2 + 6*A*B*a^2*b*c*d + A*B*a^3*d^2)*g^3*i^2*x^2 + (3*A*B*a^2*b*c^2 + 2*A*B*a^3*c*d)*g^3*i^2*x)*log(e*((b*x + a)/(d*x + c))^n), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, algorithm="giac")

[Out] Timed out

maple [F] time = 0.46, size = 0, normalized size = 0.00

$$\int (bgx + ag)^3 (dix + ci)^2 \left(B \ln \left(e \left(\frac{bx + a}{dx + c} \right)^n \right) + A \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)^3*(d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)

[Out] $\int ((b*gx+a*g)^3*(d*i*x+c*i)^2*(B*\ln(e*((b*x+a)/(d*x+c))^n)+A)^2, x)$

maxima [B] time = 8.10, size = 5952, normalized size = 7.77

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((b*gx+a*g)^3*(d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x,
algorithm="maxima")`

[Out] $\frac{1}{3}A^2B^2b^3d^2g^3i^2x^6\log(e*(b*x/(d*x+c) + a/(d*x+c))^n) + \frac{1}{6}A^2b^3d^2g^3i^2x^6 + \frac{4}{5}A^2B^2b^3c*dg^3i^2x^5\log(e*(b*x/(d*x+c) + a/(d*x+c))^n) + \frac{6}{5}A^2B^2a*b^2d^2g^3i^2x^5\log(e*(b*x/(d*x+c) + a/(d*x+c))^n) + \frac{2}{5}A^2b^3c*dg^3i^2x^5 + \frac{3}{5}A^2a*b^2d^2g^3i^2x^5 + \frac{1}{2}A^2B^2b^3c^2g^3i^2x^4\log(e*(b*x/(d*x+c) + a/(d*x+c))^n) + 3A^2B^2a*b^2c*dg^3i^2x^4\log(e*(b*x/(d*x+c) + a/(d*x+c))^n) + \frac{3}{2}A^2B^2a^2*b*d^2g^3i^2x^4\log(e*(b*x/(d*x+c) + a/(d*x+c))^n) + \frac{1}{4}A^2b^3c^2g^3i^2x^4 + \frac{3}{2}A^2a*b^2c*dg^3i^2x^4 + \frac{3}{4}A^2a^2*b*d^2g^3i^2x^4 + 2A^2B^2a*b^2c^2g^3i^2x^3\log(e*(b*x/(d*x+c) + a/(d*x+c))^n) + 4A^2B^2a^2b*c*dg^3i^2x^3\log(e*(b*x/(d*x+c) + a/(d*x+c))^n) + \frac{2}{3}A^2B^2a^3*d^2g^3i^2x^3\log(e*(b*x/(d*x+c) + a/(d*x+c))^n) + A^2a^2*b^2c^2g^3i^2x^3 + 2A^2a^2*b*c*dg^3i^2x^3 + \frac{1}{3}A^2a^3*d^2g^3i^2x^3 + 3A^2B^2a^2b*c^2g^3i^2x^2\log(e*(b*x/(d*x+c) + a/(d*x+c))^n) + 2A^2B^2a^3c*dg^3i^2x^2\log(e*(b*x/(d*x+c) + a/(d*x+c))^n) + \frac{3}{2}A^2a^2*b*c^2g^3i^2x^2 + A^2a^3c*dg^3i^2x^2 - \frac{1}{180}A^2B^2b^3d^2g^3i^2n*(60a^6\log(b*x+a)/b^6 - 60c^6\log(d*x+c)/d^6 + (12*(b^5*c*d^4 - a*b^4*d^5)*x^5 - 15*(b^5*c^2*d^3 - a^2*b^3*d^5)*x^4 + 20*(b^5*c^3*d^2 - a^3*b^2*d^5)*x^3 - 30*(b^5*c^4*d - a^4*b*d^5)*x^2 + 60*(b^5*c^5 - a^5*d^5)*x)/(b^5*d^5)) + \frac{1}{15}A^2B^2b^3c*dg^3i^2n*(12a^5\log(b*x+a)/b^5 - 12c^5\log(d*x+c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4*c^2*d^2 - a^2*b^2*d^4)*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 - a^4*d^4)*x)/(b^4*d^4)) + \frac{1}{10}A^2B^2a*b^2d^2g^3i^2n*(12a^5\log(b*x+a)/b^5 - 12c^5\log(d*x+c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4*c^2*d^2 - a^2*b^2*d^4)*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 - a^4*d^4)*x)/(b^4*d^4)) - \frac{1}{12}A^2B^2b^3c^2g^3i^2n*(6a^4\log(b*x+a)/b^4 - 6c^4\log(d*x+c)/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3)) - \frac{1}{2}A^2B^2a*b^2c*dg^3i^2n*(6a^4\log(b*x+a)/b^4 - 6c^4\log(d*x+c)/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3)) - \frac{1}{4}A^2B^2a^2*b*d^2g^3i^2n*(6a^4\log(b*x+a)/b^4 - 6c^4\log(d*x+c)/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3)) + A^2B^2a*b^2c^2g^3i^2n*(2a^3\log(b*x+a)/b^3 - 2c^3\log(d*x+c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) + 2A^2B^2a^2*b*c*dg^3i^2n*(2a^3\log(b*x+a)/b^3 - 2c^3\log(d*x+c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) + \frac{1}{d^3} - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2) + \frac{1}{d^3}$

$$\begin{aligned}
& 3A^2B^2a^3d^2g^3i^2n^2(2a^3\log(bx+a)/b^3 - 2c^3\log(dx+c)/d^3 - \\
& ((b^2cd - a^2bd^2) * x^2 - 2(b^2c^2 - a^2d^2) * x)/(b^2d^2)) - 3A^2B^2a^2b^2c^2g^3i^2n^2(a^2\log(bx+a)/b^2 - c^2\log(dx+c)/d^2 + (bc - ad) * \\
& x/(bd)) - 2A^2B^2a^3c^2d^2g^3i^2n^2(a^2\log(bx+a)/b^2 - c^2\log(dx+c)/d^2 + (bc - ad) * x/(bd)) + 2A^2B^2a^3c^2g^3i^2n^2(a\log(bx+a)/b - c \\
& * \log(dx+c)/d) + 2A^2B^2a^3c^2g^3i^2n^2 * \log(e * (bx/(dx+c) + a/(dx+c)))^n + A^2a^3c^2g^3i^2n^2 * x - 1/180 * (33a^4b^2c^2d^4g^3i^2n^2 - 6a^5 \\
& c^2d^5g^3i^2n^2 - 2(g^3i^2n^2 + 3g^3i^2n^2 \log(e)) * b^5c^6 + 6(g^3i^2n^2 + 6g^3i^2n^2 \log(e)) * a^2b^4c^5d + 3(g^3i^2n^2 - 30g^3i^2n^2 \log(e)) * a^2b^3c^4d^2 - 2(17g^3i^2n^2 - 60g^3i^2n^2 \log(e)) * a^3b^2c^3d^3) * B^2 \log(dx+c)/(b^2d^4) + 1/30 * (b^6c^6g^3i^2n^2 - 6a^2b^5c^5d^2g^3i^2n^2 + 15a^2b^4c^4d^2g^3i^2n^2 - 20a^3b^3c^3d^3g^3i^2n^2 + 15a^4b^2c^2d^4g^3i^2n^2 - 6a^5b^2c^2d^5g^3i^2n^2 + a^6d^6g^3i^2n^2) * (\log(bx+a) * \log((b^2dx + ad)/(bc - ad) + 1) + \operatorname{dilog}(- \\
& (b^2dx + ad)/(bc - ad))) * B^2/(b^3d^4) + 1/360 * (60B^2b^6d^6g^3i^2n^2 * x^6 \log(e)^2 - 24 * ((g^3i^2n^2 \log(e) - 6g^3i^2n^2 \log(e)^2) * b^6c^2d^5 - (g^3i^2n^2 \log(e) + 9g^3i^2n^2 \log(e)^2) * a^2b^5d^6) * B^2 * x^5 + 6 * ((g^3i^2n^2 - 7g^3i^2n^2 \log(e) + 15g^3i^2n^2 \log(e)^2) * b^6c^2d^4 - 2 * (g^3i^2n^2 + 3g^3i^2n^2 \log(e) - 45g^3i^2n^2 \log(e)^2) * a^2b^5c^2d^5 + (g^3i^2n^2 + 13g^3i^2n^2 \log(e) + 45g^3i^2n^2 \log(e)^2) * a^2b^4d^6) * B^2 * x^4 + 2 * ((3g^3i^2n^2 - 2g^3i^2n^2 \log(e)) * b^6c^3d^3 + 3 * (g^3i^2n^2 - 26g^3i^2n^2 \log(e) + 60g^3i^2n^2 \log(e)^2) * a^2b^5c^2d^4 - 3 * (5g^3i^2n^2 - 14g^3i^2n^2 \log(e) - 120g^3i^2n^2 \log(e)^2) * a^2b^4c^2d^5 + (9g^3i^2n^2 + 38g^3i^2n^2 \log(e) + 60g^3i^2n^2 \log(e)^2) * a^3b^3d^6) * B^2 * x^3 - ((7g^3i^2n^2 - 6g^3i^2n^2 \log(e)) * b^6c^4d^2 - 2 * (23g^3i^2n^2 - 18g^3i^2n^2 \log(e)) * a^2b^5c^3d^3 + 60 * (g^3i^2n^2 + 3g^3i^2n^2 \log(e) - 9g^3i^2n^2 \log(e)^2) * a^2b^4c^2d^4 - 2 * (5g^3i^2n^2 + 102g^3i^2n^2 \log(e) + 180g^3i^2n^2 \log(e)^2) * a^3b^3c^2d^5 - (11g^3i^2n^2 + 6g^3i^2n^2 \log(e)) * a^4b^2d^6) * B^2 * x^2 - 6 * (15a^4b^2c^2d^4g^3i^2n^2 - 6a^5b^2c^2d^5g^3i^2n^2 + a^6d^6g^3i^2n^2) * B^2 \log(bx+a)^2 - 12 * (b^6c^6g^3i^2n^2 - 6a^2b^5c^5d^2g^3i^2n^2 + 15a^2b^4c^4d^2g^3i^2n^2 - 20a^3b^3c^3d^3g^3i^2n^2) * B^2 \log(bx+a) * \log(dx+c) + 6 * (b^6c^6g^3i^2n^2 - 6a^2b^5c^5d^2g^3i^2n^2 + 15a^2b^4c^4d^2g^3i^2n^2 - 20a^3b^3c^3d^3g^3i^2n^2) * B^2 \log(dx+c)^2 + 2 * (2 * (2g^3i^2n^2 - 3g^3i^2n^2 \log(e)) * b^6c^5d - 9 * (3g^3i^2n^2 - 4g^3i^2n^2 \log(e)) * a^2b^5c^4d^2 + (77g^3i^2n^2 - 90g^3i^2n^2 \log(e)) * a^2b^4c^3d^3 - (97g^3i^2n^2 - 30g^3i^2n^2 \log(e) - 180g^3i^2n^2 \log(e)^2) * a^3b^3c^2d^4 + 3 * (17g^3i^2n^2 + 12g^3i^2n^2 \log(e)) * a^4b^2c^2d^5 - 2 * (4g^3i^2n^2 + 3g^3i^2n^2 \log(e)) * a^5b^2d^6) * B^2 * x - 2 * (6a^2b^5c^5d^2g^3i^2n^2 - 33a^2b^4c^4d^2g^3i^2n^2 + 74a^3b^3c^3d^3g^3i^2n^2 - 9 * (7g^3i^2n^2 + 10g^3i^2n^2 \log(e)) * a^4b^2c^2d^4 + 18 * (g^3i^2n^2 + 2g^3i^2n^2 \log(e)) * a^5b^2c^2d^5 - 2 * (g^3i^2n^2 + 3g^3i^2n^2 \log(e)) * a^6d^6) * B^2 \log(bx+a) + 6 * (10B^2b^6d^6g^3i^2n^2 * x^6 + 60B^2a^3b^3c^2d^4g^3i^2n^2 * x + 12 * (2b^6c^2d^5g^3i^2n^2 + 3a^2b^5d^6g^3i^2n^2) * B^2 * x^5 + 15 * (b^6c^2d^4g^3i^2n^2 + 6a^2b^5c^2d^5g^3i^2n^2 + 3a^2b^4d^6g^3i^2n^2) * B^2 * x^4 + 20 * (3a^2b^5c^2d^4g^3i^2n^2 + 6a^2b^2c^2d^6g^3i^2n^2) * B^2 * x^3 + 12 * (2b^6c^2d^5g^3i^2n^2 + 3a^2b^5d^6g^3i^2n^2) * B^2 * x^2 + 6 * (b^6c^2d^4g^3i^2n^2 + 6a^2b^5c^2d^5g^3i^2n^2 + 3a^2b^4d^6g^3i^2n^2) * B^2 * x + 6 * (b^6c^2d^4g^3i^2n^2 + 6a^2b^5c^2d^5g^3i^2n^2 + 3a^2b^4d^6g^3i^2n^2) * B^2)
\end{aligned}$$

$$\begin{aligned}
& b^4*c*d^5*g^3*i^2 + a^3*b^3*d^6*g^3*i^2)*B^2*x^3 + 30*(3*a^2*b^4*c^2*d^4*g^3*i^2 + 2*a^3*b^3*c*d^5*g^3*i^2)*B^2*x^2)*\log((b*x + a)^n)^2 + 6*(10*B^2*b^6*d^6*g^3*i^2*x^6 + 60*B^2*a^3*b^3*c^2*d^4*g^3*i^2*x + 12*(2*b^6*c*d^5*g^3*i^2 + 3*a*b^5*d^6*g^3*i^2)*B^2*x^5 + 15*(b^6*c^2*d^4*g^3*i^2 + 6*a*b^5*c*d^5*g^3*i^2 + 3*a^2*b^4*d^6*g^3*i^2)*B^2*x^4 + 20*(3*a*b^5*c^2*d^4*g^3*i^2 + 6*a^2*b^4*c*d^5*g^3*i^2 + a^3*b^3*d^6*g^3*i^2)*B^2*x^3 + 30*(3*a^2*b^4*c^2*d^4*g^3*i^2 + 2*a^3*b^3*c*d^5*g^3*i^2)*B^2*x^2)*\log((d*x + c)^n)^2 + 2*(60*B^2*b^6*d^6*g^3*i^2*x^6*\log(e) - 12*((g^3*i^2*n - 12*g^3*i^2*\log(e))*b^6*c*d^5 - (g^3*i^2*n + 18*g^3*i^2*\log(e))*a*b^5*d^6)*B^2*x^5 - 3*((7*g^3*i^2*n - 30*g^3*i^2*\log(e))*b^6*c^2*d^4 + 6*(g^3*i^2*n - 30*g^3*i^2*\log(e))*a*b^5*c*d^5 - (13*g^3*i^2*n + 90*g^3*i^2*\log(e))*a^2*b^4*d^6)*B^2*x^4 - 2*(b^6*c^3*d^3*g^3*i^2*n + 3*(13*g^3*i^2*n - 60*g^3*i^2*\log(e))*a*b^5*c^2*d^4 - 3*(7*g^3*i^2*n + 120*g^3*i^2*\log(e))*a^2*b^4*c*d^5 - (19*g^3*i^2*n + 60*g^3*i^2*\log(e))*a^3*b^3*d^6)*B^2*x^3 + 3*(b^6*c^4*d^2*g^3*i^2*n - 6*a*b^5*c^3*d^3*g^3*i^2*n + a^4*b^2*d^6*g^3*i^2*n - 30*(g^3*i^2*n - 6*g^3*i^2*\log(e))*a^2*b^4*c^2*d^4 + 2*(17*g^3*i^2*n + 60*g^3*i^2*\log(e))*a^3*b^3*c*d^5)*B^2*x^2 - 6*(b^6*c^5*d*g^3*i^2*n - 6*a*b^5*c^4*d^2*g^3*i^2*n + 15*a^2*b^4*c^3*d^3*g^3*i^2*n - 6*a^4*b^2*c*d^5*g^3*i^2*n + a^5*b*d^6*g^3*i^2*n - 5*(g^3*i^2*n + 12*g^3*i^2*\log(e))*a^3*b^3*c^2*d^4)*B^2*x + 6*(15*a^4*b^2*c^2*d^4*g^3*i^2*n - 6*a^5*b*c*d^5*g^3*i^2*n + a^6*d^6*g^3*i^2*n)*B^2*\log(b*x + a) + 6*(b^6*c^6*g^3*i^2*n - 6*a*b^5*c^5*d*g^3*i^2*n + 15*a^2*b^4*c^4*d^2*g^3*i^2*n - 20*a^3*b^3*c^3*d^3*g^3*i^2*n)*B^2*\log(d*x + c))*\log((b*x + a)^n) - 2*(60*B^2*b^6*d^6*g^3*i^2*x^6*\log(e) - 12*((g^3*i^2*n - 12*g^3*i^2*\log(e))*b^6*c*d^5 - (g^3*i^2*n + 18*g^3*i^2*\log(e))*a*b^5*d^6)*B^2*x^5 - 3*((7*g^3*i^2*n - 30*g^3*i^2*\log(e))*b^6*c^2*d^4 + 6*(g^3*i^2*n - 30*g^3*i^2*\log(e))*a*b^5*c*d^5 - (13*g^3*i^2*n + 90*g^3*i^2*\log(e))*a^2*b^4*d^6)*B^2*x^4 - 2*(b^6*c^3*d^3*g^3*i^2*n + 3*(13*g^3*i^2*n - 60*g^3*i^2*\log(e))*a*b^5*c^2*d^4 - 3*(7*g^3*i^2*n + 120*g^3*i^2*\log(e))*a^2*b^4*c*d^5 - (19*g^3*i^2*n + 60*g^3*i^2*\log(e))*a^3*b^3*d^6)*B^2*x^3 + 3*(b^6*c^4*d^2*g^3*i^2*n - 6*a*b^5*c^3*d^3*g^3*i^2*n + a^4*b^2*d^6*g^3*i^2*n - 30*(g^3*i^2*n - 6*g^3*i^2*\log(e))*a^2*b^4*c^2*d^4 + 2*(17*g^3*i^2*n + 60*g^3*i^2*\log(e))*a^3*b^3*c*d^5)*B^2*x^2 - 6*(b^6*c^5*d*g^3*i^2*n - 6*a*b^5*c^4*d^2*g^3*i^2*n + 15*a^2*b^4*c^3*d^3*g^3*i^2*n - 6*a^4*b^2*c*d^5*g^3*i^2*n + a^5*b*d^6*g^3*i^2*n - 5*(g^3*i^2*n + 12*g^3*i^2*\log(e))*a^3*b^3*c^2*d^4)*B^2*x + 6*(15*a^4*b^2*c^2*d^4*g^3*i^2*n - 6*a^5*b*c*d^5*g^3*i^2*n + a^6*d^6*g^3*i^2*n)*B^2*\log(b*x + a) + 6*(b^6*c^6*g^3*i^2*n - 6*a*b^5*c^5*d*g^3*i^2*n + 15*a^2*b^4*c^4*d^2*g^3*i^2*n - 20*a^3*b^3*c^3*d^3*g^3*i^2*n)*B^2*\log(d*x + c) + 6*(10*B^2*b^6*d^6*g^3*i^2*x^6 + 60*B^2*a^3*b^3*c^2*d^4*g^3*i^2*x + 12*(2*b^6*c*d^5*g^3*i^2 + 3*a*b^5*d^6*g^3*i^2)*B^2*x^5 + 15*(b^6*c^2*d^4*g^3*i^2 + 6*a*b^5*c*d^5*g^3*i^2 + 3*a^2*b^4*d^6*g^3*i^2)*B^2*x^4 + 20*(3*a*b^5*c^2*d^4*g^3*i^2 + 6*a^2*b^4*c*d^5*g^3*i^2 + a^3*b^3*d^6*g^3*i^2)*B^2*x^3 + 30*(3*a^2*b^4*c^2*d^4*g^3*i^2 + 2*a^3*b^3*c*d^5*g^3*i^2)*B^2*x^2)*\log((b*x + a)^n))*\log((d*x + c)^n))/(b^3*d^4)
\end{aligned}$$

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (ag + bgx)^3 (ci + dix)^2 \left(A + B \ln \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a*g + b*g*x)^3*(c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2,x)

[Out] int((a*g + b*g*x)^3*(c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2, x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)**3*(d*i*x+c*i)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2,x)

[Out] Timed out

$$3.169 \quad \int (ag+bgx)^2(ci+dix)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx$$

Optimal. Leaf size=819

$$\frac{Bg^2i^2n \left(2A + 3Bn + 2B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) \log \left(\frac{bc-ad}{b(c+dx)} \right) (bc-ad)^5}{30b^3d^3} + \frac{B^2g^2i^2n^2 \log \left(\frac{a+bx}{c+dx} \right) (bc-ad)^5}{30b^3d^3} + \frac{B^2g^2i^2n^2 \log(c+dx)}{10b^3d^3}$$

[Out] $-1/10*B^2*(-a*d+b*c)^4*g^2*i^2*n^2*x/b^2/d^2-1/20*B^2*(-a*d+b*c)^3*g^2*i^2*n^2*(d*x+c)^2/b/d^3+1/30*B^2*(-a*d+b*c)^2*g^2*i^2*n^2*(d*x+c)^3/d^3-1/30*B*(-a*d+b*c)^3*g^2*i^2*n*(b*x+a)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^3/d-1/15*B*(-a*d+b*c)^2*g^2*i^2*n*(b*x+a)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^3-1/5*B*(-a*d+b*c)^3*g^2*i^2*n*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b/d^3+4/15*B*(-a*d+b*c)^2*g^2*i^2*n*(d*x+c)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/d^3-1/10*b*B*(-a*d+b*c)*g^2*i^2*n*(d*x+c)^4*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/d^3+1/30*(-a*d+b*c)^2*g^2*i^2*(b*x+a)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/b^3+1/10*(-a*d+b*c)*g^2*i^2*(b*x+a)^3*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/b^2+1/5*g^2*i^2*(b*x+a)^3*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/b+1/30*B*(-a*d+b*c)^4*g^2*i^2*n*(b*x+a)*(2*A+B*n+2*B*\ln(e*((b*x+a)/(d*x+c))^n))/b^3/d^2+1/30*B*(-a*d+b*c)^5*g^2*i^2*n*(2*A+3*B*n+2*B*\ln(e*((b*x+a)/(d*x+c))^n))*\ln((-a*d+b*c)/b/(d*x+c))/b^3/d^3+1/30*B^2*(-a*d+b*c)^5*g^2*i^2*n^2*\ln((b*x+a)/(d*x+c))/b^3/d^3+1/10*B^2*(-a*d+b*c)^5*g^2*i^2*n^2*\ln(d*x+c)/b^3/d^3+1/15*B^2*(-a*d+b*c)^5*g^2*i^2*n^2*polylog(2,d*(b*x+a)/b/(d*x+c))/b^3/d^3$

Rubi [A] time = 2.61, antiderivative size = 714, normalized size of antiderivative = 0.87, number of steps used = 71, number of rules used = 13, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}} = 0.289$, Rules used = {2528, 2525, 12, 2486, 31, 43, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$\frac{B^2g^2i^2n^2(bc-ad)^5 \text{PolyLog} \left(2, \frac{b(c+dx)}{bc-ad} \right)}{15b^3d^3} - \frac{Bg^2i^2n(bc-ad)^5 \log(c+dx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{15b^3d^3} + \frac{d^2g^2i^2(a+bx)^5}{10b^3d^3}$$

Antiderivative was successfully verified.

[In] Int[(a*g + b*g*x)^2*(c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2,x]

[Out] $(A*B*(b*c - a*d)^4*g^2*i^2*n*x)/(15*b^2*d^2) - (B^2*(b*c - a*d)^4*g^2*i^2*n^2*x)/(15*b^2*d^2) + (B^2*(b*c - a*d)^3*g^2*i^2*n^2*(a + b*x)^2)/(20*b^3*d) + (B^2*(b*c - a*d)^2*g^2*i^2*n^2*(a + b*x)^3)/(30*b^3) + (B^2*(b*c - a*d)^4*g^2*i^2*n*(a + b*x)*\text{Log}[e*((a + b*x)/(c + d*x))^n])/(15*b^3*d^2) - (B*(b*c - a*d)^3*g^2*i^2*n*(a + b*x)^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(30*b^3*d^2)$

$$0*b^3*d) - (B*(b*c - a*d)^2*g^2*i^2*n*(a + b*x)^3*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(5*b^3) - (B*d*(b*c - a*d)*g^2*i^2*n*(a + b*x)^4*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(10*b^3) + ((b*c - a*d)^2*g^2*i^2*(a + b*x)^3*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2)/(3*b^3) + (d*(b*c - a*d)*g^2*i^2*(a + b*x)^4*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2)/(2*b^3) + (d^2*g^2*i^2*(a + b*x)^5*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2)/(5*b^3) + (B^2*(b*c - a*d)^5*g^2*i^2*n^2*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c + d*x])/(15*b^3*d^3) - (B*(b*c - a*d)^5*g^2*i^2*n*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])*\text{Log}[c + d*x])/(15*b^3*d^3) - (B^2*(b*c - a*d)^5*g^2*i^2*n^2*\text{Log}[c + d*x]^2)/(30*b^3*d^3) + (B^2*(b*c - a*d)^5*g^2*i^2*n^2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/(15*b^3*d^3)$$

Rule 12

$\text{Int}[(a_)*(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \ \&\& \ !\text{MatchQ}[u, (b_)*(v_)] /; \text{FreeQ}[b, x]$

Rule 31

$\text{Int}[(a_ + (b_)*(x_))^{-1}, x_Symbol] \rightarrow \text{Simp}[\text{Log}[\text{RemoveContent}[a + b*x, x]]/b, x] /; \text{FreeQ}[\{a, b\}, x]$

Rule 43

$\text{Int}[(a_ + (b_)*(x_))^{(m_)*((c_ + (d_)*(x_))^{(n_)}), x_Symbol] \rightarrow \text{Int}[\text{ExpandIntegrand}[(a + b*x)^m*(c + d*x)^n, x], x] /; \text{FreeQ}[\{a, b, c, d, n\}, x] \ \&\& \ \text{NeQ}[b*c - a*d, 0] \ \&\& \ \text{IGtQ}[m, 0] \ \&\& \ (\ !\text{IntegerQ}[n] \ || \ (\text{EqQ}[c, 0] \ \&\& \ \text{LeQ}[7*m + 4*n + 4, 0]) \ || \ \text{LtQ}[9*m + 5*(n + 1), 0] \ || \ \text{GtQ}[m + n + 2, 0])$

Rule 2301

$\text{Int}[(a_ + \text{Log}[(c_)*(x_)^{(n_)}]*(b_)]/(x_), x_Symbol] \rightarrow \text{Simp}[(a + b*\text{Log}[c*x^n])^2/(2*b*n), x] /; \text{FreeQ}[\{a, b, c, n\}, x]$

Rule 2390

$\text{Int}[(a_ + \text{Log}[(c_)*((d_ + (e_)*(x_))^{(n_)}]*(b_))^{(p_)*((f_ + (g_)*(x_))^{(q_)}), x_Symbol] \rightarrow \text{Dist}[1/e, \text{Subst}[\text{Int}[(f*x)/d]^q*(a + b*\text{Log}[c*x^n])^p, x], x, d + e*x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g, n, p, q\}, x] \ \&\& \ \text{EqQ}[e*f - d*g, 0]$

Rule 2391

$\text{Int}[\text{Log}[(c_)*((d_ + (e_)*(x_))^{(n_)})]/(x_), x_Symbol] \rightarrow -\text{Simp}[\text{PolyLog}[2, -(c*e*x^n)]/n, x] /; \text{FreeQ}[\{c, d, e, n\}, x] \ \&\& \ \text{EqQ}[c*d, 1]$

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))])*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)
]^(n)))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n]^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_)^(p_.))*((c_.) + (d_.)*(x_)^(q_.))
^(r_.))^(s_.), x_Symbol] := Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)
^q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q]^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.))/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_)^(m_.
)), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```


Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int (169c + 169dx)^2 (ag + bgx)^2 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2 dx &= \int \left(\frac{(-bc + ad)^2 g^2 (169c + 169dx)^2 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2}{d^2} \right) dx \\
&= \frac{(b^2 g^2) \int (169c + 169dx)^4 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2 dx}{28561 d^2} \\
&= \frac{28561 (bc - ad)^2 g^2 (c + dx)^3 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2}{3d^3} \\
&= \frac{28561 (bc - ad)^2 g^2 (c + dx)^3 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2}{3d^3} \\
&= \frac{28561 (bc - ad)^2 g^2 (c + dx)^3 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2}{3d^3} \\
&= \frac{28561 (bc - ad)^2 g^2 (c + dx)^3 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2}{3d^3} \\
&= \frac{28561 AB (bc - ad)^4 g^2 nx}{15b^2 d^2} - \frac{28561 B (bc - ad)^3 g^2}{15b^2 d^2} \\
&= \frac{28561 AB (bc - ad)^4 g^2 nx}{15b^2 d^2} - \frac{28561 B^2 (bc - ad)^4 g^2}{15b^2 d^2} \\
&= \frac{28561 AB (bc - ad)^4 g^2 nx}{15b^2 d^2} - \frac{28561 B^2 (bc - ad)^4 g^2}{15b^2 d^2} \\
&= \frac{28561 AB (bc - ad)^4 g^2 nx}{15b^2 d^2} - \frac{28561 B^2 (bc - ad)^4 g^2}{15b^2 d^2} \\
&= \frac{28561 AB (bc - ad)^4 g^2 nx}{15b^2 d^2} - \frac{28561 B^2 (bc - ad)^4 g^2}{15b^2 d^2} \\
&= \frac{28561 AB (bc - ad)^4 g^2 nx}{15b^2 d^2} - \frac{28561 B^2 (bc - ad)^4 g^2}{15b^2 d^2}
\end{aligned}$$

Mathematica [A] time = 1.02, size = 1254, normalized size = 1.53

$$g^2 i^2 \left(12d^5 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 (a+bx)^5 + 30d^4(bc-ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 (a+bx)^4 + 20d^3(bc-ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 (a+bx)^3 + 10d^2(bc-ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 (a+bx)^2 + 10d(bc-ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 (a+bx) + 10d^2(bc-ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 (a+bx) \right)$$

Antiderivative was successfully verified.

[In] Integrate[(a*g + b*g*x)^2*(c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2,x]

[Out] (g^2*i^2*(20*d^3*(b*c - a*d)^2*(a + b*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 + 30*d^4*(b*c - a*d)*(a + b*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 + 12*d^5*(a + b*x)^5*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 + 20*B*(b*c - a*d)^3*n*(2*A*b*d*(b*c - a*d)*x + 2*B*d*(b*c - a*d)*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n] - d^2*(a + b*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 2*B*(b*c - a*d)^2*n*Log[c + d*x] - 2*(b*c - a*d)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] + B*(b*c - a*d)*n*(b*d*x + (-b*c) + a*d)*Log[c + d*x] + B*(b*c - a*d)^2*n*((2*Log[(d*(a + b*x))/(-b*c) + a*d]) - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]) - 10*B*(b*c - a*d)^2*n*(6*A*b*d*(b*c - a*d)^2*x + 6*B*d*(b*c - a*d)^2*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n] + 3*d^2*(-b*c) + a*d)*(a + b*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 2*d^3*(a + b*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 6*B*(b*c - a*d)^3*n*Log[c + d*x] - 6*(b*c - a*d)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] + B*(b*c - a*d)*n*(2*b*d*(b*c - a*d)*x - d^2*(a + b*x)^2 - 2*(b*c - a*d)^2*Log[c + d*x]) + 3*B*(b*c - a*d)^2*n*(b*d*x + (-b*c) + a*d)*Log[c + d*x] + 3*B*(b*c - a*d)^3*n*((2*Log[(d*(a + b*x))/(-b*c) + a*d]) - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]) + B*(b*c - a*d)*n*(24*A*b*d*(b*c - a*d)^3*x + 24*B*d*(b*c - a*d)^3*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n] - 12*d^2*(b*c - a*d)^2*(a + b*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 8*d^3*(b*c - a*d)*(a + b*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 6*d^4*(a + b*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 24*B*(b*c - a*d)^4*n*Log[c + d*x] - 24*(b*c - a*d)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] + 4*B*(b*c - a*d)^2*n*(2*b*d*(b*c - a*d)*x - d^2*(a + b*x)^2 - 2*(b*c - a*d)^2*Log[c + d*x]) + B*(b*c - a*d)*n*(6*b*d*(b*c - a*d)^2*x + 3*d^2*(-b*c) + a*d)*(a + b*x)^2 + 2*d^3*(a + b*x)^3 - 6*(b*c - a*d)^3*Log[c + d*x]) + 12*B*(b*c - a*d)^3*n*(b*d*x + (-b*c) + a*d)*Log[c + d*x] + 12*B*(b*c - a*d)^4*n*((2*Log[(d*(a + b*x))/(-b*c) + a*d]) - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(60*b^3*d^3)

fricas [F] time = 1.06, size = 0, normalized size = 0.00

$$\text{integral} \left(A^2 b^2 d^2 g^2 i^2 x^4 + A^2 a^2 c^2 g^2 i^2 + 2 \left(A^2 b^2 c d + A^2 a b d^2 \right) g^2 i^2 x^3 + \left(A^2 b^2 c^2 + 4 A^2 a b c d + A^2 a^2 d^2 \right) g^2 i^2 x^2 + 2 \left(A^2 b^2 c d + A^2 a b d^2 \right) g^2 i^2 x + A^2 a^2 c^2 g^2 i^2 \right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x,
algorithm="fricas")
```

```
[Out] integral(A^2*b^2*d^2*g^2*i^2*x^4 + A^2*a^2*c^2*g^2*i^2 + 2*(A^2*b^2*c*d + A
^2*a*b*d^2)*g^2*i^2*x^3 + (A^2*b^2*c^2 + 4*A^2*a*b*c*d + A^2*a^2*d^2)*g^2*i
^2*x^2 + 2*(A^2*a*b*c^2 + A^2*a^2*c*d)*g^2*i^2*x + (B^2*b^2*d^2*g^2*i^2*x^4
+ B^2*a^2*c^2*g^2*i^2 + 2*(B^2*b^2*c*d + B^2*a*b*d^2)*g^2*i^2*x^3 + (B^2*b
^2*c^2 + 4*B^2*a*b*c*d + B^2*a^2*d^2)*g^2*i^2*x^2 + 2*(B^2*a*b*c^2 + B^2*a
^2*c*d)*g^2*i^2*x)*log(e*((b*x + a)/(d*x + c))^n)^2 + 2*(A*B*b^2*d^2*g^2*i^2
*x^4 + A*B*a^2*c^2*g^2*i^2 + 2*(A*B*b^2*c*d + A*B*a*b*d^2)*g^2*i^2*x^3 + (A
*B*b^2*c^2 + 4*A*B*a*b*c*d + A*B*a^2*d^2)*g^2*i^2*x^2 + 2*(A*B*a*b*c^2 + A*
B*a^2*c*d)*g^2*i^2*x)*log(e*((b*x + a)/(d*x + c))^n), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x,
algorithm="giac")
```

[Out] Timed out

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int (bgx + ag)^2 (dix + ci)^2 \left(B \ln \left(e \left(\frac{bx + a}{dx + c} \right)^n \right) + A \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^2*(d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)
```

```
[Out] int((b*g*x+a*g)^2*(d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)
```

maxima [B] time = 7.58, size = 4247, normalized size = 5.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x,
algorithm="maxima")
```

```
[Out] 2/5*A*B*b^2*d^2*g^2*i^2*x^5*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/5*A^
2*b^2*d^2*g^2*i^2*x^5 + A*B*b^2*c*d*g^2*i^2*x^4*log(e*(b*x/(d*x + c) + a/(d
```

$$\begin{aligned}
& *x + c))^n) + A*B*a*b*d^2*g^2*i^2*x^4*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) \\
&) + 1/2*A^2*b^2*c*d*g^2*i^2*x^4 + 1/2*A^2*a*b*d^2*g^2*i^2*x^4 + 2/3*A*B*b^2 \\
& *c^2*g^2*i^2*x^3*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 8/3*A*B*a*b*c*d*g \\
& ^2*i^2*x^3*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 2/3*A*B*a^2*d^2*g^2*i^2 \\
& *x^3*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/3*A^2*b^2*c^2*g^2*i^2*x^3 + \\
& 4/3*A^2*a*b*c*d*g^2*i^2*x^3 + 1/3*A^2*a^2*d^2*g^2*i^2*x^3 + 2*A*B*a*b*c^2* \\
& g^2*i^2*x^2*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 2*A*B*a^2*c*d*g^2*i^2* \\
& x^2*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A^2*a*b*c^2*g^2*i^2*x^2 + A^2* \\
& a^2*c*d*g^2*i^2*x^2 + 1/30*A*B*b^2*d^2*g^2*i^2*n*(12*a^5*\log(b*x + a)/b^5 - \\
& 12*c^5*\log(d*x + c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4*c^2*d^2 \\
& - a^2*b^2*d^4)*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 - a^4*d^4) \\
& *x)/(b^4*d^4)) - 1/6*A*B*b^2*c*d*g^2*i^2*n*(6*a^4*\log(b*x + a)/b^4 - 6*c^4* \\
& \log(d*x + c)/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3) \\
& *x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3)) - 1/6*A*B*a*b*d^2*g^2*i^2*n*(6 \\
& *a^4*\log(b*x + a)/b^4 - 6*c^4*\log(d*x + c)/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3) \\
& *x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3)) \\
& + 1/3*A*B*b^2*c^2*g^2*i^2*n*(2*a^3*\log(b*x + a)/b^3 - 2*c^3*\log(d*x + c)/d^ \\
& 3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) + 4/3*A* \\
& B*a*b*c*d*g^2*i^2*n*(2*a^3*\log(b*x + a)/b^3 - 2*c^3*\log(d*x + c)/d^3 - ((b^ \\
& 2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) + 1/3*A*B*a^2*d^ \\
& 2*g^2*i^2*n*(2*a^3*\log(b*x + a)/b^3 - 2*c^3*\log(d*x + c)/d^3 - ((b^2*c*d - \\
& a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) - 2*A*B*a*b*c^2*g^2*i^2* \\
& n*(a^2*\log(b*x + a)/b^2 - c^2*\log(d*x + c)/d^2 + (b*c - a*d)*x/(b*d)) - 2*A \\
& *B*a^2*c*d*g^2*i^2*n*(a^2*\log(b*x + a)/b^2 - c^2*\log(d*x + c)/d^2 + (b*c - \\
& a*d)*x/(b*d)) + 2*A*B*a^2*c^2*g^2*i^2*n*(a*\log(b*x + a)/b - c*\log(d*x + c)/ \\
& d) + 2*A*B*a^2*c^2*g^2*i^2*x*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A^2*a \\
& ^2*c^2*g^2*i^2*x - 1/30*(9*a^3*b*c^2*d^3*g^2*i^2*n^2 - 2*a^4*c*d^4*g^2*i^2* \\
& n^2 + 2*b^4*c^5*g^2*i^2*n*\log(e) + 2*(g^2*i^2*n^2 - 5*g^2*i^2*n*\log(e))*a*b \\
& ^3*c^4*d - (9*g^2*i^2*n^2 - 20*g^2*i^2*n*\log(e))*a^2*b^2*c^3*d^2)*B^2*\log(d \\
& *x + c)/(b^2*d^3) - 1/15*(b^5*c^5*g^2*i^2*n^2 - 5*a*b^4*c^4*d*g^2*i^2*n^2 + \\
& 10*a^2*b^3*c^3*d^2*g^2*i^2*n^2 - 10*a^3*b^2*c^2*d^3*g^2*i^2*n^2 + 5*a^4*b* \\
& c*d^4*g^2*i^2*n^2 - a^5*d^5*g^2*i^2*n^2)*(log(b*x + a)*log((b*d*x + a*d)/(b \\
& *c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d)))*B^2/(b^3*d^3) + 1/60*(1 \\
& 2*B^2*b^5*d^5*g^2*i^2*x^5*\log(e)^2 - 6*((g^2*i^2*n*\log(e) - 5*g^2*i^2*\log(e) \\
&)^2)*b^5*c*d^4 - (g^2*i^2*n*\log(e) + 5*g^2*i^2*\log(e)^2)*a*b^4*d^5)*B^2*x^4 \\
& + 2*((g^2*i^2*n^2 - 6*g^2*i^2*n*\log(e) + 10*g^2*i^2*\log(e)^2)*b^5*c^2*d^3 \\
& - 2*(g^2*i^2*n^2 - 20*g^2*i^2*\log(e)^2)*a*b^4*c*d^4 + (g^2*i^2*n^2 + 6*g^2*i \\
& ^2*n*\log(e) + 10*g^2*i^2*\log(e)^2)*a^2*b^3*d^5)*B^2*x^3 + ((3*g^2*i^2*n^2 \\
& - 2*g^2*i^2*n*\log(e))*b^5*c^3*d^2 - 3*(g^2*i^2*n^2 + 10*g^2*i^2*n*\log(e) - \\
& 20*g^2*i^2*\log(e)^2)*a*b^4*c^2*d^3 - 3*(g^2*i^2*n^2 - 10*g^2*i^2*n*\log(e) - \\
& 20*g^2*i^2*\log(e)^2)*a^2*b^3*c*d^4 + (3*g^2*i^2*n^2 + 2*g^2*i^2*n*\log(e))* \\
& a^3*b^2*d^5)*B^2*x^2 - 2*(10*a^3*b^2*c^2*d^3*g^2*i^2*n^2 - 5*a^4*b*c*d^4*g^ \\
& 2*i^2*n^2 + a^5*d^5*g^2*i^2*n^2)*B^2*\log(b*x + a)^2 + 4*(b^5*c^5*g^2*i^2*n^ \\
& 2 - 5*a*b^4*c^4*d*g^2*i^2*n^2 + 10*a^2*b^3*c^3*d^2*g^2*i^2*n^2)*B^2*\log(b*x \\
& + a)*\log(d*x + c) - 2*(b^5*c^5*g^2*i^2*n^2 - 5*a*b^4*c^4*d*g^2*i^2*n^2 + 1
\end{aligned}$$

```

0*a^2*b^3*c^3*d^2*g^2*i^2*n^2)*B^2*log(d*x + c)^2 - 2*(2*(g^2*i^2*n^2 - g^2
*i^2*n*log(e))*b^5*c^4*d - (11*g^2*i^2*n^2 - 10*g^2*i^2*n*log(e))*a*b^4*c^3
*d^2 + 6*(3*g^2*i^2*n^2 - 5*g^2*i^2*log(e)^2)*a^2*b^3*c^2*d^3 - (11*g^2*i^2
*n^2 + 10*g^2*i^2*n*log(e))*a^3*b^2*c*d^4 + 2*(g^2*i^2*n^2 + g^2*i^2*n*log(
e))*a^4*b*d^5)*B^2*x + 2*(2*a*b^4*c^4*d*g^2*i^2*n^2 - 9*a^2*b^3*c^3*d^2*g^2
*i^2*n^2 + 2*a^5*d^5*g^2*i^2*n*log(e) + (9*g^2*i^2*n^2 + 20*g^2*i^2*n*log(e
))*a^3*b^2*c^2*d^3 - 2*(g^2*i^2*n^2 + 5*g^2*i^2*n*log(e))*a^4*b*c*d^4)*B^2*
log(b*x + a) + 2*(6*B^2*b^5*d^5*g^2*i^2*x^5 + 30*B^2*a^2*b^3*c^2*d^3*g^2*i^
2*x + 15*(b^5*c*d^4*g^2*i^2 + a*b^4*d^5*g^2*i^2)*B^2*x^4 + 10*(b^5*c^2*d^3*
g^2*i^2 + 4*a*b^4*c*d^4*g^2*i^2 + a^2*b^3*d^5*g^2*i^2)*B^2*x^3 + 30*(a*b^4*
c^2*d^3*g^2*i^2 + a^2*b^3*c*d^4*g^2*i^2)*B^2*x^2)*log((b*x + a)^n)^2 + 2*(6
*B^2*b^5*d^5*g^2*i^2*x^5 + 30*B^2*a^2*b^3*c^2*d^3*g^2*i^2*x + 15*(b^5*c*d^4
*g^2*i^2 + a*b^4*d^5*g^2*i^2)*B^2*x^4 + 10*(b^5*c^2*d^3*g^2*i^2 + 4*a*b^4*c
*d^4*g^2*i^2 + a^2*b^3*d^5*g^2*i^2)*B^2*x^3 + 30*(a*b^4*c^2*d^3*g^2*i^2 + a
^2*b^3*c*d^4*g^2*i^2)*B^2*x^2)*log((d*x + c)^n)^2 + 2*(12*B^2*b^5*d^5*g^2*i
^2*x^5*log(e) - 3*((g^2*i^2*n - 10*g^2*i^2*log(e))*b^5*c*d^4 - (g^2*i^2*n +
10*g^2*i^2*log(e))*a*b^4*d^5)*B^2*x^4 + 2*(40*a*b^4*c*d^4*g^2*i^2*log(e) -
(3*g^2*i^2*n - 10*g^2*i^2*log(e))*b^5*c^2*d^3 + (3*g^2*i^2*n + 10*g^2*i^2*
log(e))*a^2*b^3*d^5)*B^2*x^3 - (b^5*c^3*d^2*g^2*i^2*n - a^3*b^2*d^5*g^2*i^2
*n + 15*(g^2*i^2*n - 4*g^2*i^2*log(e))*a*b^4*c^2*d^3 - 15*(g^2*i^2*n + 4*g^
2*i^2*log(e))*a^2*b^3*c*d^4)*B^2*x^2 + 2*(b^5*c^4*d*g^2*i^2*n - 5*a*b^4*c^3
*d^2*g^2*i^2*n + 5*a^3*b^2*c*d^4*g^2*i^2*n - a^4*b*d^5*g^2*i^2*n + 30*a^2*b
^3*c^2*d^3*g^2*i^2*log(e))*B^2*x + 2*(10*a^3*b^2*c^2*d^3*g^2*i^2*n - 5*a^4*
b*c*d^4*g^2*i^2*n + a^5*d^5*g^2*i^2*n)*B^2*log(b*x + a) - 2*(b^5*c^5*g^2*i^
2*n - 5*a*b^4*c^4*d*g^2*i^2*n + 10*a^2*b^3*c^3*d^2*g^2*i^2*n)*B^2*log(d*x +
c))*log((b*x + a)^n) - 2*(12*B^2*b^5*d^5*g^2*i^2*x^5*log(e) - 3*((g^2*i^2*
n - 10*g^2*i^2*log(e))*b^5*c*d^4 - (g^2*i^2*n + 10*g^2*i^2*log(e))*a*b^4*d^
5)*B^2*x^4 + 2*(40*a*b^4*c*d^4*g^2*i^2*log(e) - (3*g^2*i^2*n - 10*g^2*i^2*
log(e))*b^5*c^2*d^3 + (3*g^2*i^2*n + 10*g^2*i^2*log(e))*a^2*b^3*d^5)*B^2*x^3
- (b^5*c^3*d^2*g^2*i^2*n - a^3*b^2*d^5*g^2*i^2*n + 15*(g^2*i^2*n - 4*g^2*i
^2*log(e))*a*b^4*c^2*d^3 - 15*(g^2*i^2*n + 4*g^2*i^2*log(e))*a^2*b^3*c*d^4)
*B^2*x^2 + 2*(b^5*c^4*d*g^2*i^2*n - 5*a*b^4*c^3*d^2*g^2*i^2*n + 5*a^3*b^2*c
*d^4*g^2*i^2*n - a^4*b*d^5*g^2*i^2*n + 30*a^2*b^3*c^2*d^3*g^2*i^2*log(e))*B
^2*x + 2*(10*a^3*b^2*c^2*d^3*g^2*i^2*n - 5*a^4*b*c*d^4*g^2*i^2*n + a^5*d^5*
g^2*i^2*n)*B^2*log(b*x + a) - 2*(b^5*c^5*g^2*i^2*n - 5*a*b^4*c^4*d*g^2*i^2
n + 10*a^2*b^3*c^3*d^2*g^2*i^2*n)*B^2*log(d*x + c) + 2*(6*B^2*b^5*d^5*g^2*i
^2*x^5 + 30*B^2*a^2*b^3*c^2*d^3*g^2*i^2*x + 15*(b^5*c*d^4*g^2*i^2 + a*b^4*d
^5*g^2*i^2)*B^2*x^4 + 10*(b^5*c^2*d^3*g^2*i^2 + 4*a*b^4*c*d^4*g^2*i^2 + a^2
*b^3*d^5*g^2*i^2)*B^2*x^3 + 30*(a*b^4*c^2*d^3*g^2*i^2 + a^2*b^3*c*d^4*g^2*i
^2)*B^2*x^2)*log((b*x + a)^n))*log((d*x + c)^n))/(b^3*d^3)

```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (ag + bgx)^2 (ci + dix)^2 \left(A + B \ln \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)^2*(c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2, x)
```

```
[Out] int((a*g + b*g*x)^2*(c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**2*(d*i*x+c*i)**2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))**2, x)
```

```
[Out] Timed out
```

$$3.170 \quad \int (ag+bgx)(ci+dix)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx$$

Optimal. Leaf size=635

$$\frac{Bgi^2n(bc-ad)^4 \log\left(\frac{bc-ad}{b(c+dx)}\right) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A + Bn \right)}{6b^3d^2} - \frac{Bgi^2n(a+bx)(bc-ad)^3 \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right)}{6b^3d} + \dots$$

[Out] $1/12*B^2*(-a*d+b*c)^3*g*i^2*n^2*x/b^2/d+1/12*B^2*(-a*d+b*c)^2*g*i^2*n^2*(d*x+c)^2/b/d^2-1/6*B*(-a*d+b*c)^3*g*i^2*n*(b*x+a)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^3/d-1/6*B*(-a*d+b*c)^2*g*i^2*n*(b*x+a)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^3+1/4*B*(-a*d+b*c)^2*g*i^2*n*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b/d^2-1/6*B*(-a*d+b*c)*g*i^2*n*(d*x+c)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/d^2+1/12*(-a*d+b*c)^2*g*i^2*(b*x+a)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/b^3+1/6*(-a*d+b*c)*g*i^2*(b*x+a)^2*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/b^2+1/4*g*i^2*(b*x+a)^2*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/b-1/6*B*(-a*d+b*c)^4*g*i^2*n*(A+B*n+B*\ln(e*((b*x+a)/(d*x+c))^n))*\ln((-a*d+b*c)/b/(d*x+c))/b^3/d^2-1/12*B^2*(-a*d+b*c)^4*g*i^2*n^2*\ln((b*x+a)/(d*x+c))/b^3/d^2-1/4*B^2*(-a*d+b*c)^4*g*i^2*n^2*\ln(d*x+c)/b^3/d^2-1/6*B^2*(-a*d+b*c)^4*g*i^2*n^2*polylog(2,d*(b*x+a)/b/(d*x+c))/b^3/d^2$

Rubi [A] time = 1.66, antiderivative size = 614, normalized size of antiderivative = 0.97, number of steps used = 44, number of rules used = 13, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.302$, Rules used = {2528, 2525, 12, 2486, 31, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 43}

$$\frac{B^2gi^2n^2(bc-ad)^4 \text{PolyLog}\left(2, -\frac{d(a+bx)}{bc-ad}\right)}{6b^3d^2} + \frac{Bgi^2n(bc-ad)^4 \log(a+bx) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right)}{6b^3d^2} + \frac{ABgi^2nx(bc-ad)}{6b^2d}$$

Antiderivative was successfully verified.

[In] Int[(a*g + b*g*x)*(c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2, x]

[Out] $(A*B*(b*c - a*d)^3*g*i^2*n*x)/(6*b^2*d) + (B^2*(b*c - a*d)^3*g*i^2*n^2*x)/(12*b^2*d) + (B^2*(b*c - a*d)^2*g*i^2*n^2*(c + d*x)^2)/(12*b*d^2) + (B^2*(b*c - a*d)^4*g*i^2*n^2*\text{Log}[a + b*x])/(12*b^3*d^2) - (B^2*(b*c - a*d)^4*g*i^2*n^2*\text{Log}[a + b*x]^2)/(12*b^3*d^2) + (B^2*(b*c - a*d)^3*g*i^2*n*(a + b*x)*\text{Log}[e*((a + b*x)/(c + d*x))^n])/(6*b^3*d) + (B*(b*c - a*d)^2*g*i^2*n*(c + d*x)^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(12*b*d^2) - (B*(b*c - a*d)*g*i^2*n*(c + d*x)^3*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(6*d^2) + (B*(b*c - a*d)^4*g*i^2*n*\text{Log}[a + b*x]*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(6*b^3$

$$*d^2) - ((b*c - a*d)*g*i^2*(c + d*x)^3*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2)/(3*d^2) + (b*g*i^2*(c + d*x)^4*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2)/(4*d^2) - (B^2*(b*c - a*d)^4*g*i^2*n^2*\text{Log}[c + d*x])/(6*b^3*d^2) + (B^2*(b*c - a*d)^4*g*i^2*n^2*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)])/(6*b^3*d^2) + (B^2*(b*c - a*d)^4*g*i^2*n^2*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))])/(6*b^3*d^2)$$

Rule 12

$\text{Int}[(a_*)*(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \ \&\& \ !\text{MatchQ}[u, (b_)*(v_)] /; \text{FreeQ}[b, x]$

Rule 31

$\text{Int}[(a_ + (b_)*(x_))^{-1}, x_Symbol] \rightarrow \text{Simp}[\text{Log}[\text{RemoveContent}[a + b*x, x]]/b, x] /; \text{FreeQ}[\{a, b\}, x]$

Rule 43

$\text{Int}[(a_ + (b_)*(x_))^{(m_)}*((c_ + (d_)*(x_))^{(n_)}), x_Symbol] \rightarrow \text{Int}[\text{ExpandIntegrand}[(a + b*x)^m*(c + d*x)^n, x], x] /; \text{FreeQ}[\{a, b, c, d, n\}, x] \ \&\& \ \text{NeQ}[b*c - a*d, 0] \ \&\& \ \text{IGtQ}[m, 0] \ \&\& \ (\ !\text{IntegerQ}[n] \ || \ (\text{EqQ}[c, 0] \ \&\& \ \text{LeQ}[7*m + 4*n + 4, 0]) \ || \ \text{LtQ}[9*m + 5*(n + 1), 0] \ || \ \text{GtQ}[m + n + 2, 0])$

Rule 2301

$\text{Int}[(a_ + \text{Log}[(c_)*(x_)^{(n_)}]*(b_)]/(x_), x_Symbol] \rightarrow \text{Simp}[(a + b*\text{Log}[c*x^n])^2/(2*b*n), x] /; \text{FreeQ}[\{a, b, c, n\}, x]$

Rule 2390

$\text{Int}[(a_ + \text{Log}[(c_)*((d_ + (e_)*(x_))^{(n_)}]*(b_))^{(p_)}*((f_ + (g_)*(x_))^{(q_)}), x_Symbol] \rightarrow \text{Dist}[1/e, \text{Subst}[\text{Int}[(f*x)/d]^q*(a + b*\text{Log}[c*x^n])^p, x], x, d + e*x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g, n, p, q\}, x] \ \&\& \ \text{EqQ}[e*f - d*g, 0]$

Rule 2391

$\text{Int}[\text{Log}[(c_)*((d_ + (e_)*(x_))^{(n_)})]/(x_), x_Symbol] \rightarrow -\text{Simp}[\text{PolyLog}[2, -(c*e*x^n)]/n, x] /; \text{FreeQ}[\{c, d, e, n\}, x] \ \&\& \ \text{EqQ}[c*d, 1]$

Rule 2393

$\text{Int}[(a_ + \text{Log}[(c_)*((d_ + (e_)*(x_)))]*(b_)]/((f_ + (g_)*(x_))), x_Symbol] \rightarrow \text{Dist}[1/g, \text{Subst}[\text{Int}[(a + b*\text{Log}[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g\}, x] \ \&\& \ \text{NeQ}[e*f - d*g, 0] \ \&\& \ \text{EqQ}[g + c*$

$(e*f - d*g), 0]$

Rule 2394

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_.) + (e_.)*(x_.))^{(n_.)}]*(b_.)]/((f_.) + (g_.)*(x_.)), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[(e*(f + g*x))/(e*f - d*g)]*(a + b*\text{Log}[c*(d + e*x)^n])/g, x] - \text{Dist}[(b*e*n)/g, \text{Int}[\text{Log}[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; \text{FreeQ}\{a, b, c, d, e, f, g, n\}, x] \&\& \text{NeQ}[e*f - d*g, 0]$

Rule 2418

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_.) + (e_.)*(x_.))^{(n_.)}]*(b_.))^{(p_.)}*(\text{RFx}_.), x_Symbol] \rightarrow \text{With}\{u = \text{ExpandIntegrand}[(a + b*\text{Log}[c*(d + e*x)^n])^p, \text{RFx}, x]\}, \text{Int}[u, x] /; \text{SumQ}[u] /; \text{FreeQ}\{a, b, c, d, e, n\}, x] \&\& \text{RationalFunctionQ}[\text{RFx}, x] \&\& \text{IntegerQ}[p]$

Rule 2486

$\text{Int}[\text{Log}[(e_.)*((f_.)*((a_.) + (b_.)*(x_.))^{(p_.)}*((c_.) + (d_.)*(x_.))^{(q_.)})^{(r_.)}]^{(s_.)}, x_Symbol] \rightarrow \text{Simp}[(a + b*x)*\text{Log}[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s/b, x] + \text{Dist}[(q*r*s*(b*c - a*d))/b, \text{Int}[\text{Log}[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^{(s - 1)}/(c + d*x), x], x] /; \text{FreeQ}\{a, b, c, d, e, f, p, q, r, s\}, x] \&\& \text{NeQ}[b*c - a*d, 0] \&\& \text{EqQ}[p + q, 0] \&\& \text{IGtQ}[s, 0]$

Rule 2524

$\text{Int}[(a_.) + \text{Log}[(c_.)*(\text{RFx}_.)^{(p_.)}]*(b_.))^{(n_.)}/((d_.) + (e_.)*(x_.)), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[d + e*x]*(a + b*\text{Log}[c*\text{RFx}^p])^n)/e, x] - \text{Dist}[(b*n*p)/e, \text{Int}[(\text{Log}[d + e*x]*(a + b*\text{Log}[c*\text{RFx}^p])^{(n - 1)}*D[\text{RFx}, x])/(\text{RFx}, x)], x] /; \text{FreeQ}\{a, b, c, d, e, p\}, x] \&\& \text{RationalFunctionQ}[\text{RFx}, x] \&\& \text{IGtQ}[n, 0]$

Rule 2525

$\text{Int}[(a_.) + \text{Log}[(c_.)*(\text{RFx}_.)^{(p_.)}]*(b_.))^{(n_.)}*((d_.) + (e_.)*(x_.))^{(m_.)}, x_Symbol] \rightarrow \text{Simp}[(d + e*x)^{(m + 1)}*(a + b*\text{Log}[c*\text{RFx}^p])^n/(e*(m + 1)), x] - \text{Dist}[(b*n*p)/(e*(m + 1)), \text{Int}[\text{SimplifyIntegrand}[(d + e*x)^{(m + 1)}*(a + b*\text{Log}[c*\text{RFx}^p])^{(n - 1)}*D[\text{RFx}, x])/(\text{RFx}, x)], x], x] /; \text{FreeQ}\{a, b, c, d, e, m, p\}, x] \&\& \text{RationalFunctionQ}[\text{RFx}, x] \&\& \text{IGtQ}[n, 0] \&\& (\text{EqQ}[n, 1] \parallel \text{IntegerQ}[m]) \&\& \text{NeQ}[m, -1]$

Rule 2528

$\text{Int}[(a_.) + \text{Log}[(c_.)*(\text{RFx}_.)^{(p_.)}]*(b_.))^{(n_.)}*(\text{RGx}_.), x_Symbol] \rightarrow \text{With}\{u = \text{ExpandIntegrand}[(a + b*\text{Log}[c*\text{RFx}^p])^n, \text{RGx}, x]\}, \text{Int}[u, x] /; \text{SumQ}[u] /; \text{FreeQ}\{a, b, c, p\}, x] \&\& \text{RationalFunctionQ}[\text{RFx}, x] \&\& \text{RationalFunctionQ}[\text{RGx}, x]$

onQ[RGx, x] && IGtQ[n, 0]

Rubi steps

$$\begin{aligned}
\int (170c + 170dx)^2(ag + bgx) \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2 dx &= \int \left(\frac{(-bc + ad)g(170c + 170dx)^2 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2}{d} \right. \\
&= \frac{(bg) \int (170c + 170dx)^3 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2 dx}{170d} \\
&= -\frac{28900(bc - ad)g(c + dx)^3 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2}{3d^2} \\
&= -\frac{28900(bc - ad)g(c + dx)^3 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2}{3d^2} \\
&= -\frac{28900(bc - ad)g(c + dx)^3 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2}{3d^2} \\
&= -\frac{28900(bc - ad)g(c + dx)^3 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2}{3d^2} \\
&= -\frac{28900(bc - ad)g(c + dx)^3 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2}{3d^2} \\
&= \frac{14450AB(bc - ad)^3 gnx}{3b^2d} + \frac{7225B(bc - ad)^2 gn(c + dx)}{3b^2d} \\
&= \frac{14450AB(bc - ad)^3 gnx}{3b^2d} + \frac{14450B^2(bc - ad)^3 gn(a + bx)}{3b^2d} \\
&= \frac{14450AB(bc - ad)^3 gnx}{3b^2d} + \frac{14450B^2(bc - ad)^3 gn(a + bx)}{3b^2d} \\
&= \frac{14450AB(bc - ad)^3 gnx}{3b^2d} + \frac{7225B^2(bc - ad)^3 gn^2x}{3b^2d} \\
&= \frac{14450AB(bc - ad)^3 gnx}{3b^2d} + \frac{7225B^2(bc - ad)^3 gn^2x}{3b^2d} \\
&= \frac{14450AB(bc - ad)^3 gnx}{3b^2d} + \frac{7225B^2(bc - ad)^3 gn^2x}{3b^2d}
\end{aligned}$$

Mathematica [A] time = 0.64, size = 713, normalized size = 1.12

$$gi^2 \left(\frac{4Bn(bc-ad)^2 \left(b^2(c+dx)^2 \left(B \log \left(e^{\left(\frac{a+bx}{c+dx} \right)^n} \right) + A \right) + 2(bc-ad)^2 \log(a+bx) \left(B \log \left(e^{\left(\frac{a+bx}{c+dx} \right)^n} \right) + A \right) + 2Abdx(bc-ad) + 2Bd(a+bx)(bc-ad) \log \left(e^{\left(\frac{a+bx}{c+dx} \right)^n} \right) \right)}{b^3} \right)$$

Antiderivative was successfully verified.

[In] Integrate[(a*g + b*g*x)*(c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2,x]

[Out] (g*i^2*(-4*(b*c - a*d)*(c + d*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 + 3*b*(c + d*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 + (4*B*(b*c - a*d)^2*n*(2*A*b*d*(b*c - a*d)*x - B*(b*c - a*d)*n*(b*d*x + (b*c - a*d)*Log[a + b*x]) + 2*B*d*(b*c - a*d)*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n] + b^2*(c + d*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 2*(b*c - a*d)^2*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 2*B*(b*c - a*d)^2*n*Log[c + d*x] - B*(b*c - a*d)^2*n*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)])))/b^3 - (B*(b*c - a*d)*n*(6*A*b*d*(b*c - a*d)^2*x - 3*B*(b*c - a*d)^2*n*(b*d*x + (b*c - a*d)*Log[a + b*x]) - B*(b*c - a*d)*n*(2*b*d*(b*c - a*d)*x + b^2*(c + d*x)^2 + 2*(b*c - a*d)^2*Log[a + b*x]) + 6*B*d*(b*c - a*d)^2*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n] + 3*b^2*(b*c - a*d)*(c + d*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 2*b^3*(c + d*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 6*(b*c - a*d)^3*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 6*B*(b*c - a*d)^3*n*Log[c + d*x] - 3*B*(b*c - a*d)^3*n*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)])))/b^3)/(12*d^2)

fricas [F] time = 0.95, size = 0, normalized size = 0.00

$$\text{integral} \left(A^2bd^2gi^2x^3 + A^2ac^2gi^2 + (2A^2bcd + A^2ad^2)gi^2x^2 + (A^2bc^2 + 2A^2acd)gi^2x + (B^2bd^2gi^2x^3 + B^2ac^2gi^2) \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, algorithm="fricas")

[Out] integral(A^2*b*d^2*g*i^2*x^3 + A^2*a*c^2*g*i^2 + (2*A^2*b*c*d + A^2*a*d^2)*g*i^2*x^2 + (A^2*b*c^2 + 2*A^2*a*c*d)*g*i^2*x + (B^2*b*d^2*g*i^2*x^3 + B^2*a*c^2*g*i^2 + (2*B^2*b*c*d + B^2*a*d^2)*g*i^2*x^2 + (B^2*b*c^2 + 2*B^2*a*c*d)*g*i^2*x)*log(e*((b*x + a)/(d*x + c))^n)^2 + 2*(A*B*b*d^2*g*i^2*x^3 + A*B*a*c^2*g*i^2 + (2*A*B*b*c*d + A*B*a*d^2)*g*i^2*x^2 + (A*B*b*c^2 + 2*A*B*a*c*d)*g*i^2*x)*log(e*((b*x + a)/(d*x + c))^n), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, algorithm="giac")

[Out] Timed out

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int (bgx + ag)(dix + ci)^2 \left(B \ln \left(e \left(\frac{bx + a}{dx + c} \right)^n \right) + A \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)*(d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)

[Out] int((b*g*x+a*g)*(d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)

maxima [B] time = 7.61, size = 2662, normalized size = 4.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, algorithm="maxima")

[Out] $\frac{1}{2}A^2B^2bd^2g^2i^2x^4 \log(e(bx/(dx+c) + a/(dx+c))^n) + \frac{1}{4}A^2b^2d^2g^2i^2x^4 + \frac{4}{3}A^2B^2bc^2d^2g^2i^2x^3 \log(e(bx/(dx+c) + a/(dx+c))^n) + \frac{2}{3}A^2B^2a^2d^2g^2i^2x^3 \log(e(bx/(dx+c) + a/(dx+c))^n) + \frac{2}{3}A^2b^2c^2d^2g^2i^2x^3 + \frac{1}{3}A^2a^2d^2g^2i^2x^3 + A^2B^2bc^2g^2i^2x^2 \log(e(bx/(dx+c) + a/(dx+c))^n) + 2A^2B^2ac^2d^2g^2i^2x^2 \log(e(bx/(dx+c) + a/(dx+c))^n) + \frac{1}{2}A^2b^2c^2g^2i^2x^2 + A^2a^2c^2d^2g^2i^2x^2 - \frac{1}{12}A^2B^2bd^2g^2i^2n(6a^4 \log(bx+a)/b^4 - 6c^4 \log(dx+c)/d^4 + (2(b^3c^2d^2 - ab^2d^3)x^3 - 3(b^3c^2d - a^2bd^3)x^2 + 6(b^3c^3 - a^3d^3)x)/(b^3d^3)) + \frac{2}{3}A^2B^2bc^2d^2g^2i^2n(2a^3 \log(bx+a)/b^3 - 2c^3 \log(dx+c)/d^3 - ((b^2cd - abd^2)x^2 - 2(b^2c^2 - a^2d^2)x)/(b^2d^2)) + \frac{1}{3}A^2B^2a^2d^2g^2i^2n(2a^3 \log(bx+a)/b^3 - 2c^3 \log(dx+c)/d^3 - ((b^2cd - abd^2)x^2 - 2(b^2c^2 - a^2d^2)x)/(b^2d^2)) - A^2B^2bc^2g^2i^2n(a^2 \log(bx+a)/b^2 - c^2 \log(dx+c)/d^2 + (bc - ad)x/(bd)) - 2A^2B^2ac^2d^2g^2i^2n(a^2 \log(bx+a)/b^2 - c^2 \log(dx+c)/d^2 + (bc - ad)x/(bd)) + 2A^2B^2ac^2g^2i^2n(a \log(bx+a)/b - c \log(dx+c)/d)$

$$\begin{aligned}
& + c)/d) + 2*A*B*a*c^2*g*i^2*x*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A^2 \\
& *a*c^2*g*i^2*x - 1/12*(7*a^2*b*c^2*d^2*g*i^2*n^2 - 2*a^3*c*d^3*g*i^2*n^2 + \\
& (g*i^2*n^2 - 2*g*i^2*n*\log(e))*b^3*c^4 - 2*(3*g*i^2*n^2 - 4*g*i^2*n*\log(e)) \\
& *a*b^2*c^3*d)*B^2*\log(d*x + c)/(b^2*d^2) + 1/6*(b^4*c^4*g*i^2*n^2 - 4*a*b^3 \\
& *c^3*d*g*i^2*n^2 + 6*a^2*b^2*c^2*d^2*g*i^2*n^2 - 4*a^3*b*c*d^3*g*i^2*n^2 + \\
& a^4*d^4*g*i^2*n^2)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog \\
& (-(b*d*x + a*d)/(b*c - a*d)))*B^2/(b^3*d^2) + 1/12*(3*B^2*b^4*d^4*g*i^2*x^4 \\
& *log(e)^2 - 2*((g*i^2*n*log(e) - 4*g*i^2*log(e)^2)*b^4*c*d^3 - (g*i^2*n*log \\
& (e) + 2*g*i^2*log(e)^2)*a*b^3*d^4)*B^2*x^3 + ((g*i^2*n^2 - 5*g*i^2*n*log(e) \\
& + 6*g*i^2*log(e)^2)*b^4*c^2*d^2 - 2*(g*i^2*n^2 - 2*g*i^2*n*log(e) - 6*g*i^ \\
& 2*log(e)^2)*a*b^3*c*d^3 + (g*i^2*n^2 + g*i^2*n*log(e))*a^2*b^2*d^4)*B^2*x^2 \\
& - (6*a^2*b^2*c^2*d^2*g*i^2*n^2 - 4*a^3*b*c*d^3*g*i^2*n^2 + a^4*d^4*g*i^2*n \\
& ^2)*B^2*log(b*x + a)^2 - 2*(b^4*c^4*g*i^2*n^2 - 4*a*b^3*c^3*d*g*i^2*n^2)*B^ \\
& 2*log(b*x + a)*log(d*x + c) + (b^4*c^4*g*i^2*n^2 - 4*a*b^3*c^3*d*g*i^2*n^2) \\
& *B^2*log(d*x + c)^2 + ((3*g*i^2*n^2 - 2*g*i^2*n*log(e))*b^4*c^3*d - (7*g*i^ \\
& 2*n^2 + 4*g*i^2*n*log(e) - 12*g*i^2*log(e)^2)*a*b^3*c^2*d^2 + (5*g*i^2*n^2 \\
& + 8*g*i^2*n*log(e))*a^2*b^2*c*d^3 - (g*i^2*n^2 + 2*g*i^2*n*log(e))*a^3*b*d^ \\
& 4)*B^2*x - (2*a*b^3*c^3*d*g*i^2*n^2 - (g*i^2*n^2 + 12*g*i^2*n*log(e))*a^2*b \\
& ^2*c^2*d^2 - 2*(g*i^2*n^2 - 4*g*i^2*n*log(e))*a^3*b*c*d^3 + (g*i^2*n^2 - 2* \\
& g*i^2*n*log(e))*a^4*d^4)*B^2*log(b*x + a) + (3*B^2*b^4*d^4*g*i^2*x^4 + 12*B \\
& ^2*a*b^3*c^2*d^2*g*i^2*x + 4*(2*b^4*c*d^3*g*i^2 + a*b^3*d^4*g*i^2)*B^2*x^3 \\
& + 6*(b^4*c^2*d^2*g*i^2 + 2*a*b^3*c*d^3*g*i^2)*B^2*x^2)*log((b*x + a)^n)^2 + \\
& (3*B^2*b^4*d^4*g*i^2*x^4 + 12*B^2*a*b^3*c^2*d^2*g*i^2*x + 4*(2*b^4*c*d^3*g \\
& *i^2 + a*b^3*d^4*g*i^2)*B^2*x^3 + 6*(b^4*c^2*d^2*g*i^2 + 2*a*b^3*c*d^3*g*i^ \\
& 2)*B^2*x^2)*log((d*x + c)^n)^2 + (6*B^2*b^4*d^4*g*i^2*x^4*log(e) - 2*((g*i^ \\
& 2*n - 8*g*i^2*log(e))*b^4*c*d^3 - (g*i^2*n + 4*g*i^2*log(e))*a*b^3*d^4)*B^2 \\
& *x^3 + (a^2*b^2*d^4*g*i^2*n - (5*g*i^2*n - 12*g*i^2*log(e))*b^4*c^2*d^2 + 4 \\
& *(g*i^2*n + 6*g*i^2*log(e))*a*b^3*c*d^3)*B^2*x^2 - 2*(b^4*c^3*d*g*i^2*n - 4 \\
& *a^2*b^2*c*d^3*g*i^2*n + a^3*b*d^4*g*i^2*n + 2*(g*i^2*n - 6*g*i^2*log(e))*a \\
& *b^3*c^2*d^2)*B^2*x + 2*(6*a^2*b^2*c^2*d^2*g*i^2*n - 4*a^3*b*c*d^3*g*i^2*n \\
& + a^4*d^4*g*i^2*n)*B^2*log(b*x + a) + 2*(b^4*c^4*g*i^2*n - 4*a*b^3*c^3*d*g \\
& i^2*n)*B^2*log(d*x + c))*log((b*x + a)^n) - (6*B^2*b^4*d^4*g*i^2*x^4*log(e) \\
& - 2*((g*i^2*n - 8*g*i^2*log(e))*b^4*c*d^3 - (g*i^2*n + 4*g*i^2*log(e))*a*b \\
& ^3*d^4)*B^2*x^3 + (a^2*b^2*d^4*g*i^2*n - (5*g*i^2*n - 12*g*i^2*log(e))*b^4*c \\
& ^2*d^2 + 4*(g*i^2*n + 6*g*i^2*log(e))*a*b^3*c*d^3)*B^2*x^2 - 2*(b^4*c^3*d* \\
& g*i^2*n - 4*a^2*b^2*c*d^3*g*i^2*n + a^3*b*d^4*g*i^2*n + 2*(g*i^2*n - 6*g*i^ \\
& 2*log(e))*a*b^3*c^2*d^2)*B^2*x + 2*(6*a^2*b^2*c^2*d^2*g*i^2*n - 4*a^3*b*c*d \\
& ^3*g*i^2*n + a^4*d^4*g*i^2*n)*B^2*log(b*x + a) + 2*(b^4*c^4*g*i^2*n - 4*a*b \\
& ^3*c^3*d*g*i^2*n)*B^2*log(d*x + c) + 2*(3*B^2*b^4*d^4*g*i^2*x^4 + 12*B^2*a \\
& b^3*c^2*d^2*g*i^2*x + 4*(2*b^4*c*d^3*g*i^2 + a*b^3*d^4*g*i^2)*B^2*x^3 + 6*(\\
& b^4*c^2*d^2*g*i^2 + 2*a*b^3*c*d^3*g*i^2)*B^2*x^2)*log((b*x + a)^n))*log((d* \\
& x + c)^n))/(b^3*d^2)
\end{aligned}$$

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (ag + bgx) (ci + dix)^2 \left(A + B \ln \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a*g + b*g*x)*(c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2, x)

[Out] int((a*g + b*g*x)*(c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2, x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(d*i*x+c*i)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2,x)

[Out] Timed out

$$3.171 \quad \int (ci + dix)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx$$

Optimal. Leaf size=361

$$\frac{2Bi^2n(bc - ad)^3 \log \left(1 - \frac{b(c+dx)}{d(a+bx)} \right) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{3b^3d} - \frac{2Bi^2n(a + bx)(bc - ad)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{3b^3} - Bi$$

[Out] $1/3*B^2*(-a*d+b*c)^2*i^2*n^2*x/b^2-2/3*B*(-a*d+b*c)^2*i^2*n*(b*x+a)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^3-1/3*B*(-a*d+b*c)*i^2*n*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b/d+1/3*i^2*(d*x+c)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/d+1/3*B^2*(-a*d+b*c)^3*i^2*n^2*\ln((b*x+a)/(d*x+c))/b^3/d+B^2*(-a*d+b*c)^3*i^2*n^2*\ln(d*x+c)/b^3/d+2/3*B*(-a*d+b*c)^3*i^2*n*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))*\ln(1-b*(d*x+c)/d/(b*x+a))/b^3/d-2/3*B^2*(-a*d+b*c)^3*i^2*n^2*\text{polylog}(2, b*(d*x+c)/d/(b*x+a))/b^3/d$

Rubi [A] time = 0.54, antiderivative size = 454, normalized size of antiderivative = 1.26, number of steps used = 19, number of rules used = 13, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.371$, Rules used = {2525, 12, 2528, 2486, 31, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 43}

$$\frac{2B^2i^2n^2(bc - ad)^3 \text{PolyLog} \left(2, -\frac{d(a+bx)}{bc-ad} \right)}{3b^3d} - \frac{2Bi^2n(bc - ad)^3 \log(a + bx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{3b^3d} - \frac{2ABi^2nx(bc - ad)}{3b^2}$$

Antiderivative was successfully verified.

[In] $\text{Int}[(c*i + d*i*x)^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2, x]$

[Out] $(-2*A*B*(b*c - a*d)^2*i^2*n*x)/(3*b^2) + (B^2*(b*c - a*d)^2*i^2*n^2*x)/(3*b^2) + (B^2*(b*c - a*d)^3*i^2*n^2*\text{Log}[a + b*x])/(3*b^3*d) + (B^2*(b*c - a*d)^3*i^2*n^2*\text{Log}[a + b*x]^2)/(3*b^3*d) - (2*B^2*(b*c - a*d)^2*i^2*n*(a + b*x)*\text{Log}[e*((a + b*x)/(c + d*x))^n])/(3*b^3) - (B*(b*c - a*d)*i^2*n*(c + d*x)^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(3*b*d) - (2*B*(b*c - a*d)^3*i^2*n*\text{Log}[a + b*x]*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(3*b^3*d) + (i^2*(c + d*x)^3*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2)/(3*d) + (2*B^2*(b*c - a*d)^3*i^2*n^2*\text{Log}[c + d*x])/(3*b^3*d) - (2*B^2*(b*c - a*d)^3*i^2*n^2*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)])/(3*b^3*d) - (2*B^2*(b*c - a*d)^3*i^2*n^2*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))])/(3*b^3*d)$

Rule 12

$\text{Int}[(a_*)*(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \ \&\& \ !\text{Match}[u, (b_*)*(v_) /; \text{FreeQ}[b, x]]$

Rule 31

Int[((a_) + (b_)*(x_))⁽⁻¹⁾, x_Symbol] := Simp[Log[RemoveContent[a + b*x, x]]/b, x] /; FreeQ[{a, b}, x]

Rule 43

Int[((a_) + (b_)*(x_))^(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)ⁿ, x], x] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && (!IntegerQ[n] || (EqQ[c, 0] && LeQ[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])

Rule 2301

Int[((a_) + Log[(c_)*(x_)^(n_)]*(b_))/(x_), x_Symbol] := Simp[(a + b*Log[c*xⁿ])²/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2390

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)]*(b_))^(p_)*((f_) + (g_)*(x_))^(q_), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*xⁿ])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_)*((d_) + (e_)*(x_))^(n_)]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*xⁿ)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))]*(b_))/((f_) + (g_)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)]*(b_))/((f_) + (g_)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)ⁿ])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol]
:> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n]^p, RFx, x]},
Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q]^r]^s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunci
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

Mathematica [A] time = 0.27, size = 303, normalized size = 0.84

$$i^2 \left((c + dx)^3 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)^2 - \frac{Bn(bc-ad) \left(b^2(c+dx)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right) + 2(bc-ad)^2 \log(a+bx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right) + 2Aba}{b^3} \right)$$

Antiderivative was successfully verified.

[In] Integrate[(c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2,x]

[Out] (i^2*((c + d*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 - (B*(b*c - a*d)*n*(2*A*b*d*(b*c - a*d)*x - B*(b*c - a*d)*n*(b*d*x + (b*c - a*d)*Log[a + b*x]) + 2*B*d*(b*c - a*d)*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n] + b^2*(c + d*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 2*(b*c - a*d)^2*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 2*B*(b*c - a*d)^2*n*Log[c + d*x] - B*(b*c - a*d)^2*n*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-b*c + a*d)]))/b^3)/(3*d)

fricas [F] time = 1.02, size = 0, normalized size = 0.00

$$\text{integral} \left(A^2 d^2 i^2 x^2 + 2 A^2 c d i^2 x + A^2 c^2 i^2 + \left(B^2 d^2 i^2 x^2 + 2 B^2 c d i^2 x + B^2 c^2 i^2 \right) \log \left(e \left(\frac{bx + a}{dx + c} \right)^n \right)^2 + 2 (A B d^2 i^2 x^2 + \dots \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, algorithm="fricas")

[Out] integral(A^2*d^2*i^2*x^2 + 2*A^2*c*d*i^2*x + A^2*c^2*i^2 + (B^2*d^2*i^2*x^2 + 2*B^2*c*d*i^2*x + B^2*c^2*i^2)*log(e*((b*x + a)/(d*x + c))^n)^2 + 2*(A*B*d^2*i^2*x^2 + 2*A*B*c*d*i^2*x + A*B*c^2*i^2)*log(e*((b*x + a)/(d*x + c))^n), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, algorithm="giac")

[Out] Timed out

maple [F] time = 0.30, size = 0, normalized size = 0.00

$$\int (dix + ci)^2 \left(B \ln \left(e \left(\frac{bx + a}{dx + c} \right)^n \right) + A \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)

[Out] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)

maxima [B] time = 6.46, size = 1473, normalized size = 4.08

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, algorithm="maxima")

[Out]
$$\begin{aligned} & 2/3*A*B*d^2*i^2*x^3*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/3*A^2*d^2*i^2*x^3 \\ & + 2*A*B*c*d*i^2*x^2*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A^2*c*d*i^2*x^2 \\ & + 1/3*A*B*d^2*i^2*n*(2*a^3*\log(b*x + a)/b^3 - 2*c^3*\log(d*x + c)/d^3 \\ & - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) - 2*A*B*c*d*i^2*n*(a^2*\log(b*x + a)/b^2 \\ & - c^2*\log(d*x + c)/d^2 + (b*c - a*d)*x/(b*d)) + 2*A*B*c^2*i^2*n*(a*\log(b*x + a)/b - c*\log(d*x + c)/d) \\ & + 2*A*B*c^2*i^2*x*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A^2*c^2*i^2*x - 1/3*(5*a*b*c^2*d*i^2*n^2 \\ & - 2*a^2*c*d^2*i^2*n^2 - (3*i^2*n^2 - 2*i^2*n*\log(e))*b^2*c^3)*B^2*\log(d*x + c)/(b^2*d) - 2/3*(b^3*c^3*i^2*n^2 \\ & - 3*a*b^2*c^2*d*i^2*n^2 + 3*a^2*b*c*d^2*i^2*n^2 - a^3*d^3*i^2*n^2)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) \\ & + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d)))*B^2/(b^3*d) + 1/3*(B^2*b^3*d^3*i^2*x^3*\log(e)^2 + 2*B^2*b^3*c^3*i^2*n^2*\log(b*x + a)*\log(d*x + c) \\ & - B^2*b^3*c^3*i^2*n^2*\log(d*x + c)^2 + (a*b^2*d^3*i^2*n*\log(e) - (i^2*n*\log(e) - 3*i^2*\log(e)^2)*b^3*c*d^2)*B^2*x^2 \\ & - (3*a*b^2*c^2*d*i^2*n^2 - 3*a^2*b*c*d^2*i^2*n^2 + a^3*d^3*i^2*n^2)*B^2*\log(b*x + a)^2 + ((i^2*n^2 - 4*i^2*n*\log(e) + 3*i^2*\log(e)^2)*b^3*c^2*d \\ & - 2*(i^2*n^2 - 3*i^2*n*\log(e))*a*b^2*c*d^2 + (i^2*n^2 - 2*i^2*n*\log(e))*a^2*b*d^3)*B^2*x - (2*(2*i^2*n^2 - 3*i^2*n*\log(e))*a*b^2*c^2*d \\ & - (7*i^2*n^2 - 6*i^2*n*\log(e))*a^2*b*c*d^2 + (3*i^2*n^2 - 2*i^2*n*\log(e))*a^3*d^3)*B^2*\log(b*x + a) + (B^2*b^3*d^3*i^2*x^3 + 3*B^2*b^3*c*d^2*i^2*x^2 \\ & + 3*B^2*b^3*c^2*d*i^2*x)*\log((b*x + a)^n)^2 + (B^2*b^3*d^3*i^2*x^3 + 3*B^2*b^3*c*d^2*i^2*x^2 + 3*B^2*b^3*c^2*d*i^2*x)*\log((d*x + c)^n)^2 \\ & + (2*B^2*b^3*d^3*i^2*x^3*\log(e) - 2*B^2*b^3*c^3*i^2*n*\log(d*x + c) + (a*b^2*d^3*i^2*n - (i^2*n - 6*i^2*\log(e))*b^3*c*d^2)*B^2*x^2 \\ & + 2*(3*a*b^2*c*d^2*i^2*n - a^2*b*d^3*i^2*n - (2*i^2*n - 3*i^2*\log(e))*b^3*c^2*d)*B^2*x + 2*(3*a*b^2*c^2*d*i^2*n - 3*a^2*b*c*d^2*i^2*n \\ & + a^3*d^3*i^2*n)*B^2*\log(b*x + a))*\log((b*x + a)^n) - (2*B^2*b^3*d^3*i^2*x^3*\log(e) - 2*B^2*b^3*c^3*i^2*n*\log($$

$d*x + c) + (a*b^2*d^3*i^2*n - (i^2*n - 6*i^2*\log(e))*b^3*c*d^2)*B^2*x^2 + 2$
 $*(3*a*b^2*c*d^2*i^2*n - a^2*b*d^3*i^2*n - (2*i^2*n - 3*i^2*\log(e))*b^3*c^2*$
 $d)*B^2*x + 2*(3*a*b^2*c^2*d*i^2*n - 3*a^2*b*c*d^2*i^2*n + a^3*d^3*i^2*n)*B^$
 $2*\log(b*x + a) + 2*(B^2*b^3*d^3*i^2*x^3 + 3*B^2*b^3*c*d^2*i^2*x^2 + 3*B^2*b$
 $^3*c^2*d*i^2*x)*\log((b*x + a)^n)*\log((d*x + c)^n))/(b^3*d)$

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (ci + dix)^2 \left(A + B \ln \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2,x)

[Out] int((c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2, x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2,x)

[Out] Timed out

$$3.172 \quad \int \frac{(ci+dix)^2 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{ag+bgx} dx$$

Optimal. Leaf size=572

$$\frac{2Bi^2n(bc-ad)^2Li_2\left(\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^3g} + \frac{di^2(a+bx)(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{b^3g} - \frac{Bdi^2n(a+bx)}{b^3g}$$

[Out] $-B*d*(-a*d+b*c)*i^2*n*(b*x+a)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^3/g+d*(-a*d+b*c)*i^2*(b*x+a)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/b^3/g+1/2*i^2*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/b/g+2*B*(-a*d+b*c)^2*i^2*n*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))*\ln((-a*d+b*c)/b/(d*x+c))/b^3/g+B^2*(-a*d+b*c)^2*i^2*n^2*\ln(d*x+c)/b^3/g+B*(-a*d+b*c)^2*i^2*n*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))*\ln(1-b*(d*x+c)/d/(b*x+a))/b^3/g-(-a*d+b*c)^2*i^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2*\ln(1-b*(d*x+c)/d/(b*x+a))/b^3/g+2*B^2*(-a*d+b*c)^2*i^2*n^2*\text{polylog}(2,d*(b*x+a)/b/(d*x+c))/b^3/g-B^2*(-a*d+b*c)^2*i^2*n^2*\text{polylog}(2,b*(d*x+c)/d/(b*x+a))/b^3/g+2*B*(-a*d+b*c)^2*i^2*n*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))*\text{polylog}(2,b*(d*x+c)/d/(b*x+a))/b^3/g+2*B^2*(-a*d+b*c)^2*i^2*n^2*\text{polylog}(3,b*(d*x+c)/d/(b*x+a))/b^3/g$

Rubi [B] time = 5.08, antiderivative size = 1790, normalized size of antiderivative = 3.13, number of steps used = 82, number of rules used = 27, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}} = 0.600$, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2500, 2440, 2434, 2433, 2375, 2317, 2374, 6589, 2499, 2302, 30, 2396, 2525, 2486, 31}

result too large to display

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b*g*x), x]

[Out] $-((A*B*d*(b*c - a*d)*i^2*n*x)/(b^2*g)) - (a*B^2*d*(b*c - a*d)*i^2*n^2*\text{Log}[a + b*x]^2)/(b^3*g) + (B^2*(b*c - a*d)^2*i^2*n^2*\text{Log}[a + b*x]^2)/(2*b^3*g) - (A*B*(b*c - a*d)^2*i^2*n*\text{Log}[g*(a + b*x)]^2)/(b^3*g) + (B^2*(b*c - a*d)^2*i^2*n^2*\text{Log}[g*(a + b*x)]^3)/(3*b^3*g) - (B^2*(b*c - a*d)^2*i^2*n^2*\text{Log}[g*(a + b*x)]^2*\text{Log}[-c - d*x])/b^3/g + (2*B^2*(b*c - a*d)^2*i^2*n*\text{Log}[g*(a + b*x)]*\text{Log}[(a + b*x)^n]*\text{Log}[-c - d*x])/b^3/g - (B^2*(b*c - a*d)^2*i^2*\text{Log}[(a + b*x)^n]^2*\text{Log}[-c - d*x])/b^3/g - (B^2*d*(b*c - a*d)*i^2*n*(a + b*x)*\text{Log}[e*((a + b*x)/(c + d*x))^n])/b^3/g + (2*a*B*d*(b*c - a*d)*i^2*n*\text{Log}[a + b*x]*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/b^3/g - (B*(b*c - a*d)^2*i^2*n*\text{Log}[a + b*x]*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/b^3/g + (d*(b*c$

$$\begin{aligned}
& - a*d)*i^{2*x}(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2)/(b^{2*g}) + (i^{2*(c + d*x)^2}(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2)/(2*b*g) + (B^{2*(b*c - a*d)} \\
& ^{2*i^{2*n^2}\text{Log}[c + d*x]})/(b^{3*g}) + (2*B^{2*c*(b*c - a*d)}*i^{2*n^2}\text{Log}[-((d*(a + b*x))/(b*c - a*d))] * \text{Log}[c + d*x])/(b^{2*g}) - (2*B*c*(b*c - a*d)*i^{2*n*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])} * \text{Log}[c + d*x])/(b^{2*g}) - (B^{2*c*(b*c - a*d)}*i^{2*n^2}\text{Log}[c + d*x]^2)/(b^{2*g}) + (2*a*B^{2*d*(b*c - a*d)}*i^{2*n^2}\text{Log}[a + b*x] * \text{Log}[(b*(c + d*x))/(b*c - a*d)])/(b^{3*g}) - (B^{2*(b*c - a*d)^{2*i^{2*n^2}} * \text{Log}[a + b*x] * \text{Log}[(b*(c + d*x))/(b*c - a*d)])/(b^{3*g}) + (B^{2*(b*c - a*d)^{2*i^{2*n^2}} * \text{Log}[g*(a + b*x)]^2 * \text{Log}[(b*(c + d*x))/(b*c - a*d)])/(b^{3*g}) + (B^{2*(b*c - a*d)^{2*i^{2*n^2}} * \text{Log}[(a + b*x)^n]^2 * \text{Log}[(b*(c + d*x))/(b*c - a*d)])/(b^{3*g}) + (B^{2*(b*c - a*d)^{2*i^{2*n^2}} * \text{Log}[-((d*(a + b*x))/(b*c - a*d))] * \text{Log}[(c + d*x)^{(-n)]^2})/(b^{3*g}) - (B^{2*(b*c - a*d)^{2*i^{2*n^2}} * \text{Log}[g*(a + b*x)] * \text{Log}[(c + d*x)^{(-n)]^2})/(b^{3*g}) + ((b*c - a*d)^{2*i^{2*n^2}}(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2 * \text{Log}[a*g + b*g*x])/(b^{3*g}) + (2*A*B*(b*c - a*d)^{2*i^{2*n^2}} * \text{Log}[(b*(c + d*x))/(b*c - a*d)] * \text{Log}[a*g + b*g*x])/(b^{3*g}) - (2*B^{2*(b*c - a*d)^{2*i^{2*n^2}} * \text{Log}[(b*(c + d*x))/(b*c - a*d)] * (\text{Log}[(a + b*x)^n] - \text{Log}[e*((a + b*x)/(c + d*x))^n] + \text{Log}[(c + d*x)^{(-n)]}) * \text{Log}[a*g + b*g*x])/(b^{3*g}) - (B^{2*(b*c - a*d)^{2*i^{2*n^2}} * \text{Log}[e*((a + b*x)/(c + d*x))^n] * \text{Log}[a*g + b*g*x]^2)/(b^{3*g}) - (B^{2*(b*c - a*d)^{2*i^{2*n^2}} * \text{Log}[(b*(c + d*x))/(b*c - a*d)] * \text{Log}[a*g + b*g*x]^2)/(b^{3*g}) + (2*A*B*(b*c - a*d)^{2*i^{2*n^2}} * \text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))])/(b^{3*g}) + (2*a*B^{2*d*(b*c - a*d)}*i^{2*n^2} * \text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))])/(b^{3*g}) - (B^{2*(b*c - a*d)^{2*i^{2*n^2}} * \text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))])/(b^{3*g}) + (2*B^{2*(b*c - a*d)^{2*i^{2*n^2}} * \text{Log}[(a + b*x)^n] * \text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))])/(b^{3*g}) - (2*B^{2*(b*c - a*d)^{2*i^{2*n^2}} * (\text{Log}[(a + b*x)^n] - \text{Log}[e*((a + b*x)/(c + d*x))^n] + \text{Log}[(c + d*x)^{(-n)]}) * \text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))])/(b^{3*g}) + (2*B^{2*c*(b*c - a*d)}*i^{2*n^2} * \text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/(b^{2*g}) - (2*B^{2*(b*c - a*d)^{2*i^{2*n^2}} * \text{Log}[(c + d*x)^{(-n)]} * \text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/(b^{3*g}) - (2*B^{2*(b*c - a*d)^{2*i^{2*n^2}} * \text{PolyLog}[3, -((d*(a + b*x))/(b*c - a*d))])/(b^{3*g}) - (2*B^{2*(b*c - a*d)^{2*i^{2*n^2}} * \text{PolyLog}[3, (b*(c + d*x))/(b*c - a*d)])/(b^{3*g})
\end{aligned}$$

Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 30

```
Int[(x_)^(m_), x_Symbol] := Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && NeQ[m, -1]
```

Rule 31

```
Int[((a_) + (b_)*(x_))^( -1), x_Symbol] := Simp[Log[RemoveContent[a + b*x, x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2301

$\text{Int}[(a + \text{Log}[c \cdot x^n] \cdot b) / x, x_Symbol] \rightarrow \text{Simp}[(a + b \cdot \text{Log}[c \cdot x^n])^2 / (2 \cdot b \cdot n), x] /; \text{FreeQ}\{a, b, c, n\}, x]$

Rule 2302

$\text{Int}[(a + \text{Log}[c \cdot x^n] \cdot b)^p / x, x_Symbol] \rightarrow \text{Dist}[1 / (b \cdot n), \text{Subst}[\text{Int}[x^p, x], x, a + b \cdot \text{Log}[c \cdot x^n]], x] /; \text{FreeQ}\{a, b, c, n, p\}, x]$

Rule 2317

$\text{Int}[(a + \text{Log}[c \cdot x^n] \cdot b)^p / (d + e \cdot x), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[1 + (e \cdot x) / d] \cdot (a + b \cdot \text{Log}[c \cdot x^n])^p) / e, x] - \text{Dist}[(b \cdot n \cdot p) / e, \text{Int}[(\text{Log}[1 + (e \cdot x) / d] \cdot (a + b \cdot \text{Log}[c \cdot x^n])^{p-1}) / x, x], x] /; \text{FreeQ}\{a, b, c, d, e, n\}, x] \&\& \text{IGtQ}[p, 0]$

Rule 2374

$\text{Int}[(\text{Log}[d \cdot (e + f \cdot x^m)]) \cdot (a + \text{Log}[c \cdot x^n] \cdot b)^p / x, x_Symbol] \rightarrow -\text{Simp}[(\text{PolyLog}[2, -(d \cdot f \cdot x^m)] \cdot (a + b \cdot \text{Log}[c \cdot x^n])^p) / m, x] + \text{Dist}[(b \cdot n \cdot p) / m, \text{Int}[(\text{PolyLog}[2, -(d \cdot f \cdot x^m)] \cdot (a + b \cdot \text{Log}[c \cdot x^n])^{p-1}) / x, x], x] /; \text{FreeQ}\{a, b, c, d, e, f, m, n\}, x] \&\& \text{IGtQ}[p, 0] \&\& \text{EqQ}[d \cdot e, 1]$

Rule 2375

$\text{Int}[(\text{Log}[d \cdot (e + f \cdot x^m)]^r) \cdot (a + \text{Log}[c \cdot x^n] \cdot b)^p / x, x_Symbol] \rightarrow \text{Simp}[(\text{Log}[d \cdot (e + f \cdot x^m)]^r \cdot (a + b \cdot \text{Log}[c \cdot x^n])^{p+1}) / (b \cdot n \cdot (p+1)), x] - \text{Dist}[(f \cdot m \cdot r) / (b \cdot n \cdot (p+1)), \text{Int}[(x^{m-1} \cdot (a + b \cdot \text{Log}[c \cdot x^n])^{p+1}) / (e + f \cdot x^m), x], x] /; \text{FreeQ}\{a, b, c, d, e, f, r, m, n\}, x] \&\& \text{IGtQ}[p, 0] \&\& \text{NeQ}[d \cdot e, 1]$

Rule 2390

$\text{Int}[(a + \text{Log}[c \cdot (d + e \cdot x)^n] \cdot b)^p \cdot (f + g \cdot x)^q / x, x_Symbol] \rightarrow \text{Dist}[1 / e, \text{Subst}[\text{Int}[(f \cdot x) / d]^q \cdot (a + b \cdot \text{Log}[c \cdot x^n])^p, x], x, d + e \cdot x], x] /; \text{FreeQ}\{a, b, c, d, e, f, g, n, p, q\}, x] \&\& \text{EqQ}[e \cdot f - d \cdot g, 0]$

Rule 2391

$\text{Int}[\text{Log}[c \cdot (d + e \cdot x)^n] / x, x_Symbol] \rightarrow -\text{Simp}[\text{PolyLog}[2, -(c \cdot e \cdot x^n)] / n, x] /; \text{FreeQ}\{c, d, e, n\}, x] \&\& \text{EqQ}[c \cdot d, 1]$

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e^n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e^n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e]^m)], x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))^(p_.)/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n])]/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m))]/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
```

, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]

Rule 2440

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.) *((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :> Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*1)/l) + (e*x)/l)^n])*(f + g*Log[h*(-((j*k - i*1)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]

Rule 2486

Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)]^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]

Rule 2499

Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)]^(r_.)]*(s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.)]/(j_.) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r])/((k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dist[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x), x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r}, x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]

Rule 2500

Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)]^(r_.)]*(s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/(j_.) + (k_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r] - Log[(a + b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x), x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ[b*c - a*d, 0]

Rule 2523

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, p}, x] && Rat

ionalFunctionQ[RFx, x] && IGtQ[n, 0]

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol]
:> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e,
Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.),
x_Symbol]
:> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)),
Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /;
FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol]
:> With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /;
FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_Symbol]
:> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6688

```
Int[u_, x_Symbol]
:> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; SimplifierIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol]
:> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]]
```

Rubi steps

$$\begin{aligned}
\int \frac{(172c + 172dx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{ag + bgx} dx &= \int \left(\frac{29584d(bc - ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^2g} + \frac{172d(172c + 172dx)^2}{b^2g} \right) dx \\
&= \frac{(29584(bc - ad)^2) \int \frac{\left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{ag+bgx} dx}{b^2} + \frac{(172d) \int (172c + 172dx)^2}{b^2g} \\
&= \frac{29584d(bc - ad)x \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^2g} + \frac{14792(c + dx)^2}{b^2g} \\
&= \frac{29584d(bc - ad)x \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^2g} + \frac{14792(c + dx)^2}{b^2g} \\
&= \frac{29584d(bc - ad)x \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^2g} + \frac{14792(c + dx)^2}{b^2g} \\
&= \frac{29584d(bc - ad)x \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^2g} + \frac{14792(c + dx)^2}{b^2g} \\
&= -\frac{29584ABd(bc - ad)nx}{b^2g} + \frac{59168aBd(bc - ad)n \log(a + bx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^3g} \\
&= -\frac{29584ABd(bc - ad)nx}{b^2g} - \frac{29584B^2d(bc - ad)n(a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^3g} \\
&= -\frac{29584ABd(bc - ad)nx}{b^2g} - \frac{29584B^2d(bc - ad)n(a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^3g} \\
&= -\frac{29584ABd(bc - ad)nx}{b^2g} - \frac{29584B^2d(bc - ad)n(a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^3g} \\
&= -\frac{29584ABd(bc - ad)nx}{b^2g} - \frac{29584aB^2d(bc - ad)n^2 \log^2(a + bx)}{b^3g}
\end{aligned}$$

Mathematica [B] time = 3.25, size = 1654, normalized size = 2.89

result too large to display

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b*g*x), x]

[Out]
$$\begin{aligned} & (i^2*(6*b*d*(2*b*c - a*d)*x*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n] - B*n*\text{Log} \\ & [(a + b*x)/(c + d*x)])^2 + 3*b^2*d^2*x^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n] - B*n*\text{Log} \\ & [(a + b*x)/(c + d*x)])^2 + 6*(b*c - a*d)^2*\text{Log}[a + b*x]*(A + B \\ & * \text{Log}[e*((a + b*x)/(c + d*x))^n] - B*n*\text{Log}[(a + b*x)/(c + d*x)])^2 - 12*b*B* \\ & c*n*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n] - B*n*\text{Log}[(a + b*x)/(c + d*x)])*(\\ & a*d*\text{Log}[a/b + x]^2 - 2*a*d*\text{Log}[a/b + x]*(1 + \text{Log}[a + b*x]) + 2*(-(b*c) + a* \\ & d + \text{Log}[c/d + x]*(b*c + a*d*\text{Log}[a + b*x] - a*d*\text{Log}[(d*(a + b*x))/(-(b*c) + \\ & a*d)]) + (-(b*d*x) + a*d*\text{Log}[a + b*x])*\text{Log}[(a + b*x)/(c + d*x)]) - 2*a*d*Po \\ & ly\text{Log}[2, (b*(c + d*x))/(b*c - a*d)]) + 6*b^2*B*c^2*n*(A + B*\text{Log}[e*((a + b*x) \\ &)/(c + d*x))^n] - B*n*\text{Log}[(a + b*x)/(c + d*x)]*(\text{Log}[a/b + x]^2 - 2*\text{Log}[a + \\ & b*x]*(\text{Log}[a/b + x] - \text{Log}[c/d + x] - \text{Log}[(a + b*x)/(c + d*x)]) - 2*(\text{Log}[c/d \\ & + x]*\text{Log}[(d*(a + b*x))/(-(b*c) + a*d)] + \text{PolyLog}[2, (b*(c + d*x))/(b*c - a \\ & *d)])) + 3*B*n*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n] - B*n*\text{Log}[(a + b*x)/(c \\ & + d*x)])*(-4*a*d^2*(a + b*x)*(-1 + \text{Log}[a/b + x]) + 2*a^2*d^2*\text{Log}[a/b + x]^ \\ & 2 + 4*a*b*d*(c + d*x)*(-1 + \text{Log}[c/d + x]) + d^2*(b*x*(2*a - b*x) + 2*b^2*x^ \\ & 2*\text{Log}[a/b + x] - 2*a^2*\text{Log}[a + b*x]) - 2*d^2*(b*x*(-2*a + b*x) + 2*a^2*\text{Log}[\\ & a + b*x])*(\text{Log}[a/b + x] - \text{Log}[c/d + x] - \text{Log}[(a + b*x)/(c + d*x)]) + b^2*(d \\ & *x*(-2*c + d*x) - 2*d^2*x^2*\text{Log}[c/d + x] + 2*c^2*\text{Log}[c + d*x]) - 4*a^2*d^2* \\ & (\text{Log}[c/d + x]*\text{Log}[(d*(a + b*x))/(-(b*c) + a*d)] + \text{PolyLog}[2, (b*(c + d*x))/ \\ & (b*c - a*d)]) + 4*b*B^2*c*n^2*(\text{Log}[(a + b*x)/(c + d*x)]*(-(a*d*\text{Log}[(a + b* \\ & x)/(c + d*x)]^2) + 6*(b*c - a*d)*\text{Log}[(b*c - a*d)/(b*c + b*d*x)] + 3*d*\text{Log}[(\\ & a + b*x)/(c + d*x)]*(a + b*x + a*\text{Log}[(b*c - a*d)/(b*c + b*d*x)])) + 6*(b*c \\ & - a*d + a*d*\text{Log}[(a + b*x)/(c + d*x)])*\text{PolyLog}[2, (d*(a + b*x))/(b*(c + d*x) \\ &)] - 6*a*d*\text{PolyLog}[3, (d*(a + b*x))/(b*(c + d*x))] - B^2*n^2*(6*b^2*c^2*Lo \\ & g[(b*c - a*d)/(c + d*x)] - 12*a*b*c*d*\text{Log}[(b*c - a*d)/(c + d*x)] + 6*a^2*d^ \\ & 2*\text{Log}[(b*c - a*d)/(c + d*x)] + 6*a*b*c*d*\text{Log}[(a + b*x)/(c + d*x)] - 6*a^2*d \\ & ^2*\text{Log}[(a + b*x)/(c + d*x)] + 6*b^2*c*d*x*\text{Log}[(a + b*x)/(c + d*x)] - 6*a*b* \\ & d^2*x*\text{Log}[(a + b*x)/(c + d*x)] + 9*a^2*d^2*\text{Log}[(a + b*x)/(c + d*x)]^2 + 6*a \\ & *b*d^2*x*\text{Log}[(a + b*x)/(c + d*x)]^2 - 3*b^2*d^2*x^2*\text{Log}[(a + b*x)/(c + d*x) \\ &]^2 - 2*a^2*d^2*\text{Log}[(a + b*x)/(c + d*x)]^3 + 6*b^2*c^2*\text{Log}[(a + b*x)/(c + d \\ & *x)]*\text{Log}[(b*c - a*d)/(b*c + b*d*x)] + 12*a*b*c*d*\text{Log}[(a + b*x)/(c + d*x)]*L \\ & og[(b*c - a*d)/(b*c + b*d*x)] - 18*a^2*d^2*\text{Log}[(a + b*x)/(c + d*x)]*\text{Log}[(b* \\ & c - a*d)/(b*c + b*d*x)] + 6*a^2*d^2*\text{Log}[(a + b*x)/(c + d*x)]^2*\text{Log}[(b*c - a \\ & *d)/(b*c + b*d*x)] + 6*(b^2*c^2 + 2*a*b*c*d - 3*a^2*d^2 + 2*a^2*d^2*\text{Log}[(a \\ & + b*x)/(c + d*x)])*\text{PolyLog}[2, (d*(a + b*x))/(b*(c + d*x))] - 12*a^2*d^2*Pol \\ & y\text{Log}[3, (d*(a + b*x))/(b*(c + d*x))] - 6*b^2*B^2*c^2*n^2*(\text{Log}[(-(b*c) + a* \end{aligned}$$

$d)/(d*(a + b*x))]*\text{Log}[(a + b*x)/(c + d*x)]^2 - 2*\text{Log}[(a + b*x)/(c + d*x)]*\text{PolyLog}[2, (b*(c + d*x))/(d*(a + b*x))] - 2*\text{PolyLog}[3, (b*(c + d*x))/(d*(a + b*x))])]/(6*b^3*g)$

fricas [F] time = 1.07, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{A^2 d^2 i^2 x^2 + 2 A^2 c d i^2 x + A^2 c^2 i^2 + (B^2 d^2 i^2 x^2 + 2 B^2 c d i^2 x + B^2 c^2 i^2) \log \left(e \left(\frac{bx+a}{dx+c} \right)^n \right)^2 + 2 (A B d^2 i^2 x^2 + 2 A B c d i^2 x + A B c^2 i^2) \log \left(e \left(\frac{bx+a}{dx+c} \right)^n \right)}{bgx + ag}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g), x, algorithm="fricas")

[Out] integral((A^2*d^2*i^2*x^2 + 2*A^2*c*d*i^2*x + A^2*c^2*i^2 + (B^2*d^2*i^2*x^2 + 2*B^2*c*d*i^2*x + B^2*c^2*i^2)*log(e*((b*x + a)/(d*x + c))^n))^2 + 2*(A*B*d^2*i^2*x^2 + 2*A*B*c*d*i^2*x + A*B*c^2*i^2)*log(e*((b*x + a)/(d*x + c))^n))/(b*g*x + a*g), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g), x, algorithm="giac")

[Out] Timed out

maple [F] time = 0.46, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci)^2 \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)^2}{bgx + ag} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g), x)

[Out] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g), x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$2 A^2 c d i^2 \left(\frac{x}{bg} - \frac{a \log(bx + a)}{b^2 g} \right) + \frac{1}{2} A^2 d^2 i^2 \left(\frac{2 a^2 \log(bx + a)}{b^3 g} + \frac{bx^2 - 2 ax}{b^2 g} \right) + \frac{A^2 c^2 i^2 \log(bgx + ag)}{bg} + \frac{(B^2 b^2 d^2 i^2 x^2 + 2 A B d^2 i^2 x + A B c^2 i^2) \log \left(e \left(\frac{bx+a}{dx+c} \right)^n \right)^2}{bgx + ag}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g),x, algorithm="maxima")

[Out] $2*A^2*c*d*i^2*(x/(b*g) - a*\log(b*x + a)/(b^2*g)) + 1/2*A^2*d^2*i^2*(2*a^2*\log(b*x + a)/(b^3*g) + (b*x^2 - 2*a*x)/(b^2*g)) + A^2*c^2*i^2*\log(b*g*x + a)/(b*g) + 1/2*(B^2*b^2*d^2*i^2*x^2 + 2*(2*b^2*c*d*i^2 - a*b*d^2*i^2)*B^2*x + 2*(b^2*c^2*i^2 - 2*a*b*c*d*i^2 + a^2*d^2*i^2)*B^2*\log(b*x + a))*\log((d*x + c)^n)^2/(b^3*g) - \text{integrate}(- (B^2*b^3*c^3*i^2*\log(e)^2 + 2*A*B*b^3*c^3*i^2*\log(e) + (B^2*b^3*d^3*i^2*\log(e)^2 + 2*A*B*b^3*d^3*i^2*\log(e))*x^3 + 3*(B^2*b^3*c*d^2*i^2*\log(e)^2 + 2*A*B*b^3*c*d^2*i^2*\log(e))*x^2 + (B^2*b^3*d^3*i^2*x^3 + 3*B^2*b^3*c*d^2*i^2*x^2 + 3*B^2*b^3*c^2*d*i^2*x + B^2*b^3*c^3*i^2)*\log((b*x + a)^n)^2 + 3*(B^2*b^3*c^2*d*i^2*\log(e)^2 + 2*A*B*b^3*c^2*d*i^2*\log(e))*x + 2*(B^2*b^3*c^3*i^2*\log(e) + A*B*b^3*c^3*i^2 + (B^2*b^3*d^3*i^2*\log(e) + A*B*b^3*d^3*i^2))*x^3 + 3*(B^2*b^3*c*d^2*i^2*\log(e) + A*B*b^3*c*d^2*i^2)*x^2 + 3*(B^2*b^3*c^2*d*i^2*\log(e) + A*B*b^3*c^2*d*i^2)*x)*\log((b*x + a)^n) - (2*B^2*b^3*c^3*i^2*\log(e) + 2*A*B*b^3*c^3*i^2 + (2*A*B*b^3*d^3*i^2 + (i^2*n + 2*i^2*\log(e))*B^2*b^3*d^3))*x^3 + (6*A*B*b^3*c*d^2*i^2 - (a*b^2*d^3*i^2*n - 2*(2*i^2*n + 3*i^2*\log(e))*b^3*c*d^2)*B^2)*x^2 + 2*(3*A*B*b^3*c^2*d*i^2 + (2*a*b^2*c*d^2*i^2*n - a^2*b*d^3*i^2*n + 3*b^3*c^2*d*i^2*\log(e))*B^2)*x + 2*((b^3*c^2*d*i^2*n - 2*a*b^2*c*d^2*i^2*n + a^2*b*d^3*i^2*n)*B^2*x + (a*b^2*c^2*d*i^2*n - 2*a^2*b*c*d^2*i^2*n + a^3*d^3*i^2*n)*B^2)*\log(b*x + a) + 2*(B^2*b^3*d^3*i^2*x^3 + 3*B^2*b^3*c*d^2*i^2*x^2 + 3*B^2*b^3*c^2*d*i^2*x + B^2*b^3*c^3*i^2)*\log((b*x + a)^n))*\log((d*x + c)^n))/(b^4*d*g*x^2 + a*b^3*c*g + (b^4*c*g + a*b^3*d*g)*x), x)$

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ci + dix)^2 \left(A + B \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{ag + bgx} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x),x)

[Out] int(((c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x), x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(b*g*x+a*g),x)
```

```
[Out] Timed out
```

$$3.173 \quad \int \frac{(ci+dix)^2 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag+bgx)^2} dx$$

Optimal. Leaf size=472

$$\frac{d^2 i^2 (a+bx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)^2}{b^3 g^2} + \frac{4Bdi^2 n(bc-ad) \text{Li}_2 \left(\frac{b(c+dx)}{d(a+bx)} \right) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{b^3 g^2} + \frac{2Bdi^2 n(bc-ad)}{b^3 g^2}$$

[Out] $-2*B^2*(-a*d+b*c)*i^{2*n}*(d*x+c)/b^2/g^2/(b*x+a)-2*B*(-a*d+b*c)*i^{2*n}*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^2/g^2/(b*x+a)+d^2*i^2*(b*x+a)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/b^3/g^2-(-a*d+b*c)*i^2*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/b^2/g^2/(b*x+a)+2*B*d*(-a*d+b*c)*i^{2*n}*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))*\ln((-a*d+b*c)/b/(d*x+c))/b^3/g^2-2*d*(-a*d+b*c)*i^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2*\ln(1-b*(d*x+c)/d/(b*x+a))/b^3/g^2+2*B^2*d*(-a*d+b*c)*i^{2*n}^2*\text{polylog}(2,d*(b*x+a)/b/(d*x+c))/b^3/g^2+4*B*d*(-a*d+b*c)*i^{2*n}*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))*\text{polylog}(2,b*(d*x+c)/d/(b*x+a))/b^3/g^2+4*B^2*d*(-a*d+b*c)*i^{2*n}^2*\text{polylog}(3,b*(d*x+c)/d/(b*x+a))/b^3/g^2$

Rubi [B] time = 3.76, antiderivative size = 1309, normalized size of antiderivative = 2.77, number of steps used = 60, number of rules used = 21, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}} = 0.467$, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 44, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610}

$$\frac{aB^2d^2n^2 \log^2(a+bx)i^2}{b^3g^2} + \frac{B^2d(bc-ad)n^2 \log^2(a+bx)i^2}{b^3g^2} - \frac{2ABd(bc-ad)n \log^2(a+bx)i^2}{b^3g^2} - \frac{2B^2d(bc-ad) \log \left(\frac{b(c+dx)}{d(a+bx)} \right)}{b^3g^2}$$

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b*g*x)^2,x]

[Out] $(-2*B^2*(b*c - a*d)^2*i^{2*n}^2)/(b^3*g^2*(a + b*x)) - (2*B^2*d*(b*c - a*d)*i^{2*n}^2*\text{Log}[a + b*x])/(b^3*g^2) - (2*A*B*d*(b*c - a*d)*i^{2*n}*\text{Log}[a + b*x]^2)/(b^3*g^2) - (a*B^2*d^2*i^{2*n}^2*\text{Log}[a + b*x]^2)/(b^3*g^2) + (B^2*d*(b*c - a*d)*i^{2*n}^2*\text{Log}[a + b*x]^2)/(b^3*g^2) - (2*B^2*d*(b*c - a*d)*i^2*\text{Log}[-((b*c - a*d)/(d*(a + b*x)))]*\text{Log}[e*((a + b*x)/(c + d*x))^n]^2)/(b^3*g^2) - (2*B^2*d*(b*c - a*d)*i^2*\text{Log}[a + b*x]*\text{Log}[e*((a + b*x)/(c + d*x))^n]^2)/(b^3*g^2) - (2*B*(b*c - a*d)^2*i^{2*n}*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(b^3*g^2*(a + b*x)) + (2*a*B*d^2*i^{2*n}*\text{Log}[a + b*x]*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(b^3*g^2) - (2*B*d*(b*c - a*d)*i^{2*n}*\text{Log}[a + b*x]*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(b^3*g^2)$

$$\begin{aligned} & ((a + b*x)/(c + d*x))^n) / (b^3*g^2) + (d^2*i^2*x*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2) / (b^2*g^2) - ((b*c - a*d)^2*i^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2) / (b^3*g^2*(a + b*x)) + (2*d*(b*c - a*d)*i^2*\text{Log}[a + b*x]*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2) / (b^3*g^2) + (2*B^2*d*(b*c - a*d)*i^2*n^2*\text{Log}[c + d*x]) / (b^3*g^2) + (2*B^2*c*d*i^2*n^2*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]) * \text{Log}[c + d*x] / (b^2*g^2) - (2*B^2*d*(b*c - a*d)*i^2*n^2*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]) * \text{Log}[c + d*x] / (b^3*g^2) - (2*B*c*d*i^2*n*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]) * \text{Log}[c + d*x]) / (b^2*g^2) + (2*B*d*(b*c - a*d)*i^2*n*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]) * \text{Log}[c + d*x]) / (b^3*g^2) - (B^2*c*d*i^2*n^2*\text{Log}[c + d*x]^2) / (b^2*g^2) + (B^2*d*(b*c - a*d)*i^2*n^2*\text{Log}[c + d*x]^2) / (b^3*g^2) + (4*A*B*d*(b*c - a*d)*i^2*n*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)]) / (b^3*g^2) + (2*a*B^2*d^2*i^2*n^2*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)]) / (b^3*g^2) - (2*B^2*d*(b*c - a*d)*i^2*n^2*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)]) / (b^3*g^2) + (4*A*B*d*(b*c - a*d)*i^2*n*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))]) / (b^3*g^2) + (2*a*B^2*d^2*i^2*n^2*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))]) / (b^3*g^2) - (2*B^2*d*(b*c - a*d)*i^2*n^2*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))]) / (b^3*g^2) + (2*B^2*c*d*i^2*n^2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]) / (b^2*g^2) - (2*B^2*d*(b*c - a*d)*i^2*n^2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]) / (b^3*g^2) + (4*B^2*d*(b*c - a*d)*i^2*n*\text{Log}[e*((a + b*x)/(c + d*x))^n]*\text{PolyLog}[2, 1 + (b*c - a*d)/(d*(a + b*x))]) / (b^3*g^2) + (4*B^2*d*(b*c - a*d)*i^2*n^2*\text{PolyLog}[3, 1 + (b*c - a*d)/(d*(a + b*x))]) / (b^3*g^2) \end{aligned}$$

Rule 12

`Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]`

Rule 44

`Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])`

Rule 2301

`Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]`

Rule 2317

`Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol] := Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e, Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b`

, c, d, e, n}, x] && IGtQ[p, 0]

Rule 2344

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
x_Symbol] := Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))])*(b_.)/((f_.) + (g_.)*(x_)), x_
Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
, x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]

Rule 2394

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2411

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_.
)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] := Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]

Rule 2418

```
Int[((a_.) + Log[(c_.)*(d_) + (e_.)*(x_)^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol]
:> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x]
&& IntegerQ[p]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_)^(p_.))*((c_.) + (d_.)*(x_)^(q_.))^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol]
:> -Simp[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/h, x] + Dist[(p*r*s*(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1)/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c, d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_)^(p_.))*((c_.) + (d_.)*(x_)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol]
:> With[{g = Simplify[(v - 1)*(c + d*x)/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/(b*c - a*d), x] + Dist[h*p*r*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1)/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_)^(p_.))*((c_.) + (d_.)*(x_)^(q_.))^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_)^(t_.))^(u_.)]*(v_), x_Symbol]
:> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g + h*x)^t]^u)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s + 1)/(p*r*(s + 1)*(b*c - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s + 1)/(g + h*x), x], x] /; FreeQ[k, x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2523

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol]
:> Simp[x*(a + b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] := With[{w = DerivativeDivides[v, u*v, x]}, Simp[w*PolyLog[n + 1, v], x] /; !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] := With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; SimplifyIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] := With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]]
```

Rubi steps

$$\begin{aligned}
\int \frac{(173c + 173dx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag + bgx)^2} dx &= \int \left(\frac{29929d^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^2g^2} + \frac{29929(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^2g^2(a + bx)} \right) dx \\
&= \frac{(29929d^2) \int \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx}{b^2g^2} + \frac{59858d(bc - ad) \int \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx}{b^3g^2(a + bx)} \\
&= \frac{29929d^2x \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^2g^2} - \frac{29929(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^3g^2(a + bx)} \\
&= \frac{29929d^2x \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^2g^2} - \frac{29929(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^3g^2(a + bx)} \\
&= \frac{29929d^2x \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^2g^2} - \frac{29929(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^3g^2(a + bx)} \\
&= \frac{29929d^2x \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^2g^2} - \frac{29929(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^3g^2(a + bx)} \\
&= -\frac{59858B(bc - ad)^2n \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^3g^2(a + bx)} + \frac{59858aBd^2n \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^3g^2(a + bx)} \\
&= -\frac{59858B^2d(bc - ad) \log(a + bx) \log^2 \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^3g^2} - \frac{59858B^2d(bc - ad) \log \left(-\frac{bc - ad}{d(a + bx)} \right) \log^2 \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^3g^2} - \frac{59858B^2d(bc - ad) \log(a + bx) \log^2 \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^3g^2} \\
&= -\frac{59858B^2(bc - ad)^2n^2}{b^3g^2(a + bx)} - \frac{59858B^2d(bc - ad)n^2 \log(a + bx)}{b^3g^2} - \frac{59858B^2d(bc - ad)n^2 \log(a + bx)}{b^3g^2} \\
&= -\frac{59858B^2(bc - ad)^2n^2}{b^3g^2(a + bx)} - \frac{59858B^2d(bc - ad)n^2 \log(a + bx)}{b^3g^2} - \frac{59858B^2d(bc - ad)n^2 \log(a + bx)}{b^3g^2} \\
&= -\frac{59858B^2(bc - ad)^2n^2}{b^3g^2(a + bx)} - \frac{59858B^2d(bc - ad)n^2 \log(a + bx)}{b^3g^2} - \frac{59858B^2d(bc - ad)n^2 \log(a + bx)}{b^3g^2}
\end{aligned}$$

Mathematica [B] time = 12.40, size = 2834, normalized size = 6.00

Result too large to show

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b*g*x)^2,x]

[Out]
$$\begin{aligned} & (i^2*(3*b*d^2*x*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x]))^2 - (3*(b*c - a*d)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x]))^2)/(a + b*x) + 6*d*(b*c - a*d)*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x]))^2 + (6*b^2*B*c^2*n*(-A - B*Log[e*((a + b*x)/(c + d*x))^n] + B*n*Log[(a + b*x)/(c + d*x]))*(-(d*(a + b*x)*Log[c/d + x]) + d*(a + b*x)*Log[(d*(a + b*x))/(-(b*c) + a*d)] + (b*c - a*d)*(1 + Log[(a + b*x)/(c + d*x)])))/((b*c - a*d)*(a + b*x)) + (3*b^2*B^2*c^2*n^2*(-2*b*c + 2*a*d - 2*d*(a + b*x)*Log[a + b*x] - 2*(b*c - a*d)*Log[(a + b*x)/(c + d*x)] - 2*d*(a + b*x)*Log[a + b*x]*Log[(a + b*x)/(c + d*x)] - (b*c - a*d)*Log[(a + b*x)/(c + d*x)]^2 + 2*d*(a + b*x)*Log[c + d*x] - 2*d*(a + b*x)*Log[(a + b*x)/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] + d*(a + b*x)*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)] + d*(a + b*x)*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b*c) + a*d)] + Log[(b*c - a*d)/(b*c + b*d*x)] - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/((b*c - a*d)*(a + b*x)) + 6*b*B*c*d*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])*(Log[a/b + x]^2 - 2*Log[a/b + x]*Log[a + b*x] - 2*Log[c/d + x]*Log[(d*(a + b*x))/(-(b*c) + a*d)] + 2*Log[a + b*x]*((a*d)/(b*c - a*d) + Log[c/d + x] + Log[(a + b*x)/(c + d*x)]) + 2*a*((a + b*x)^(-1) + Log[(a + b*x)/(c + d*x)]/(a + b*x) + (d*Log[c + d*x])/(-(b*c) + a*d)) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)] + 6*B*d^2*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])*((a + b*x)*(-1 + Log[a/b + x]) - a*Log[a/b + x]^2 - (a^2*(1 + Log[a/b + x]))/(a + b*x) - b*(c/d + x)*(-1 + Log[c/d + x]) + (a^2*Log[c/d + x])/(a + b*x) + (b*x - a^2/(a + b*x) - 2*a*Log[a + b*x])*(-Log[a/b + x] + Log[c/d + x] + Log[(a + b*x)/(c + d*x)]) + (a^2*d*(Log[a + b*x] - Log[c + d*x]))/(-(b*c) + a*d) + 2*a*(Log[c/d + x]*Log[(d*(a + b*x))/(-(b*c) + a*d)] + PolyLog[2, (b*(c + d*x))/(b*c - a*d)])) + (2*b*B^2*c*d*n^2*(6*b*c - 6*a*d - (6*b^2*c*x)/(a + b*x) + (6*a*b*d*x)/(a + b*x) + 6*a*d*Log[a/b + x] + 3*b*c*Log[a/b + x]^2 - 3*a*d*Log[a/b + x]^2 - 6*b*c*Log[c/d + x] + 6*b*c*Log[a + b*x] - 6*a*d*Log[a + b*x] - 6*b*c*Log[a/b + x]*Log[a + b*x] + 6*a*d*Log[a/b + x]*Log[a + b*x] + 6*b*c*Log[c/d + x]*Log[a + b*x] - 6*a*d*Log[c/d + x]*Log[a + b*x] - 6*b*c*Log[c/d + x]*Log[(d*(a + b*x))/(-(b*c) + a*d)] + 6*a*d*Log[c/d + x]*Log[(d*(a + b*x))/(-(b*c) + a*d)] - (6*b*(b*c - a*d)*x*Log[(a + b*x)/(c + d*x)]/(a + b*x) + 6*b*c*Log[a + b*x]*Log[(a + b*x)/(c + d*x)] - 6*a*d*Log[a + b*x]*Log[(a + b*x)/(c + d*x)] + 3*a*d*Log[(a + b*x)/(c + d*x)]^2 + 3*b*d*x*Log[(a + b*x)/(c + d*x)])) \end{aligned}$$

$$\begin{aligned} &]^2 - (3*b^2*x*(c + d*x)*\text{Log}[(a + b*x)/(c + d*x)]^2)/(a + b*x) - 3*b*c*\text{Log}[-(b*c) + a*d)/(d*(a + b*x))]*\text{Log}[(a + b*x)/(c + d*x)]^2 - a*d*\text{Log}[(a + b*x)/(c + d*x)]^3 + 6*b*c*\text{Log}[(a + b*x)/(c + d*x)]*\text{Log}[(b*c - a*d)/(b*c + b*d*x)] - 6*a*d*\text{Log}[(a + b*x)/(c + d*x)]*\text{Log}[(b*c - a*d)/(b*c + b*d*x)] + 3*a*d*\text{Log}[(a + b*x)/(c + d*x)]^2*\text{Log}[(b*c - a*d)/(b*c + b*d*x)] + 6*(b*c - a*d + a*d*\text{Log}[(a + b*x)/(c + d*x)])*\text{PolyLog}[2, (d*(a + b*x))/(b*(c + d*x))] - 6*(b*c - a*d)*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)] + 6*b*c*\text{Log}[(a + b*x)/(c + d*x)]*\text{PolyLog}[2, (b*(c + d*x))/(d*(a + b*x))] - 6*a*d*\text{PolyLog}[3, (d*(a + b*x))/(b*(c + d*x))] + 6*b*c*\text{PolyLog}[3, (b*(c + d*x))/(d*(a + b*x))])/(b*c - a*d) - (B^2*d^n^2*(6*a^2*b*c*d + 6*a^2*b*d^2*x + 6*a^2*b*c*d*\text{Log}[(a + b*x)/(c + d*x)] + 6*a^2*b*d^2*x*\text{Log}[(a + b*x)/(c + d*x)] + 12*a^2*b*c*d*\text{Log}[-(b*c) + a*d)/(d*(a + b*x))]*\text{Log}[(a + b*x)/(c + d*x)] + 12*a*b^2*c*d*x*\text{Log}[-(b*c) + a*d)/(d*(a + b*x))]*\text{Log}[(a + b*x)/(c + d*x)] + 6*a^2*b*c*d*\text{Log}[(a + b*x)/(c + d*x)]^2 + 3*a^3*d^2*\text{Log}[(a + b*x)/(c + d*x)]^2 + 9*a^2*b*d^2*x*\text{Log}[(a + b*x)/(c + d*x)]^2 - 3*b^3*c*d*x^2*\text{Log}[(a + b*x)/(c + d*x)]^2 + 3*a*b^2*d^2*x^2*\text{Log}[(a + b*x)/(c + d*x)]^2 - 6*a^2*b*c*d*\text{Log}[-(b*c) + a*d)/(d*(a + b*x))]*\text{Log}[(a + b*x)/(c + d*x)]^2 - 6*a*b^2*c*d*x*\text{Log}[-(b*c) + a*d)/(d*(a + b*x))]*\text{Log}[(a + b*x)/(c + d*x)]^2 - 2*a^3*d^2*\text{Log}[(a + b*x)/(c + d*x)]^3 - 2*a^2*b*d^2*x*\text{Log}[(a + b*x)/(c + d*x)]^3 - 6*a*b^2*c^2*\text{Log}[(a + b*x)/(c + d*x)]*\text{Log}[(b*c - a*d)/(b*c + b*d*x)] - 6*a^3*d^2*\text{Log}[(a + b*x)/(c + d*x)]*\text{Log}[(b*c - a*d)/(b*c + b*d*x)] - 6*b^3*c^2*x*\text{Log}[(a + b*x)/(c + d*x)]*\text{Log}[(b*c - a*d)/(b*c + b*d*x)] - 6*a^2*b*d^2*x*\text{Log}[(a + b*x)/(c + d*x)]*\text{Log}[(b*c - a*d)/(b*c + b*d*x)] + 6*a^3*d^2*\text{Log}[(a + b*x)/(c + d*x)]^2*\text{Log}[(b*c - a*d)/(b*c + b*d*x)] + 6*(a + b*x)*(-b^2*c^2) - a^2*d^2 + 2*a^2*d^2*\text{Log}[(a + b*x)/(c + d*x)]*\text{PolyLog}[2, (d*(a + b*x))/(b*(c + d*x))] + 12*a*b*c*d*(a + b*x)*(-1 + \text{Log}[(a + b*x)/(c + d*x)])*\text{PolyLog}[2, (b*(c + d*x))/(d*(a + b*x))] - 12*a^3*d^2*\text{PolyLog}[3, (d*(a + b*x))/(b*(c + d*x))] - 12*a^2*b*d^2*x*\text{PolyLog}[3, (d*(a + b*x))/(b*(c + d*x))] + 12*a^2*b*c*d*\text{PolyLog}[3, (b*(c + d*x))/(d*(a + b*x))] + 12*a*b^2*c*d*x*\text{PolyLog}[3, (b*(c + d*x))/(d*(a + b*x))])/(b*c - a*d)*(a + b*x))/(3*b^3*g^2) \end{aligned}$$

fricas [F] time = 1.12, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{A^2 d^2 i^2 x^2 + 2 A^2 c d i^2 x + A^2 c^2 i^2 + (B^2 d^2 i^2 x^2 + 2 B^2 c d i^2 x + B^2 c^2 i^2) \log \left(e \left(\frac{b x + a}{d x + c} \right)^n \right)^2 + 2 (A B d^2 i^2 x^2 + 2 A B c d i^2 x + A B c^2 i^2)}{b^2 g^2 x^2 + 2 a b g^2 x + a^2 g^2} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^2,x, algorithm="fricas")

[Out] integral((A^2*d^2*i^2*x^2 + 2*A^2*c*d*i^2*x + A^2*c^2*i^2 + (B^2*d^2*i^2*x^2 + 2*B^2*c*d*i^2*x + B^2*c^2*i^2)*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^2,x, algorithm="fricas")

$2 + 2*B^2*c*d*i^2*x + B^2*c^2*i^2)*\log(e*((b*x + a)/(d*x + c))^n)^2 + 2*(A*B*d^2*i^2*x^2 + 2*A*B*c*d*i^2*x + A*B*c^2*i^2)*\log(e*((b*x + a)/(d*x + c))^n))/(b^2*g^2*x^2 + 2*a*b*g^2*x + a^2*g^2), x$

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^2,x, algorithm="giac")

[Out] Timed out

maple [F] time = 0.45, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci)^2 \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)^2}{(bgx + ag)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^2,x)

[Out] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^2,x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^2,x, algorithm="maxima")

[Out] $-2*A*B*c^2*i^2*n*(1/(b^2*g^2*x + a*b*g^2) + d*\log(b*x + a)/((b^2*c - a*b*d)*g^2) - d*\log(d*x + c)/((b^2*c - a*b*d)*g^2)) - A^2*(a^2/(b^4*g^2*x + a*b^3*g^2) - x/(b^2*g^2) + 2*a*\log(b*x + a)/(b^3*g^2))*d^2*i^2 + 2*A^2*c*d*i^2*(a/(b^3*g^2*x + a*b^2*g^2) + \log(b*x + a)/(b^2*g^2)) - 2*A*B*c^2*i^2*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^2*g^2*x + a*b*g^2) - A^2*c^2*i^2/(b^2*g^2*x + a*b*g^2) + (B^2*b^2*d^2*i^2*x^2 + B^2*a*b*d^2*i^2*x - (b^2*c^2*i^2 - 2*a*b*c*d*i^2 + a^2*d^2*i^2)*B^2 + 2*((b^2*c*d*i^2 - a*b*d^2*i^2)*B^2*x + (a*b*c*d*i^2 - a^2*d^2*i^2)*B^2)*\log(b*x + a))*\log((d*x + c)^n)^2/(b^4*g^2*x + a*b^3*g^2) - \text{integrate}(- (B^2*b^3*c^3*i^2*\log(e)^2 + (B^2*b^3*d^3*i^2*\log(e)^2 + 2*A*B*b^3*d^3*i^2*\log(e))*x^3 + 3*(B^2*b^3*c*d^2*i^2*\log(e)^2 + 2*A$

```

*B*b^3*c*d^2*i^2*log(e))*x^2 + (B^2*b^3*d^3*i^2*x^3 + 3*B^2*b^3*c*d^2*i^2*x
^2 + 3*B^2*b^3*c^2*d*i^2*x + B^2*b^3*c^3*i^2)*log((b*x + a)^n)^2 + (3*B^2*b
^3*c^2*d*i^2*log(e))^2 + 4*A*B*b^3*c^2*d*i^2*log(e))*x + 2*(B^2*b^3*c^3*i^2*
log(e) + (B^2*b^3*d^3*i^2*log(e) + A*B*b^3*d^3*i^2))*x^3 + 3*(B^2*b^3*c*d^2*
i^2*log(e) + A*B*b^3*c*d^2*i^2))*x^2 + (3*B^2*b^3*c^2*d*i^2*log(e) + 2*A*B*b
^3*c^2*d*i^2)*x)*log((b*x + a)^n) - 2*((A*B*b^3*d^3*i^2 + (i^2*n + i^2*log(
e))*B^2*b^3*d^3))*x^3 - (a*b^2*c^2*d*i^2*n - 2*a^2*b*c*d^2*i^2*n + a^3*d^3*i
^2*n - b^3*c^3*i^2*log(e))*B^2 + (3*A*B*b^3*c*d^2*i^2 + (2*a*b^2*d^3*i^2*n
+ 3*b^3*c*d^2*i^2*log(e))*B^2))*x^2 + (2*A*B*b^3*c^2*d*i^2 + (2*a*b^2*c*d^2*
i^2*n - (i^2*n - 3*i^2*log(e))*b^3*c^2*d)*B^2))*x + 2*((b^3*c*d^2*i^2*n - a
b^2*d^3*i^2*n)*B^2*x^2 + 2*(a*b^2*c*d^2*i^2*n - a^2*b*d^3*i^2*n)*B^2*x + (a
^2*b*c*d^2*i^2*n - a^3*d^3*i^2*n)*B^2)*log(b*x + a) + (B^2*b^3*d^3*i^2*x^3
+ 3*B^2*b^3*c*d^2*i^2*x^2 + 3*B^2*b^3*c^2*d*i^2*x + B^2*b^3*c^3*i^2)*log((b
*x + a)^n))*log((d*x + c)^n))/(b^5*d*g^2*x^3 + a^2*b^3*c*g^2 + (b^5*c*g^2 +
2*a*b^4*d*g^2)*x^2 + (2*a*b^4*c*g^2 + a^2*b^3*d*g^2)*x), x)

```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ci + dix)^2 \left(A + B \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag + bgx)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x
)^2,x)
```

```
[Out] int(((c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x
)^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(b*g*x+a*g)**2
,x)
```

```
[Out] Timed out
```

$$3.174 \quad \int \frac{(ci+dx)^2 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag+bgx)^3} dx$$

Optimal. Leaf size=417

$$\frac{2Bd^2i^2n \operatorname{Li}_2 \left(\frac{b(c+dx)}{d(a+bx)} \right) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{b^3g^3} - \frac{d^2i^2 \log \left(1 - \frac{b(c+dx)}{d(a+bx)} \right) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)^2}{b^3g^3} - \frac{di^2(c+dx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{b^2g^3}$$

[Out] $-2*B^2*d*i^2*n^2*(d*x+c)/b^2/g^3/(b*x+a)-1/4*B^2*i^2*n^2*(d*x+c)^2/b/g^3/(b*x+a)^2-2*B*d*i^2*n*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^2/g^3/(b*x+a)-1/2*B*i^2*n*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b/g^3/(b*x+a)^2-d*i^2*2*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/b^2/g^3/(b*x+a)-1/2*i^2*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/b/g^3/(b*x+a)^2-d^2*i^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2*\ln(1-b*(d*x+c)/d/(b*x+a))/b^3/g^3+2*B*d^2*i^2*n*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))*\operatorname{polylog}(2,b*(d*x+c)/d/(b*x+a))/b^3/g^3+2*B^2*d^2*i^2*n^2*\operatorname{polylog}(3,b*(d*x+c)/d/(b*x+a))/b^3/g^3$

Rubi [B] time = 3.84, antiderivative size = 1003, normalized size of antiderivative = 2.41, number of steps used = 68, number of rules used = 20, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}} = 0.444$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610}

$$\frac{3B^2d^2n^2 \log^2(a+bx)i^2}{2b^3g^3} - \frac{ABd^2n \log^2(a+bx)i^2}{b^3g^3} - \frac{B^2d^2 \log \left(-\frac{bc-ad}{d(a+bx)} \right) \log^2 \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) i^2}{b^3g^3} - \frac{B^2d^2 \log(a+bx) \log^2(a+bx)}{b^3g^3}$$

Antiderivative was successfully verified.

[In] $\operatorname{Int} \left[\left((c*i + d*i*x)^2 * (A + B*\operatorname{Log} \left[e \left(\frac{a + b*x}{c + d*x} \right)^n \right] \right)^2 / (a*g + b*g*x)^3, x \right]$

[Out] $-(B^2*(b*c - a*d)^2*i^2*n^2)/(4*b^3*g^3*(a + b*x)^2) - (5*B^2*d*(b*c - a*d)*i^2*n^2)/(2*b^3*g^3*(a + b*x)) - (5*B^2*d^2*i^2*n^2*\operatorname{Log}[a + b*x])/(2*b^3*g^3) - (A*B*d^2*i^2*n*\operatorname{Log}[a + b*x]^2)/(b^3*g^3) + (3*B^2*d^2*i^2*n^2*\operatorname{Log}[a + b*x]^2)/(2*b^3*g^3) - (B^2*d^2*i^2*\operatorname{Log}[-(b*c - a*d)/(d*(a + b*x))])*\operatorname{Log}[e*((a + b*x)/(c + d*x))^n]^2/(b^3*g^3) - (B^2*d^2*i^2*\operatorname{Log}[a + b*x]*\operatorname{Log}[e*((a + b*x)/(c + d*x))^n]^2)/(b^3*g^3) - (B*(b*c - a*d)^2*i^2*n*(A + B*\operatorname{Log}[e*((a + b*x)/(c + d*x))^n]))/(2*b^3*g^3*(a + b*x)^2) - (3*B*d*(b*c - a*d)*i^2*n*(A + B*\operatorname{Log}[e*((a + b*x)/(c + d*x))^n]))/(b^3*g^3*(a + b*x)) - (3*B*d^2*i^2*n*\operatorname{Log}[a + b*x]*(A + B*\operatorname{Log}[e*((a + b*x)/(c + d*x))^n]))/(b^3*g^3) - ((b*c - a*d)^2*i^2*(A + B*\operatorname{Log}[e*((a + b*x)/(c + d*x))^n])^2)/(2*b^3*g^3*(a + b*x))$

$$\begin{aligned} &^2) - (2*d*(b*c - a*d)*i^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2)/(b^3*g \\ &^3*(a + b*x)) + (d^2*i^2*\text{Log}[a + b*x]*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2)/(b^3*g^3) + (5*B^2*d^2*i^2*n^2*\text{Log}[c + d*x])/(2*b^3*g^3) - (3*B^2*d^2*i^2*n^2*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c + d*x])/(b^3*g^3) + (3*B*d^2*i^2*n*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])*\text{Log}[c + d*x])/(b^3*g^3) + (3*B^2*d^2*i^2*n^2*\text{Log}[c + d*x]^2)/(2*b^3*g^3) + (2*A*B*d^2*i^2*n*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)])/(b^3*g^3) - (3*B^2*d^2*i^2*n^2*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)])/(b^3*g^3) + (2*A*B*d^2*i^2*n*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))])/(b^3*g^3) - (3*B^2*d^2*i^2*n^2*\text{PolyLog}[2, -(d*(a + b*x))/(b*c - a*d)])/(b^3*g^3) - (3*B^2*d^2*i^2*n^2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/(b^3*g^3) + (2*B^2*d^2*i^2*n*\text{Log}[e*((a + b*x)/(c + d*x))^n]*\text{PolyLog}[2, 1 + (b*c - a*d)/(d*(a + b*x))])/(b^3*g^3) + (2*B^2*d^2*i^2*n^2*\text{PolyLog}[3, 1 + (b*c - a*d)/(d*(a + b*x))])/(b^3*g^3) \end{aligned}$$
Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol] := Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e, Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))), x_Symbol] := Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.)
)*(x_)^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_.)
)*(x_)^(q_.)*((h_.) + (i_.)*(x_)^(r_.), x_Symbol] := Dist[1/e, Subst[Int[(g*x/e)^q*(e*h - d*i)/e + (i*x)/e]^r*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_)^(p_.))*((c_.) + (d_.)*(x_)^(q_.))^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] := -Simp[(Log[-(b*c - a*d)/(
```

$d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/h, x] + Dist[(p*r*s*(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c, d, e, f, g, h, p, q, r, s}, x] \&\& NeQ[b*c - a*d, 0] \&\& EqQ[p + q, 0] \&\& EqQ[b*g - a*h, 0] \&\& IGtQ[s, 0]$

Rule 2506

$Int[Log[v_*]Log[(e_)*((f_)*((a_*) + (b_*)*(x_))^(p_)*((c_*) + (d_*)*(x_))^(q_))]^(r_)]^(s_)*(u_), x_Symbol] \rightarrow With[\{g = Simplify[((v - 1)*(c + d*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]\}, -Simp[(h*PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[\{g, h\}, x] /; FreeQ[\{a, b, c, d, e, f, p, q, r, s\}, x] \&\& NeQ[b*c - a*d, 0] \&\& IGtQ[s, 0] \&\& EqQ[p + q, 0]$

Rule 2507

$Int[Log[(e_)*((f_)*((a_*) + (b_*)*(x_))^(p_)*((c_*) + (d_*)*(x_))^(q_))]^(r_)]^(s_)*Log[(i_)*((j_)*((g_*) + (h_*)*(x_))^(t_))]^(u_)*(v_), x_Symbol] \rightarrow With[\{k = Simplify[v*(a + b*x)*(c + d*x)]\}, Simp[(k*Log[i*(j*(g + h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1))/(p*r*(s + 1)*(b*c - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x] /; FreeQ[\{a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u\}, x] \&\& NeQ[b*c - a*d, 0] \&\& EqQ[p + q, 0] \&\& NeQ[s, -1]$

Rule 2524

$Int[((a_*) + Log[(c_*)*(RFx_)^(p_)]*(b_*)^(n_))/((d_*) + (e_*)*(x_)), x_Symbol] \rightarrow Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[\{a, b, c, d, e, p\}, x] \&\& RationalFunctionQ[RFx, x] \&\& IGtQ[n, 0]$

Rule 2525

$Int[((a_*) + Log[(c_*)*(RFx_)^(p_)]*(b_*)^(n_))*((d_*) + (e_*)*(x_))^(m_), x_Symbol] \rightarrow Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[\{a, b, c, d, e, m, p\}, x] \&\& RationalFunctionQ[RFx, x] \&\& IGtQ[n, 0] \&\& (EqQ[n, 1] || IntegerQ[m]) \&\& NeQ[m, -1]$

Rule 2528


```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] := With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /; !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] := With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] := With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\begin{aligned}
\int \frac{(174c + 174dx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag + bgx)^3} dx &= \int \left(\frac{30276(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^2 g^3 (a + bx)^3} + \frac{60552d(bc - ad)}{b^3 g^3} \right) dx \\
&= \frac{(30276d^2) \int \frac{\left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{a+bx} dx}{b^2 g^3} + \frac{(60552d(bc - ad)) \int \frac{A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{a+bx} dx}{b^2 g^3} \\
&= -\frac{15138(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^3 g^3 (a + bx)^2} - \frac{60552d(bc - ad)}{b^3 g^3} \\
&= -\frac{15138(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^3 g^3 (a + bx)^2} - \frac{60552d(bc - ad)}{b^3 g^3} \\
&= -\frac{15138(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^3 g^3 (a + bx)^2} - \frac{60552d(bc - ad)}{b^3 g^3} \\
&= -\frac{15138(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^3 g^3 (a + bx)^2} - \frac{60552d(bc - ad)}{b^3 g^3} \\
&= -\frac{15138B(bc - ad)^2 n \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^3 g^3 (a + bx)^2} - \frac{90828Bd(bc - ad)}{b^3 g^3} \\
&= -\frac{30276B^2 d^2 \log(a + bx) \log^2 \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^3 g^3} - \frac{15138B(bc - ad)^2}{b^3 g^3} \\
&= -\frac{30276B^2 d^2 \log \left(-\frac{bc-ad}{d(a+bx)} \right) \log^2 \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^3 g^3} - \frac{30276B^2 d^2 \log(a + bx)}{b^3 g^3} \\
&= -\frac{7569B^2 (bc - ad)^2 n^2}{b^3 g^3 (a + bx)^2} - \frac{75690B^2 d (bc - ad) n^2}{b^3 g^3 (a + bx)} - \frac{75690B^2 d^2 n^2}{b^3 g^3} \\
&= -\frac{7569B^2 (bc - ad)^2 n^2}{b^3 g^3 (a + bx)^2} - \frac{75690B^2 d (bc - ad) n^2}{b^3 g^3 (a + bx)} - \frac{75690B^2 d^2 n^2}{b^3 g^3} \\
&= -\frac{7569B^2 (bc - ad)^2 n^2}{b^3 g^3 (a + bx)^2} - \frac{75690B^2 d (bc - ad) n^2}{b^3 g^3 (a + bx)} - \frac{75690B^2 d^2 n^2}{b^3 g^3}
\end{aligned}$$

Mathematica [B] time = 13.70, size = 4761, normalized size = 11.42

Result too large to show

Antiderivative was successfully verified.

[In] Integrate[(((c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b*g*x)^3,x]

[Out]
$$\begin{aligned} & (d^2 i^2 \text{Log}[a + b*x] * (A + B * (\text{Log}[e * ((a + b*x)/(c + d*x))^n] - n * \text{Log}[(a + b*x)/(c + d*x)]))^2 / (b^3 g^3) + (2 * (-A^2 * b * c * d * i^2) + a * A^2 * d^2 * i^2 - 2 * A * \\ & b * B * c * d * i^2 * (\text{Log}[e * ((a + b*x)/(c + d*x))^n] - n * \text{Log}[(a + b*x)/(c + d*x)]) + \\ & 2 * a * A * B * d^2 * i^2 * (\text{Log}[e * ((a + b*x)/(c + d*x))^n] - n * \text{Log}[(a + b*x)/(c + d*x)])) - b * B^2 * c * d * i^2 * (\text{Log}[e * ((a + b*x)/(c + d*x))^n] - n * \text{Log}[(a + b*x)/(c + \\ & d*x)])^2 + a * B^2 * d^2 * i^2 * (\text{Log}[e * ((a + b*x)/(c + d*x))^n] - n * \text{Log}[(a + b*x)/(c + d*x)])^2) / (b^3 g^3 * (a + b*x)) + (-A^2 * b^2 * c^2 * i^2) + 2 * a * A^2 * b * c * d * i \\ & ^2 - a^2 * A^2 * d^2 * i^2 - 2 * A * b^2 * B * c^2 * i^2 * (\text{Log}[e * ((a + b*x)/(c + d*x))^n] - n * \text{Log}[(a + b*x)/(c + d*x)]) + 4 * a * A * b * B * c * d * i^2 * (\text{Log}[e * ((a + b*x)/(c + d*x)) \\ &]^n - n * \text{Log}[(a + b*x)/(c + d*x)]) - 2 * a^2 * A * B * d^2 * i^2 * (\text{Log}[e * ((a + b*x)/(c + d*x))^n] - n * \text{Log}[(a + b*x)/(c + d*x)]) - b^2 * B^2 * c^2 * i^2 * (\text{Log}[e * ((a + b*x) \\ &)/(c + d*x))^n - n * \text{Log}[(a + b*x)/(c + d*x)])^2 + 2 * a * b * B^2 * c * d * i^2 * (\text{Log}[e * ((a + b*x)/(c + d*x))^n] - n * \text{Log}[(a + b*x)/(c + d*x)])^2 - a^2 * B^2 * d^2 * i^2 \\ & * (\text{Log}[e * ((a + b*x)/(c + d*x))^n] - n * \text{Log}[(a + b*x)/(c + d*x)])^2) / (2 * b^3 g^3 * (a + b*x)^2) + (2 * B * c^2 * i^2 * n * (A + B * (\text{Log}[e * ((a + b*x)/(c + d*x))^n] - n * \\ & \text{Log}[(a + b*x)/(c + d*x)])) * (-1/8 * ((a/b + x) * (2 * \text{Log}[a/b + x] + 4 * \text{Log}[a/b + x]^2)) / ((a + b*x)^3 * \text{Log}[a/b + x]) - ((b * (c/d + x)) / ((-a + (b*c)/d))^3 * (1 - (b \\ & * (c/d + x)) / (-a + (b*c)/d))) - ((b^2 * (c/d + x)^2) / ((-a + (b*c)/d)^4 * (1 - (b \\ & * (c/d + x)) / (-a + (b*c)/d))^2) + (2 * b * (c/d + x)) / ((-a + (b*c)/d)^3 * (1 - (b \\ & * (c/d + x)) / (-a + (b*c)/d))) * \text{Log}[c/d + x] - \text{Log}[1 - (b * (c/d + x)) / (-a + (b \\ & c)/d)] / (-a + (b*c)/d)^2) / (2 * b) - (-\text{Log}[a/b + x] + \text{Log}[c/d + x] + \text{Log}[a/(c + \\ & d*x) + (b*x)/(c + d*x)]) / (2 * b * (a + b*x)^2)) / g^3 + (4 * B * c * d * i^2 * n * (A + B * (\text{Log}[e * ((a + b*x)/(c + d*x))^n] - n * \text{Log}[(a + b*x)/(c + d*x)])) * (-((1 + \text{Log}[a \\ & /b + x]) / (b^2 * (a + b*x))) + (a * (1 + 2 * \text{Log}[a/b + x])) / (4 * b^2 * (a + b*x)^2) - \\ & (-\text{Log}[c/d + x] / (b * (a + b*x))) + (d * (\text{Log}[a + b*x] / (b * c - a * d) - \text{Log}[c + d*x] / (b * c - a * d))) / b) / b - (a * (\text{Log}[c/d + x] + (d * (a + b*x) * (b * c - a * d + d * (a + \\ & b*x) * \text{Log}[a + b*x] - d * (a + b*x) * \text{Log}[c + d*x])) / (b * c - a * d)^2) / (2 * b^2 * (a + \\ & b*x)^2) - ((a + 2 * b*x) * (-\text{Log}[a/b + x] + \text{Log}[c/d + x] + \text{Log}[a/(c + d*x) + (b \\ & x)/(c + d*x)])) / (2 * b^2 * (a + b*x)^2)) / g^3 + (2 * B * d^2 * i^2 * n * (A + B * (\text{Log}[e * ((a + b*x)/(c + d*x))^n] - n * \text{Log}[(a + b*x)/(c + d*x)])) * (\text{Log}[a/b + x]^2 / (2 * b \\ & ^3) + (2 * a * (1 + \text{Log}[a/b + x])) / (b^3 * (a + b*x)) - (a^2 * (1 + 2 * \text{Log}[a/b + x])) / (4 * b^3 * (a + b*x)^2) + (2 * a * (-\text{Log}[c/d + x] / (b * (a + b*x))) + (d * (\text{Log}[a + b*x] / (b * c - a * d) - \text{Log}[c + d*x] / (b * c - a * d))) / b) / b^2 + (a^2 * (\text{Log}[c/d + x] + \\ & (d * (a + b*x) * (b * c - a * d + d * (a + b*x) * \text{Log}[a + b*x] - d * (a + b*x) * \text{Log}[c + d*x])) / (b * c - a * d)^2) / (2 * b^3 * (a + b*x)^2) + (((a * (3 * a + 4 * b*x)) / (a + b*x)^2 \\ & + 2 * \text{Log}[a + b*x]) * (-\text{Log}[a/b + x] + \text{Log}[c/d + x] + \text{Log}[a/(c + d*x) + (b*x)/(c + d*x)])) / (2 * b^3 * (a + b*x)^2) \end{aligned}$$

$$\begin{aligned}
& c + d*x)))/(2*b^3) - ((\text{Log}[c/d + x]*\text{Log}[(a + b*x)/(a - (b*c)/d)]/b + \text{Poly} \\
& \text{Log}[2, (b*d*(c/d + x))/(b*c - a*d)]/b)/b^2)/g^3 + (B^2*c*d*i^2*n^2*(2*a*Lo \\
& g[(a + b*x)/(c + d*x)]^2 - 4*(a + b*x)*\text{Log}[(a + b*x)/(c + d*x)]^2 - (4*(a + \\
& b*x)*(2*b*c - 2*a*d + 2*d*(a + b*x)*\text{Log}[a + b*x] + 2*(b*c - a*d)*\text{Log}[(a + \\
& b*x)/(c + d*x)] + 2*d*(a + b*x)*\text{Log}[a + b*x]*\text{Log}[(a + b*x)/(c + d*x)] - 2*d \\
& *(a + b*x)*\text{Log}[c + d*x] + 2*d*(a + b*x)*\text{Log}[(a + b*x)/(c + d*x)]*\text{Log}[(b*c - \\
& a*d)/(b*c + b*d*x)] - d*(a + b*x)*(\text{Log}[a + b*x]*(\text{Log}[a + b*x] - 2*\text{Log}[(b*(\\
& c + d*x))/(b*c - a*d)])) - 2*\text{PolyLog}[2, (d*(a + b*x))/(-b*c) + a*d]) - d*(\\
& a + b*x)*(\text{Log}[(b*c - a*d)/(b*c + b*d*x)]*(2*\text{Log}[(d*(a + b*x))/(-b*c) + a*d \\
&]) + \text{Log}[(b*c - a*d)/(b*c + b*d*x)]) - 2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a* \\
& d)])))/(b*c - a*d) + (a*((b*c - a*d)^2 + 2*d*(-b*c) + a*d)*(a + b*x) - 2*d \\
& ^2*(a + b*x)^2*\text{Log}[a + b*x] + 2*(b*c - a*d)^2*\text{Log}[(a + b*x)/(c + d*x)] + 4* \\
& d*(-b*c) + a*d)*(a + b*x)*\text{Log}[(a + b*x)/(c + d*x)] - 4*d^2*(a + b*x)^2*\text{Log} \\
& [a + b*x]*\text{Log}[(a + b*x)/(c + d*x)] + 2*d^2*(a + b*x)^2*\text{Log}[c + d*x] - 4*d*(\\
& a + b*x)*(b*c - a*d + d*(a + b*x)*\text{Log}[a + b*x] - d*(a + b*x)*\text{Log}[c + d*x]) \\
& - 4*d^2*(a + b*x)^2*\text{Log}[(a + b*x)/(c + d*x)]*\text{Log}[(b*c - a*d)/(b*c + b*d*x)] \\
& + 2*d^2*(a + b*x)^2*(\text{Log}[a + b*x]*(\text{Log}[a + b*x] - 2*\text{Log}[(b*(c + d*x))/(b*c \\
& - a*d)])) - 2*\text{PolyLog}[2, (d*(a + b*x))/(-b*c) + a*d]) + 2*d^2*(a + b*x)^2 \\
& *(\text{Log}[(b*c - a*d)/(b*c + b*d*x)]*(2*\text{Log}[(d*(a + b*x))/(-b*c) + a*d]) + \text{Log} \\
& [(b*c - a*d)/(b*c + b*d*x)]) - 2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])))/(\\
& b*c - a*d)^2)/(2*b^2*g^3*(a + b*x)^2) - (B^2*c^2*i^2*n^2*((b*c - a*d)^2 + \\
& 2*d*(-b*c) + a*d)*(a + b*x) - 2*d^2*(a + b*x)^2*\text{Log}[a + b*x] + 2*(b*c - a* \\
& d)^2*\text{Log}[(a + b*x)/(c + d*x)] + 4*d*(-b*c) + a*d)*(a + b*x)*\text{Log}[(a + b*x)/ \\
& (c + d*x)] - 4*d^2*(a + b*x)^2*\text{Log}[a + b*x]*\text{Log}[(a + b*x)/(c + d*x)] + 2*(b \\
& *c - a*d)^2*\text{Log}[(a + b*x)/(c + d*x)]^2 + 2*d^2*(a + b*x)^2*\text{Log}[c + d*x] - 4 \\
& *d*(a + b*x)*(b*c - a*d + d*(a + b*x)*\text{Log}[a + b*x] - d*(a + b*x)*\text{Log}[c + d* \\
& x]) - 4*d^2*(a + b*x)^2*\text{Log}[(a + b*x)/(c + d*x)]*\text{Log}[(b*c - a*d)/(b*c + b*d \\
& *x)] + 2*d^2*(a + b*x)^2*(\text{Log}[a + b*x]*(\text{Log}[a + b*x] - 2*\text{Log}[(b*(c + d*x))/ \\
& (b*c - a*d)])) - 2*\text{PolyLog}[2, (d*(a + b*x))/(-b*c) + a*d]) + 2*d^2*(a + b* \\
& x)^2*(\text{Log}[(b*c - a*d)/(b*c + b*d*x)]*(2*\text{Log}[(d*(a + b*x))/(-b*c) + a*d]) + \\
& \text{Log}[(b*c - a*d)/(b*c + b*d*x)]) - 2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])) \\
&))/(4*b*(b*c - a*d)^2*g^3*(a + b*x)^2) - (B^2*d^2*i^2*n^2*((2*x*(7*b^2*c^2 \\
& - 14*a*b*c*d + 7*a^2*d^2 - 6*d*(a + b*x)*(a*d - b*(2*c + d*x))*\text{Log}[a + b*x] \\
& + 6*(b*c - a*d)^2*\text{Log}[(a + b*x)/(c + d*x)] + 2*b^2*(c + d*x)^2*\text{Log}[(a + b* \\
& x)/(c + d*x)]^2 - 12*a*b*c*d*\text{Log}[c + d*x] + 6*a^2*d^2*\text{Log}[c + d*x] - 12*b^2 \\
& *c*d*x*\text{Log}[c + d*x] - 6*b^2*d^2*x^2*\text{Log}[c + d*x]))/(a + b*x) + (b*x^2*(b^2* \\
& c^2 - 8*a*b*c*d + 7*a^2*d^2 - 6*b^2*c*d*x + 6*a*b*d^2*x - 6*d^2*(a + b*x)^2 \\
& *\text{Log}[a + b*x] + 2*(b*c - a*d)*(b*c - 3*a*d - 2*b*d*x)*\text{Log}[(a + b*x)/(c + d* \\
& x)] + 2*b*(c + d*x)*(b*c - 2*a*d - b*d*x)*\text{Log}[(a + b*x)/(c + d*x)]^2 + 6*a^ \\
& 2*d^2*\text{Log}[c + d*x] + 12*a*b*d^2*x*\text{Log}[c + d*x] + 6*b^2*d^2*x^2*\text{Log}[c + d*x] \\
&))/(a + b*x)^2 - 2*(12*b*c^2 - 18*a*c*d + (6*a^2*d^2)/b - 3*b*c*d*x + 3*a*d \\
& ^2*x + 12*a*c*d*\text{Log}[a/b + x] - (6*a^2*d^2*\text{Log}[a/b + x])/b + 3*b*c^2*\text{Log}[a/b \\
& + x]^2 - 6*a*c*d*\text{Log}[a/b + x]^2 + (3*a^2*d^2*\text{Log}[a/b + x]^2)/b - 12*b*c^2* \\
& \text{Log}[c/d + x] + 6*a*c*d*\text{Log}[c/d + x] + 7*b*c^2*\text{Log}[a + b*x] - 14*a*c*d*\text{Log}[a \\
& + b*x] + (4*a^2*d^2*\text{Log}[a + b*x])/b + 12*b*c*d*x*\text{Log}[a + b*x] - 6*a*d^2*x*
\end{aligned}$$

$$\begin{aligned} & \text{Log}[a + b*x] + 3*b*d^2*x^2*\text{Log}[a + b*x] - 6*b*c^2*\text{Log}[a/b + x]*\text{Log}[a + b*x] \\ & + 12*a*c*d*\text{Log}[a/b + x]*\text{Log}[a + b*x] - (6*a^2*d^2*\text{Log}[a/b + x]*\text{Log}[a + b*x] \\ &])/b + 6*b*c^2*\text{Log}[c/d + x]*\text{Log}[a + b*x] - 12*a*c*d*\text{Log}[c/d + x]*\text{Log}[a + b*x] \\ & + (6*a^2*d^2*\text{Log}[c/d + x]*\text{Log}[a + b*x])/b - 6*b*c^2*\text{Log}[c/d + x]*\text{Log}[(d*(a + b*x))/(-b*c \\ &) + a*d] + 12*a*c*d*\text{Log}[c/d + x]*\text{Log}[(d*(a + b*x))/(-b*c \\ &) + a*d] - (6*a^2*d^2*\text{Log}[c/d + x]*\text{Log}[(d*(a + b*x))/(-b*c) + a*d])/b - \\ & 2*b*c^2*\text{Log}[(b*c - a*d)/(c + d*x)] + 4*a*c*d*\text{Log}[(b*c - a*d)/(c + d*x)] - (\\ & 2*a^2*d^2*\text{Log}[(b*c - a*d)/(c + d*x)])/b - 2*a*c*d*\text{Log}[(a + b*x)/(c + d*x)] \\ & + (2*a^2*d^2*\text{Log}[(a + b*x)/(c + d*x)])/b - 2*b*c*d*x*\text{Log}[(a + b*x)/(c + d*x) \\ &)] + 2*a*d^2*x*\text{Log}[(a + b*x)/(c + d*x)] + 6*b*c^2*\text{Log}[a + b*x]*\text{Log}[(a + b*x) \\ &]/(c + d*x) - 12*a*c*d*\text{Log}[a + b*x]*\text{Log}[(a + b*x)/(c + d*x)] + (6*a^2*d^2* \\ & \text{Log}[a + b*x]*\text{Log}[(a + b*x)/(c + d*x)])/b + 4*a*c*d*\text{Log}[(a + b*x)/(c + d*x)] \\ & ^2 - (3*a^2*d^2*\text{Log}[(a + b*x)/(c + d*x)]^2)/b + 4*b*c*d*x*\text{Log}[(a + b*x)/(c \\ & + d*x)]^2 - 2*a*d^2*x*\text{Log}[(a + b*x)/(c + d*x)]^2 + b*d^2*x^2*\text{Log}[(a + b*x)/ \\ & (c + d*x)]^2 - 2*b*c^2*\text{Log}[(-b*c) + a*d]/(d*(a + b*x))*\text{Log}[(a + b*x)/(c + \\ & d*x)]^2 - (4*a*c*d*\text{Log}[(a + b*x)/(c + d*x)]^3)/3 + (2*a^2*d^2*\text{Log}[(a + b*x) \\ &]/(c + d*x)]^3)/(3*b) + 3*b*c^2*\text{Log}[c + d*x] - 12*b*c*d*x*\text{Log}[c + d*x] + 6* \\ & a*d^2*x*\text{Log}[c + d*x] - 3*b*d^2*x^2*\text{Log}[c + d*x] + 6*b*c^2*\text{Log}[(a + b*x)/(c \\ & + d*x)]*\text{Log}[(b*c - a*d)/(b*c + b*d*x)] - 12*a*c*d*\text{Log}[(a + b*x)/(c + d*x)]* \\ & \text{Log}[(b*c - a*d)/(b*c + b*d*x)] + (6*a^2*d^2*\text{Log}[(a + b*x)/(c + d*x)]*\text{Log}[(b \\ & *c - a*d)/(b*c + b*d*x)])/b + 4*a*c*d*\text{Log}[(a + b*x)/(c + d*x)]^2*\text{Log}[(b*c - \\ & a*d)/(b*c + b*d*x)] - (2*a^2*d^2*\text{Log}[(a + b*x)/(c + d*x)]^2*\text{Log}[(b*c - a*d) \\ &]/(b*c + b*d*x)])/b + (2*(3*(b*c - a*d)^2 - 2*a*d*(-2*b*c + a*d)*\text{Log}[(a + b \\ & *x)/(c + d*x)]*\text{PolyLog}[2, (d*(a + b*x))/(b*(c + d*x))])/b - (6*(b*c - a*d) \\ & ^2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/b + 4*b*c^2*\text{Log}[(a + b*x)/(c + d* \\ & x)]*\text{PolyLog}[2, (b*(c + d*x))/(d*(a + b*x))] - 8*a*c*d*\text{PolyLog}[3, (d*(a + b* \\ & x))/(b*(c + d*x))] + (4*a^2*d^2*\text{PolyLog}[3, (d*(a + b*x))/(b*(c + d*x))])/b \\ & + 4*b*c^2*\text{PolyLog}[3, (b*(c + d*x))/(d*(a + b*x))]))/(4*b^2*(b*c - a*d)^2*g \\ & ^3) \end{aligned}$$

fricas [F] time = 1.15, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{A^2 d^2 i^2 x^2 + 2 A^2 c d i^2 x + A^2 c^2 i^2 + (B^2 d^2 i^2 x^2 + 2 B^2 c d i^2 x + B^2 c^2 i^2) \log \left(e \left(\frac{b x + a}{d x + c} \right)^n \right)^2 + 2 (A B d^2 i^2 x^2 + 2 A^2 c d i^2 x + A^2 c^2 i^2) \log \left(e \left(\frac{b x + a}{d x + c} \right)^n \right)}{b^3 g^3 x^3 + 3 a b^2 g^3 x^2 + 3 a^2 b g^3 x + a^3 g^3} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^3,x,
algorithm="fricas")

[Out] integral((A^2*d^2*i^2*x^2 + 2*A^2*c*d*i^2*x + A^2*c^2*i^2 + (B^2*d^2*i^2*x^2 + 2*B^2*c*d*i^2*x + B^2*c^2*i^2)*log(e*((b*x + a)/(d*x + c))^n)^2 + 2*(A*

$B*d^{2*i}x^2 + 2*A*B*c*d*i^2*x + A*B*c^{2*i})*\log(e*((b*x + a)/(d*x + c))^n)/(b^3*g^3*x^3 + 3*a*b^2*g^3*x^2 + 3*a^2*b*g^3*x + a^3*g^3), x)$

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^3,x,
algorithm="giac")

[Out] Timed out

maple [F] time = 0.45, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci)^2 \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)^2}{(bgx + ag)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^3,x)

[Out] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^3,x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^3,x,
algorithm="maxima")

[Out] $-A*B*c*d*i^2*n*((3*a*b*c - a^2*d + 2*(2*b^2*c - a*b*d)*x)/((b^5*c - a*b^4*d)*g^3*x^2 + 2*(a*b^4*c - a^2*b^3*d)*g^3*x + (a^2*b^3*c - a^3*b^2*d)*g^3) + 2*(2*b*c*d - a*d^2)*\log(b*x + a)/((b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)*g^3) - 2*(2*b*c*d - a*d^2)*\log(d*x + c)/((b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)*g^3) + 1/2*A*B*c^2*i^2*n*((2*b*d*x - b*c + 3*a*d)/((b^4*c - a*b^3*d)*g^3*x^2 + 2*(a*b^3*c - a^2*b^2*d)*g^3*x + (a^2*b^2*c - a^3*b*d)*g^3) + 2*d^2*\log(b*x + a)/((b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*g^3) - 2*d^2*\log(d*x + c)/((b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*g^3) + 1/2*A^2*d^2*i^2*((4*a*b*x + 3*a^2)/(b^5*g^3*x^2 + 2*a*b^4*g^3*x + a^2*b^3*g^3) + 2*\log(b*x + a)/(b^3*g^3)) - 2*(2*b*x + a)*A*B*c*d*i^2*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^4*g^3*x^2 + 2*a*b^3*g^3*x + a^2*b^2*g^3) - (2*b*x + a)*A^2*c*d*i^2/(b^4*g^3*x^2$

$$\begin{aligned}
& + 2*a*b^3*g^3*x + a^2*b^2*g^3) - A*B*c^2*i^2*\log(e*(b*x/(d*x + c) + a/(d*x \\
& + c))^n)/(b^3*g^3*x^2 + 2*a*b^2*g^3*x + a^2*b*g^3) - 1/2*A^2*c^2*i^2/(b^3* \\
& g^3*x^2 + 2*a*b^2*g^3*x + a^2*b*g^3) - 1/2*(4*(b^2*c*d*i^2 - a*b*d^2*i^2)*B \\
& ^2*x + (b^2*c^2*i^2 + 2*a*b*c*d*i^2 - 3*a^2*d^2*i^2)*B^2 - 2*(B^2*b^2*d^2*i \\
& ^2*x^2 + 2*B^2*a*b*d^2*i^2*x + B^2*a^2*d^2*i^2)*\log(b*x + a))*\log((d*x + c) \\
& ^n)^2/(b^5*g^3*x^2 + 2*a*b^4*g^3*x + a^2*b^3*g^3) - \text{integrate}(-(3*B^2*b^3*c \\
& ^2*d*i^2*x*\log(e)^2 + B^2*b^3*c^3*i^2*\log(e)^2 + (B^2*b^3*d^3*i^2*\log(e)^2 \\
& + 2*A*B*b^3*d^3*i^2*\log(e))*x^3 + (3*B^2*b^3*c*d^2*i^2*\log(e)^2 + 2*A*B*b^3 \\
& *c*d^2*i^2*\log(e))*x^2 + (B^2*b^3*d^3*i^2*x^3 + 3*B^2*b^3*c*d^2*i^2*x^2 + 3 \\
& *B^2*b^3*c^2*d*i^2*x + B^2*b^3*c^3*i^2)*\log((b*x + a)^n)^2 + 2*(3*B^2*b^3*c \\
& ^2*d*i^2*x*\log(e) + B^2*b^3*c^3*i^2*\log(e) + (B^2*b^3*d^3*i^2*\log(e) + A*B \\
& b^3*d^3*i^2)*x^3 + (3*B^2*b^3*c*d^2*i^2*\log(e) + A*B*b^3*c*d^2*i^2)*x^2)*\log \\
& ((b*x + a)^n) + ((6*a*b^2*c*d^2*i^2*n - 7*a^2*b*d^3*i^2*n + (i^2*n - 6*i^2 \\
& *\log(e))*b^3*c^2*d)*B^2*x - 2*(B^2*b^3*d^3*i^2*\log(e) + A*B*b^3*d^3*i^2)*x^ \\
& 3 + (a*b^2*c^2*d*i^2*n + 2*a^2*b*c*d^2*i^2*n - 3*a^3*d^3*i^2*n - 2*b^3*c^3 \\
& i^2*\log(e))*B^2 - 2*(A*B*b^3*c*d^2*i^2 + (2*a*b^2*d^3*i^2*n - (2*i^2*n - 3 \\
& i^2*\log(e))*b^3*c*d^2)*B^2)*x^2 - 2*(B^2*b^3*d^3*i^2*n*x^3 + 3*B^2*a*b^2*d^ \\
& 3*i^2*n*x^2 + 3*B^2*a^2*b*d^3*i^2*n*x + B^2*a^3*d^3*i^2*n)*\log(b*x + a) - 2 \\
& *(B^2*b^3*d^3*i^2*x^3 + 3*B^2*b^3*c*d^2*i^2*x^2 + 3*B^2*b^3*c^2*d*i^2*x + B \\
& ^2*b^3*c^3*i^2)*\log((b*x + a)^n))*\log((d*x + c)^n))/(b^6*d*g^3*x^4 + a^3*b^ \\
& 3*c*g^3 + (b^6*c*g^3 + 3*a*b^5*d*g^3)*x^3 + 3*(a*b^5*c*g^3 + a^2*b^4*d*g^3) \\
& *x^2 + (3*a^2*b^4*c*g^3 + a^3*b^3*d*g^3)*x), x)
\end{aligned}$$

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ci + dix)^2 \left(A + B \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag + bgx)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x)^3,x)

[Out] int(((c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x)^3, x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(b*g*x+a*g)**3,x)

[Out] Timed out

$$3.175 \quad \int \frac{(ci+dx)^2 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag+bgx)^4} dx$$

Optimal. Leaf size=157

$$\frac{i^2(c+dx)^3 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)^2}{3g^4(a+bx)^3(bc-ad)} - \frac{2Bi^2n(c+dx)^3 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{9g^4(a+bx)^3(bc-ad)} - \frac{2B^2i^2n^2(c+dx)^3}{27g^4(a+bx)^3(bc-ad)}$$

[Out] $-2/27*B^2*i^2*n^2*(d*x+c)^3/(-a*d+b*c)/g^4/(b*x+a)^3-2/9*B*i^2*n*(d*x+c)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)/g^4/(b*x+a)^3-1/3*i^2*(d*x+c)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)/g^4/(b*x+a)^3$

Rubi [C] time = 3.17, antiderivative size = 889, normalized size of antiderivative = 5.66, number of steps used = 86, number of rules used = 11, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}} = 0.244$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{B^2i^2n^2 \log^2(a+bx)d^3}{3b^3(bc-ad)g^4} + \frac{B^2i^2n^2 \log^2(c+dx)d^3}{3b^3(bc-ad)g^4} - \frac{2B^2i^2n^2 \log(a+bx)d^3}{9b^3(bc-ad)g^4} - \frac{2Bi^2n \log(a+bx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{3b^3(bc-ad)g^4}$$

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b*g*x)^4, x]

[Out] $(-2*B^2*(b*c - a*d)^2*i^2*n^2)/(27*b^3*g^4*(a + b*x)^3) - (2*B^2*d*(b*c - a*d)*i^2*n^2)/(9*b^3*g^4*(a + b*x)^2) - (2*B^2*d^2*i^2*n^2)/(9*b^3*g^4*(a + b*x)) - (2*B^2*d^3*i^2*n^2*Log[a + b*x])/(9*b^3*(b*c - a*d)*g^4) + (B^2*d^3*i^2*n^2*Log[a + b*x]^2)/(3*b^3*(b*c - a*d)*g^4) - (2*B*(b*c - a*d)^2*i^2*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])/(9*b^3*g^4*(a + b*x)^3) - (2*B*d*(b*c - a*d)*i^2*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])/(3*b^3*g^4*(a + b*x)^2) - (2*B*d^2*i^2*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])/(3*b^3*g^4*(a + b*x)) - (2*B*d^3*i^2*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n])/(3*b^3*(b*c - a*d)*g^4) - ((b*c - a*d)^2*i^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(3*b^3*g^4*(a + b*x)^3) - (d*(b*c - a*d)*i^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(b^3*g^4*(a + b*x)^2) - (d^2*i^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(b^3*g^4*(a + b*x)) + (2*B^2*d^3*i^2*n^2*Log[c + d*x])/(9*b^3*(b*c - a*d)*g^4) - (2*B^2*d^3*i^2*n^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(3*b^3*(b*c - a*d)*g^4) + (2*B*d^3*i^2*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x])/(3*b^3*(b*c - a*d)*g^4) + (B^2*d^3*i^2*n^2*Log[c + d*x]^2)/(3*b^3*(b*c - a*d)*g^4) - (2*B^2*d^3*i^2*n^2*$

$$\text{Log}[a + b*x] * \text{Log}[(b*(c + d*x))/(b*c - a*d)] / (3*b^3*(b*c - a*d)*g^4) - (2*B^2*d^3*i^2*n^2 * \text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))] / (3*b^3*(b*c - a*d)*g^4) - (2*B^2*d^3*i^2*n^2 * \text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)] / (3*b^3*(b*c - a*d)*g^4)$$
Rule 12

$$\text{Int}[(a_*)*(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \&\& \text{!MatchQ}[u, (b_*)*(v_)] /; \text{FreeQ}[b, x]$$
Rule 44

$$\text{Int}[(a_*) + (b_*)*(x_)^{(m_*)} * ((c_*) + (d_*)*(x_)^{(n_*)}), x_Symbol] \rightarrow \text{Int}[\text{ExpandIntegrand}[(a + b*x)^m * (c + d*x)^n, x], x] /; \text{FreeQ}[\{a, b, c, d\}, x] \&\& \text{NeQ}[b*c - a*d, 0] \&\& \text{ILtQ}[m, 0] \&\& \text{IntegerQ}[n] \&\& \text{!(IGtQ}[n, 0] \&\& \text{LtQ}[m + n + 2, 0])$$
Rule 2301

$$\text{Int}[(a_*) + \text{Log}[(c_*)*(x_)^{(n_*)} * (b_*)] / (x_), x_Symbol] \rightarrow \text{Simp}[(a + b * \text{Log}[c*x^n])^2 / (2*b*n), x] /; \text{FreeQ}[\{a, b, c, n\}, x]$$
Rule 2390

$$\text{Int}[(a_*) + \text{Log}[(c_*) * ((d_*) + (e_*)*(x_)^{(n_*)}) * (b_*)]^{(p_*)} * ((f_*) + (g_*) * (x_)^{(q_*)}), x_Symbol] \rightarrow \text{Dist}[1/e, \text{Subst}[\text{Int}[(f*x)/d]^q * (a + b * \text{Log}[c*x^n])^p, x], x, d + e*x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g, n, p, q\}, x] \&\& \text{EqQ}[e*f - d*g, 0]$$
Rule 2391

$$\text{Int}[\text{Log}[(c_*) * ((d_*) + (e_*)*(x_)^{(n_*)})] / (x_), x_Symbol] \rightarrow -\text{Simp}[\text{PolyLog}[2, -(c*e*x^n)] / n, x] /; \text{FreeQ}[\{c, d, e, n\}, x] \&\& \text{EqQ}[c*d, 1]$$
Rule 2393

$$\text{Int}[(a_*) + \text{Log}[(c_*) * ((d_*) + (e_*)*(x_))] * (b_*)] / ((f_*) + (g_*) * (x_)), x_Symbol] \rightarrow \text{Dist}[1/g, \text{Subst}[\text{Int}[(a + b * \text{Log}[1 + (c*e*x)/g]] / x, x], x, f + g*x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g\}, x] \&\& \text{NeQ}[e*f - d*g, 0] \&\& \text{EqQ}[g + c*(e*f - d*g), 0]$$
Rule 2394

$$\text{Int}[(a_*) + \text{Log}[(c_*) * ((d_*) + (e_*)*(x_)^{(n_*)}) * (b_*)] / ((f_*) + (g_*) * (x_)), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[(e*(f + g*x)) / (e*f - d*g)] * (a + b * \text{Log}[c*(d + e*x)^n]) / g, x] - \text{Dist}[(b*e*n)/g, \text{Int}[\text{Log}[(e*(f + g*x)) / (e*f - d*g)] / (d + e*x)]$$

, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2418

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]

Rule 2524

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]

Rule 2525

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]

Rule 2528

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]

Rubi steps

$$\begin{aligned}
\int \frac{(175c + 175dx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag + bgx)^4} dx &= \int \left(\frac{30625(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^2 g^4 (a + bx)^4} + \frac{61250d(bc - ad)}{b^2 g^4 (a + bx)^4} \right) dx \\
&= \frac{(30625d^2) \int \frac{\left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(a+bx)^2} dx}{b^2 g^4} + \frac{(61250d(bc - ad)) \int \frac{A}{a+bx} dx}{b^2 g^4} \\
&= -\frac{30625(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{3b^3 g^4 (a + bx)^3} - \frac{30625d(bc - ad)}{b^2 g^4} \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \\
&= -\frac{30625(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{3b^3 g^4 (a + bx)^3} - \frac{30625d(bc - ad)}{b^2 g^4} \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \\
&= -\frac{30625(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{3b^3 g^4 (a + bx)^3} - \frac{30625d(bc - ad)}{b^2 g^4} \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \\
&= -\frac{30625(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{3b^3 g^4 (a + bx)^3} - \frac{30625d(bc - ad)}{b^2 g^4} \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \\
&= -\frac{61250B(bc - ad)^2 n \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{9b^3 g^4 (a + bx)^3} - \frac{61250Bd(bc - ad)}{b^2 g^4} \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \\
&= -\frac{61250B(bc - ad)^2 n \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{9b^3 g^4 (a + bx)^3} - \frac{61250Bd(bc - ad)}{b^2 g^4} \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \\
&= -\frac{61250B(bc - ad)^2 n \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{9b^3 g^4 (a + bx)^3} - \frac{61250Bd(bc - ad)}{b^2 g^4} \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \\
&= -\frac{61250B^2(bc - ad)^2 n^2}{27b^3 g^4 (a + bx)^3} - \frac{61250B^2 d(bc - ad) n^2}{9b^3 g^4 (a + bx)^2} - \frac{61250B^2 d^2}{9b^3 g^4 (a + bx)} \\
&= -\frac{61250B^2(bc - ad)^2 n^2}{27b^3 g^4 (a + bx)^3} - \frac{61250B^2 d(bc - ad) n^2}{9b^3 g^4 (a + bx)^2} - \frac{61250B^2 d^2}{9b^3 g^4 (a + bx)} \\
&= -\frac{61250B^2(bc - ad)^2 n^2}{27b^3 g^4 (a + bx)^3} - \frac{61250B^2 d(bc - ad) n^2}{9b^3 g^4 (a + bx)^2} - \frac{61250B^2 d^2}{9b^3 g^4 (a + bx)}
\end{aligned}$$

Mathematica [C] time = 2.24, size = 1415, normalized size = 9.01

result too large to display

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b*g*x)^4,x]

[Out]
$$-1/54*(i^2*(18*(b*c - a*d)^3*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2 + 54*d*(b*c - a*d)^2*(a + b*x)*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2 - 54*d^2*(-(b*c) + a*d)*(a + b*x)^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2 + 54*B*d^2*n*(a + b*x)^2*(2*(b*c - a*d)*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]) + 2*d*(a + b*x)*\text{Log}[a + b*x]*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]) - 2*d*(a + b*x)*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])*\text{Log}[c + d*x] + 2*B*n*(b*c - a*d + d*(a + b*x)*\text{Log}[a + b*x] - d*(a + b*x)*\text{Log}[c + d*x]) - B*d*n*(a + b*x)*(\text{Log}[a + b*x]*(\text{Log}[a + b*x] - 2*\text{Log}[(b*(c + d*x))/(b*c - a*d)]) - 2*\text{PolyLog}[2, (d*(a + b*x))/(-(b*c) + a*d)]) + B*d*n*(a + b*x)*((2*\text{Log}[(d*(a + b*x))/(-(b*c) + a*d)] - \text{Log}[c + d*x])*\text{Log}[c + d*x] + 2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])) + 27*B*d*n*(a + b*x)*(2*(b*c - a*d)^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]) + 4*d*(-(b*c) + a*d)*(a + b*x)*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]) - 4*d^2*(a + b*x)^2*\text{Log}[a + b*x]*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]) + 4*d^2*(a + b*x)^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])*\text{Log}[c + d*x] - 4*B*d*n*(a + b*x)*(b*c - a*d + d*(a + b*x)*\text{Log}[a + b*x] - d*(a + b*x)*\text{Log}[c + d*x]) + B*n*((b*c - a*d)^2 + 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d^2*(a + b*x)^2*\text{Log}[a + b*x] + 2*d^2*(a + b*x)^2*\text{Log}[c + d*x]) + 2*B*d^2*n*(a + b*x)^2*(\text{Log}[a + b*x]*(\text{Log}[a + b*x] - 2*\text{Log}[(b*(c + d*x))/(b*c - a*d)]) - 2*\text{PolyLog}[2, (d*(a + b*x))/(-(b*c) + a*d)]) - 2*B*d^2*n*(a + b*x)^2*((2*\text{Log}[(d*(a + b*x))/(-(b*c) + a*d)] - \text{Log}[c + d*x])*\text{Log}[c + d*x] + 2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])) + B*n*(12*(b*c - a*d)^3*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]) - 18*d*(b*c - a*d)^2*(a + b*x)*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]) + 36*d^2*(b*c - a*d)*(a + b*x)^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]) + 36*d^3*(a + b*x)^3*\text{Log}[a + b*x]*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]) - 36*d^3*(a + b*x)^3*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])*\text{Log}[c + d*x] + 36*B*d^2*n*(a + b*x)^2*(b*c - a*d + d*(a + b*x)*\text{Log}[a + b*x] - d*(a + b*x)*\text{Log}[c + d*x]) - 9*B*d*n*(a + b*x)*((b*c - a*d)^2 + 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d^2*(a + b*x)^2*\text{Log}[a + b*x] + 2*d^2*(a + b*x)^2*\text{Log}[c + d*x]) + 2*B*n*(2*(b*c - a*d)^3 - 3*d*(b*c - a*d)^2*(a + b*x) + 6*d^2*(b*c - a*d)*(a + b*x)^2 + 6*d^3*(a + b*x)^3*\text{Log}[a + b*x] - 6*d^3*(a + b*x)^3*\text{Log}[c + d*x]) - 18*B*d^3*n*(a + b*x)^3*(\text{Log}[a + b*x]*(\text{Log}[a + b*x] - 2*\text{Log}[(b*(c + d*x))/(b*c - a*d)]) - 2*\text{PolyLog}[2, (d*(a + b*x))/(-(b*c) + a*d)]) + 18*B*d^3*n*(a + b*x)^3*((2*\text{Log}[(d*(a + b*x))/(-(b*c) + a*d)] - \text{Log}[c + d*x])*\text{Log}[c + d*x] + 2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])))/(b^3*(b*c - a*d)*g^4*(a + b*x)^3)$$

fricas [B] time = 1.00, size = 975, normalized size = 6.21

$$2(B^2b^3c^3 - B^2a^3d^3)i^2n^2 + 6(ABb^3c^3 - ABa^3d^3)i^2n + 9(A^2b^3c^3 - A^2a^3d^3)i^2 + 3(2(B^2b^3cd^2 - B^2ab^2d^3)i^2n^2$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^4,x,
algorithm="fricas")

[Out]
$$-1/27*(2*(B^2*b^3*c^3 - B^2*a^3*d^3)*i^2*n^2 + 6*(A*B*b^3*c^3 - A*B*a^3*d^3)*i^2*n + 9*(A^2*b^3*c^3 - A^2*a^3*d^3)*i^2 + 3*(2*(B^2*b^3*c*d^2 - B^2*a*b^2*d^3)*i^2*n^2 + 6*(A*B*b^3*c*d^2 - A*B*a*b^2*d^3)*i^2*n + 9*(A^2*b^3*c*d^2 - A^2*a*b^2*d^3)*i^2)*x^2 + 9*(3*(B^2*b^3*c*d^2 - B^2*a*b^2*d^3)*i^2*x^2 + 3*(B^2*b^3*c^2*d - B^2*a^2*b*d^3)*i^2*x + (B^2*b^3*c^3 - B^2*a^3*d^3)*i^2)*\log(e)^2 + 9*(B^2*b^3*d^3*i^2*n^2*x^3 + 3*B^2*b^3*c*d^2*i^2*n^2*x^2 + 3*B^2*b^3*c^2*d*i^2*n^2*x + B^2*b^3*c^3*i^2*n^2)*\log((b*x + a)/(d*x + c))^2 + 3*(2*(B^2*b^3*c^2*d - B^2*a^2*b*d^3)*i^2*n^2 + 6*(A*B*b^3*c^2*d - A*B*a^2*b*d^3)*i^2*n + 9*(A^2*b^3*c^2*d - A^2*a^2*b*d^3)*i^2)*x + 6*((B^2*b^3*c^3 - B^2*a^3*d^3)*i^2*n + 3*(A*B*b^3*c^3 - A*B*a^3*d^3)*i^2 + 3*((B^2*b^3*c*d^2 - B^2*a*b^2*d^3)*i^2*n + 3*(A*B*b^3*c*d^2 - A*B*a*b^2*d^3)*i^2)*x^2 + 3*((B^2*b^3*c^2*d - B^2*a^2*b*d^3)*i^2*n + 3*(A*B*b^3*c^2*d - A*B*a^2*b*d^3)*i^2)*x + 3*(B^2*b^3*d^3*i^2*n*x^3 + 3*B^2*b^3*c*d^2*i^2*n*x^2 + 3*B^2*b^3*c^2*d*i^2*n*x + B^2*b^3*c^3*i^2*n)*\log((b*x + a)/(d*x + c)))*\log(e) + 6*(B^2*b^3*c^3*i^2*n^2 + 3*A*B*b^3*c^3*i^2*n + (B^2*b^3*d^3*i^2*n^2 + 3*A*B*b^3*d^3*i^2*n)*x^3 + 3*(B^2*b^3*c*d^2*i^2*n^2 + 3*A*B*b^3*c*d^2*i^2*n)*x^2 + 3*(B^2*b^3*c^2*d*i^2*n^2 + 3*A*B*b^3*c^2*d*i^2*n)*x)*\log((b*x + a)/(d*x + c)))/((b^7*c - a*b^6*d)*g^4*x^3 + 3*(a*b^6*c - a^2*b^5*d)*g^4*x^2 + 3*(a^2*b^5*c - a^3*b^4*d)*g^4*x + (a^3*b^4*c - a^4*b^3*d)*g^4)$$

giac [A] time = 110.18, size = 176, normalized size = 1.12

$$\frac{1}{27} \left(\frac{9(dx+c)^3 B^2 n^2 \log\left(\frac{bx+a}{dx+c}\right)^2}{(bx+a)^3 g^4} + \frac{6(B^2 n^2 + 3ABn + 3B^2 n)(dx+c)^3 \log\left(\frac{bx+a}{dx+c}\right)}{(bx+a)^3 g^4} + \frac{(2B^2 n^2 + 6ABn + 6B^2 n + \dots)}{(bx+a)^3 g^4} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^4,x,
algorithm="giac")

[Out]
$$1/27*(9*(d*x + c)^3*B^2*n^2*\log((b*x + a)/(d*x + c))^2/((b*x + a)^3*g^4) + 6*(B^2*n^2 + 3*A*B*n + 3*B^2*n)*(d*x + c)^3*\log((b*x + a)/(d*x + c))/((b*x$$

+ a)³g⁴) + (2*B²*n² + 6*A*B*n + 6*B²*n + 9*A² + 18*A*B + 9*B²)*(d*x + c)³/((b*x + a)³g⁴))*(b*c/(b*c - a*d)² - a*d/(b*c - a*d)²)

maple [F] time = 0.46, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci)^2 \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)^2}{(bgx + ag)^4} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*i*x+c*i)²*(B*ln(e*((b*x+a)/(d*x+c))ⁿ)+A)²/(b*g*x+a*g)⁴, x)

[Out] int((d*i*x+c*i)²*(B*ln(e*((b*x+a)/(d*x+c))ⁿ)+A)²/(b*g*x+a*g)⁴, x)

maxima [B] time = 4.97, size = 5588, normalized size = 35.59

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)²*(A+B*log(e*((b*x+a)/(d*x+c))ⁿ))²/(b*g*x+a*g)⁴, x, algorithm="maxima")

[Out] -1/9*A*B*d²*i²*n*((11*a²*b²*c² - 7*a³*b*c*d + 2*a⁴*d² + 6*(3*b⁴*c² - 3*a*b³*c*d + a²*b²*d²)*x² + 3*(9*a*b³*c² - 7*a²*b²*c*d + 2*a³*b*d²)*x)/((b⁸*c² - 2*a*b⁷*c*d + a²*b⁶*d²)*g⁴*x³ + 3*(a*b⁷*c² - 2*a²*b⁶*c*d + a³*b⁵*d²)*g⁴*x² + 3*(a²*b⁶*c² - 2*a³*b⁵*c*d + a⁴*b⁴*d²)*g⁴*x + (a³*b⁵*c² - 2*a⁴*b⁴*c*d + a⁵*b³*d²)*g⁴) + 6*(3*b²*c²*d - 3*a*b*c*d² + a²*d³)*log(b*x + a)/((b⁶*c³ - 3*a*b⁵*c²*d + 3*a²*b⁴*c*d² - a³*b³*d³)*g⁴) - 1/9*A*B*c²*i²*n*((6*b²*d²*x² + 2*b²*c² - 7*a*b*c*d + 11*a²*d² - 3*(b²*c*d - 5*a*b*d²)*x)/((b⁶*c² - 2*a*b⁵*c*d + a²*b⁴*d²)*g⁴*x³ + 3*(a*b⁵*c² - 2*a²*b⁴*c*d + a³*b³*d²)*g⁴*x² + 3*(a²*b⁴*c² - 2*a³*b³*c*d + a⁴*b²*d²)*g⁴*x + (a³*b³*c² - 2*a⁴*b²*c*d + a⁵*b*d²)*g⁴) + 6*d³*log(b*x + a)/((b⁴*c³ - 3*a*b³*c²*d + 3*a²*b²*c*d² - a³*b*d³)*g⁴) - 6*d³*log(d*x + c)/((b⁴*c³ - 3*a*b³*c²*d + 3*a²*b²*c*d² - a³*b*d³)*g⁴) - 1/9*A*B*c*d*i²*n*((5*a*b²*c² - 22*a²*b*c*d + 5*a³*d² - 6*(3*b³*c*d - a*b²*d²)*x² + 3*(3*b³*c² - 16*a*b²*c*d + 5*a²*b*d²)*x)/((b⁷*c² - 2*a*b⁶*c*d + a²*b⁵*d²)*g⁴*x³ + 3*(a*b⁶*c² - 2*a²*b⁵*c*d + a³*b⁴*d²)*g⁴*x² + 3*(a²*b⁵*c² - 2*a³*b⁴*c*d + a⁴*b³*d²)*g⁴*x + (a³*b⁴*c² - 2*a⁴*b³*c*d + a⁵*b²*d²)*g⁴) - 6*(3*b*c*d² - a*d³)*log(b*x + a)/((b⁵*c³ - 3*a*b⁴*c²*d + 3*a²*b³*c*d² - a³*b²*d³)*g⁴) + 6*(3*b*c*d² - a*d³)*log(d*x + c)/((b⁵*c³ - 3*a*b⁴*c²*d + 3*a²*b³*c*d² - a³*b²*d³)*g⁴) - 1/3*(3*b*x + a)*B²

$$\begin{aligned}
& *c*d*i^2*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n)^2/(b^5*g^4*x^3 + 3*a*b^4*g^4*x^2 + 3*a^2*b^3*g^4*x + a^3*b^2*g^4) - 1/3*(3*b^2*x^2 + 3*a*b*x + a^2)*B^2*d^2*i^2*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n)^2/(b^6*g^4*x^3 + 3*a*b^5*g^4*x^2 + 3*a^2*b^4*g^4*x + a^3*b^3*g^4) - 1/54*(6*n*((6*b^2*d^2*x^2 + 2*b^2*c^2 - 7*a*b*c*d + 11*a^2*d^2 - 3*(b^2*c*d - 5*a*b*d^2)*x)/((b^6*c^2 - 2*a*b^5*c*d + a^2*b^4*d^2)*g^4*x^3 + 3*(a*b^5*c^2 - 2*a^2*b^4*c*d + a^3*b^3*d^2)*g^4*x^2 + 3*(a^2*b^4*c^2 - 2*a^3*b^3*c*d + a^4*b^2*d^2)*g^4*x + (a^3*b^3*c^2 - 2*a^4*b^2*c*d + a^5*b*d^2)*g^4) + 6*d^3*log(b*x + a)/((b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^3)*g^4) - 6*d^3*log(d*x + c)/((b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^3)*g^4))*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + (4*b^3*c^3 - 27*a*b^2*c^2*d + 108*a^2*b*c*d^2 - 85*a^3*d^3 + 66*(b^3*c*d^2 - a*b^2*d^3)*x^2 - 18*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*log(b*x + a)^2 - 18*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*log(d*x + c)^2 - 3*(5*b^3*c^2*d - 54*a*b^2*c*d^2 + 49*a^2*b*d^3)*x + 66*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*log(b*x + a) - 6*(11*b^3*d^3*x^3 + 33*a*b^2*d^3*x^2 + 33*a^2*b*d^3*x + 11*a^3*d^3 - 6*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*log(b*x + a))*log(d*x + c))*n^2/(a^3*b^4*c^3*g^4 - 3*a^4*b^3*c^2*d*g^4 + 3*a^5*b^2*c*d^2*g^4 - a^6*b*d^3*g^4 + (b^7*c^3*g^4 - 3*a*b^6*c^2*d*g^4 + 3*a^2*b^5*c*d^2*g^4 - a^3*b^4*d^3*g^4)*x^3 + 3*(a*b^6*c^3*g^4 - 3*a^2*b^5*c^2*d*g^4 + 3*a^3*b^4*c*d^2*g^4 - a^4*b^3*d^3*g^4)*x^2 + 3*(a^2*b^5*c^3*g^4 - 3*a^3*b^4*c^2*d*g^4 + 3*a^4*b^3*c*d^2*g^4 - a^5*b^2*d^3*g^4)*x))*B^2*c^2*i^2 - 1/54*(6*n*((5*a*b^2*c^2 - 22*a^2*b*c*d + 5*a^3*d^2 - 6*(3*b^3*c*d - a*b^2*d^2)*x^2 + 3*(3*b^3*c^2 - 16*a*b^2*c*d + 5*a^2*b*d^2)*x)/((b^7*c^2 - 2*a*b^6*c*d + a^2*b^5*d^2)*g^4*x^3 + 3*(a*b^6*c^2 - 2*a^2*b^5*c*d + a^3*b^4*d^2)*g^4*x^2 + 3*(a^2*b^5*c^2 - 2*a^3*b^4*c*d + a^4*b^3*d^2)*g^4*x + (a^3*b^4*c^2 - 2*a^4*b^3*c*d + a^5*b^2*d^2)*g^4) - 6*(3*b*c*d^2 - a*d^3)*log(b*x + a)/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*g^4) + 6*(3*b*c*d^2 - a*d^3)*log(d*x + c)/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*g^4))*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + (19*a*b^3*c^3 - 189*a^2*b^2*c^2*d + 189*a^3*b*c*d^2 - 19*a^4*d^3 - 6*(27*b^4*c^2*d - 32*a*b^3*c*d^2 + 5*a^2*b^2*d^3)*x^2 + 18*(3*a^3*b*c*d^2 - a^4*d^3 + (3*b^4*c*d^2 - a*b^3*d^3)*x^3 + 3*(3*a*b^3*c*d^2 - a^2*b^2*d^3)*x^2 + 3*(3*a^2*b^2*c*d^2 - a^3*b*d^3)*x)*log(b*x + a)^2 + 18*(3*a^3*b*c*d^2 - a^4*d^3 + (3*b^4*c*d^2 - a*b^3*d^3)*x^3 + 3*(3*a*b^3*c*d^2 - a^2*b^2*d^3)*x^2 + 3*(3*a^2*b^2*c*d^2 - a^3*b*d^3)*x)*log(d*x + c)^2 + 3*(9*b^4*c^3 - 125*a*b^3*c^2*d + 135*a^2*b^2*c*d^2 - 19*a^3*b*d^3)*x - 6*(27*a^3*b*c*d^2 - 5*a^4*d^3 + (27*b^4*c*d^2 - 5*a*b^3*d^3)*x^3 + 3*(27*a*b^3*c*d^2 - 5*a^2*b^2*d^3)*x^2 + 3*(27*a^2*b^2*c*d^2 - 5*a^3*b*d^3)*x)*log(b*x + a) + 6*(27*a^3*b*c*d^2 - 5*a^4*d^3 + (27*b^4*c*d^2 - 5*a*b^3*d^3)*x^3 + 3*(27*a*b^3*c*d^2 - 5*a^2*b^2*d^3)*x^2 + 3*(27*a^2*b^2*c*d^2 - 5*a^3*b*d^3)*x) - 6*(3*a^3*b*c*d^2 - a^4*d^3 + (3*b^4*c*d^2 - a*b^3*d^3)*x^3 + 3*(3*a*b^3*c*d^2 - a^2*b^2*d^3)*x^2 + 3*(3*a^2*b^2*c*d^2 - a^3*b*d^3)*x)*log(b*x + a))*log(d*x + c))*n^2/(a^3*b^5*c^3*g^4 - 3*a^4*b^4*c^2*d*g^4 + 3*a^5*b^3*c*d^2*g^4 - a^6*b^2*d^3*g^4 + (b^8*c^3*g^4 - 3*a*b^7*c^2*d*g^4 + 3*a^2*b^6*c*d^2*g^4 - a^3*b^5*d^3*g^4)*x^3 + 3*(a*b
\end{aligned}$$

$$\begin{aligned}
& ^7c^3g^4 - 3a^2b^6c^2d^2g^4 + 3a^3b^5c^2d^2g^4 - a^4b^4d^3g^4) * x \\
& ^2 + 3(a^2b^6c^3g^4 - 3a^3b^5c^2d^2g^4 + 3a^4b^4c^2d^2g^4 - a^5b \\
& ^3d^3g^4) * x) * B^2 * c * d * i^2 - 1/54 * (6 * n * ((11 * a^2 * b^2 * c^2 - 7 * a^3 * b * c * d + 2 * \\
& a^4 * d^2 + 6 * (3 * b^4 * c^2 - 3 * a * b^3 * c * d + a^2 * b^2 * d^2) * x^2 + 3 * (9 * a * b^3 * c^2 - \\
& 7 * a^2 * b^2 * c * d + 2 * a^3 * b * d^2) * x) / ((b^8 * c^2 - 2 * a * b^7 * c * d + a^2 * b^6 * d^2) * g^4 * \\
& x^3 + 3 * (a * b^7 * c^2 - 2 * a^2 * b^6 * c * d + a^3 * b^5 * d^2) * g^4 * x^2 + 3 * (a^2 * b^6 * c^2 \\
& - 2 * a^3 * b^5 * c * d + a^4 * b^4 * d^2) * g^4 * x + (a^3 * b^5 * c^2 - 2 * a^4 * b^4 * c * d + a^5 * b \\
& ^3 * d^2) * g^4) + 6 * (3 * b^2 * c^2 * d - 3 * a * b * c * d^2 + a^2 * d^3) * \log(b * x + a) / ((b^6 * c \\
& ^3 - 3 * a * b^5 * c^2 * d + 3 * a^2 * b^4 * c * d^2 - a^3 * b^3 * d^3) * g^4) - 6 * (3 * b^2 * c^2 * d - \\
& 3 * a * b * c * d^2 + a^2 * d^3) * \log(d * x + c) / ((b^6 * c^3 - 3 * a * b^5 * c^2 * d + 3 * a^2 * b^4 * \\
& c * d^2 - a^3 * b^3 * d^3) * g^4) * \log(e * (b * x / (d * x + c) + a / (d * x + c))^n) + (85 * a^2 \\
& * b^3 * c^3 - 108 * a^3 * b^2 * c^2 * d + 27 * a^4 * b * c * d^2 - 4 * a^5 * d^3 + 6 * (18 * b^5 * c^3 - \\
& 27 * a * b^4 * c^2 * d + 11 * a^2 * b^3 * c * d^2 - 2 * a^3 * b^2 * d^3) * x^2 - 18 * (3 * a^3 * b^2 * c^2 \\
& * d - 3 * a^4 * b * c * d^2 + a^5 * d^3 + (3 * b^5 * c^2 * d - 3 * a * b^4 * c * d^2 + a^2 * b^3 * d^3) * \\
& x^3 + 3 * (3 * a * b^4 * c^2 * d - 3 * a^2 * b^3 * c * d^2 + a^3 * b^2 * d^3) * x^2 + 3 * (3 * a^2 * b^3 * \\
& c^2 * d - 3 * a^3 * b^2 * c * d^2 + a^4 * b * d^3) * x) * \log(b * x + a)^2 - 18 * (3 * a^3 * b^2 * c^2 * \\
& d - 3 * a^4 * b * c * d^2 + a^5 * d^3 + (3 * b^5 * c^2 * d - 3 * a * b^4 * c * d^2 + a^2 * b^3 * d^3) * x \\
& ^3 + 3 * (3 * a * b^4 * c^2 * d - 3 * a^2 * b^3 * c * d^2 + a^3 * b^2 * d^3) * x^2 + 3 * (3 * a^2 * b^3 * c \\
& ^2 * d - 3 * a^3 * b^2 * c * d^2 + a^4 * b * d^3) * x) * \log(d * x + c)^2 + 3 * (63 * a * b^4 * c^3 - 8 \\
& 6 * a^2 * b^3 * c^2 * d + 27 * a^3 * b^2 * c * d^2 - 4 * a^4 * b * d^3) * x + 6 * (18 * a^3 * b^2 * c^2 * d - \\
& 9 * a^4 * b * c * d^2 + 2 * a^5 * d^3 + (18 * b^5 * c^2 * d - 9 * a * b^4 * c * d^2 + 2 * a^2 * b^3 * d^3) \\
& * x^3 + 3 * (18 * a * b^4 * c^2 * d - 9 * a^2 * b^3 * c * d^2 + 2 * a^3 * b^2 * d^3) * x^2 + 3 * (18 * a^2 \\
& * b^3 * c^2 * d - 9 * a^3 * b^2 * c * d^2 + 2 * a^4 * b * d^3) * x) * \log(b * x + a) - 6 * (18 * a^3 * b^2 \\
& * c^2 * d - 9 * a^4 * b * c * d^2 + 2 * a^5 * d^3 + (18 * b^5 * c^2 * d - 9 * a * b^4 * c * d^2 + 2 * a^2 * \\
& b^3 * d^3) * x^3 + 3 * (18 * a * b^4 * c^2 * d - 9 * a^2 * b^3 * c * d^2 + 2 * a^3 * b^2 * d^3) * x^2 + 3 \\
& * (18 * a^2 * b^3 * c^2 * d - 9 * a^3 * b^2 * c * d^2 + 2 * a^4 * b * d^3) * x - 6 * (3 * a^3 * b^2 * c^2 * d \\
& - 3 * a^4 * b * c * d^2 + a^5 * d^3 + (3 * b^5 * c^2 * d - 3 * a * b^4 * c * d^2 + a^2 * b^3 * d^3) * x^3 \\
& + 3 * (3 * a * b^4 * c^2 * d - 3 * a^2 * b^3 * c * d^2 + a^3 * b^2 * d^3) * x^2 + 3 * (3 * a^2 * b^3 * c^2 \\
& * d - 3 * a^3 * b^2 * c * d^2 + a^4 * b * d^3) * x) * \log(b * x + a) * \log(d * x + c)) * n^2 / (a^3 * b \\
& ^6 * c^3 * g^4 - 3 * a^4 * b^5 * c^2 * d^2 * g^4 + 3 * a^5 * b^4 * c * d^2 * g^4 - a^6 * b^3 * d^3 * g^4 + \\
& (b^9 * c^3 * g^4 - 3 * a * b^8 * c^2 * d^2 * g^4 + 3 * a^2 * b^7 * c * d^2 * g^4 - a^3 * b^6 * d^3 * g^4) * x \\
& ^3 + 3 * (a * b^8 * c^3 * g^4 - 3 * a^2 * b^7 * c^2 * d^2 * g^4 + 3 * a^3 * b^6 * c * d^2 * g^4 - a^4 * b^5 \\
& * d^3 * g^4) * x^2 + 3 * (a^2 * b^7 * c^3 * g^4 - 3 * a^3 * b^6 * c^2 * d^2 * g^4 + 3 * a^4 * b^5 * c * d^2 * \\
& g^4 - a^5 * b^4 * d^3 * g^4) * x) * B^2 * d^2 * i^2 - 2/3 * (3 * b * x + a) * A * B * c * d * i^2 * \log(e * \\
& (b * x / (d * x + c) + a / (d * x + c))^n) / (b^5 * g^4 * x^3 + 3 * a * b^4 * g^4 * x^2 + 3 * a^2 * b^3 \\
& * g^4 * x + a^3 * b^2 * g^4) - 2/3 * (3 * b^2 * x^2 + 3 * a * b * x + a^2) * A * B * d^2 * i^2 * \log(e * \\
& (b * x / (d * x + c) + a / (d * x + c))^n) / (b^6 * g^4 * x^3 + 3 * a * b^5 * g^4 * x^2 + 3 * a^2 * b^4 * \\
& g^4 * x + a^3 * b^3 * g^4) - 1/3 * B^2 * c^2 * i^2 * \log(e * (b * x / (d * x + c) + a / (d * x + c))^n) \\
& ^2 / (b^4 * g^4 * x^3 + 3 * a * b^3 * g^4 * x^2 + 3 * a^2 * b^2 * g^4 * x + a^3 * b * g^4) - 1/3 * (3 \\
& * b * x + a) * A^2 * c * d * i^2 / (b^5 * g^4 * x^3 + 3 * a * b^4 * g^4 * x^2 + 3 * a^2 * b^3 * g^4 * x + a^ \\
& 3 * b^2 * g^4) - 1/3 * (3 * b^2 * x^2 + 3 * a * b * x + a^2) * A^2 * d^2 * i^2 / (b^6 * g^4 * x^3 + 3 * a \\
& * b^5 * g^4 * x^2 + 3 * a^2 * b^4 * g^4 * x + a^3 * b^3 * g^4) - 2/3 * A * B * c^2 * i^2 * \log(e * (b * x / \\
& (d * x + c) + a / (d * x + c))^n) / (b^4 * g^4 * x^3 + 3 * a * b^3 * g^4 * x^2 + 3 * a^2 * b^2 * g^4 * \\
& x + a^3 * b * g^4) - 1/3 * A^2 * c^2 * i^2 / (b^4 * g^4 * x^3 + 3 * a * b^3 * g^4 * x^2 + 3 * a^2 * b^2 \\
& * g^4 * x + a^3 * b * g^4)
\end{aligned}$$

mupad [B] time = 7.48, size = 1195, normalized size = 7.61

$$\frac{x \left(9 c A^2 b^2 d i^2 + 9 a A^2 b d^2 i^2 + 6 c A B b^2 d i^2 n + 6 a A B b d^2 i^2 n + 2 c B^2 b^2 d i^2 n^2 + 2 a B^2 b d^2 i^2 n^2 \right) + x^2 \left(\dots \right)}{\dots}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int(((c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x)^4,x)`

[Out]
$$- (x*(9*A^2*a*b*d^2*i^2 + 9*A^2*b^2*c*d*i^2 + 2*B^2*a*b*d^2*i^2*n^2 + 2*B^2*b^2*c*d*i^2*n^2 + 6*A*B*a*b*d^2*i^2*n + 6*A*B*b^2*c*d*i^2*n) + x^2*(9*A^2*b^2*d^2*i^2 + 2*B^2*b^2*d^2*i^2*n^2 + 6*A*B*b^2*d^2*i^2*n) + 3*A^2*a^2*d^2*i^2 + 3*A^2*b^2*c^2*i^2 + (2*B^2*a^2*d^2*i^2*n^2)/3 + (2*B^2*b^2*c^2*i^2*n^2)/3 + 3*A^2*a*b*c*d*i^2 + 2*A*B*a^2*d^2*i^2*n + 2*A*B*b^2*c^2*i^2*n + (2*B^2*a*b*c*d*i^2*n^2)/3 + 2*A*B*a*b*c*d*i^2*n)/(9*a^3*b^3*g^4 + 9*b^6*g^4*x^3 + 27*a^2*b^4*g^4*x + 27*a*b^5*g^4*x^2) - \log(e*((a + b*x)/(c + d*x))^n)*((a*(2*A*B*a*d^2*i^2 - B^2*a*d^2*i^2*n + B^2*b*c*d*i^2*n + 2*A*B*b*c*d*i^2) + x*(b*(2*A*B*a*d^2*i^2 - B^2*a*d^2*i^2*n + B^2*b*c*d*i^2*n + 2*A*B*b*c*d*i^2) + 4*A*B*a*b*d^2*i^2 + 4*A*B*b^2*c*d*i^2 - 2*B^2*a*b*d^2*i^2*n + 2*B^2*b^2*c*d*i^2*n) + 2*A*B*b^2*c^2*i^2 - 2*B^2*a^2*d^2*i^2*n + 6*A*B*b^2*d^2*i^2*x^2 + 2*B^2*a*b*c*d*i^2*n)/(3*a^3*b^3*g^4 + 3*b^6*g^4*x^3 + 9*a^2*b^4*g^4*x + 9*a*b^5*g^4*x^2) + (2*B^2*d^3*i^2*(x*(b*((a*b^3*g^4*n*(a*d - b*c))/d + (b^3*g^4*n*(a*d - b*c)*(3*a*d - b*c))/(2*d^2)) + (2*a*b^4*g^4*n*(a*d - b*c))/d + (b^4*g^4*n*(a*d - b*c)*(3*a*d - b*c))/d^2) + a*((a*b^3*g^4*n*(a*d - b*c))/d + (b^3*g^4*n*(a*d - b*c)*(3*a*d - b*c))/(2*d^2)) + (3*b^5*g^4*n*x^2*(a*d - b*c))/d + (b^3*g^4*n*(a*d - b*c)*(3*a^2*d^2 + b^2*c^2 - 3*a*b*c*d))/d^3))/((3*b^3*g^4*(a*d - b*c)*(3*a^3*b^3*g^4 + 3*b^6*g^4*x^3 + 9*a^2*b^4*g^4*x + 9*a*b^5*g^4*x^2))) - \log(e*((a + b*x)/(c + d*x))^n)^2*((a*((B^2*c*d*i^2)/(3*b^2) + (B^2*a*d^2*i^2)/(3*b^3)) + x*(b*((B^2*c*d*i^2)/(3*b^2) + (B^2*a*d^2*i^2)/(3*b^3)) + (2*B^2*c*d*i^2)/(3*b) + (2*B^2*a*d^2*i^2)/(3*b^2)) + (B^2*c^2*i^2)/(3*b) + (B^2*d^2*i^2*x^2)/b)/(a^3*g^4 + b^3*g^4*x^3 + 3*a*b^2*g^4*x^2 + 3*a^2*b*g^4*x) - (B^2*d^3*i^2)/(3*b^3*g^4*(a*d - b*c))) - (B*d^3*i^2*n*atan((((9*b^4*c*g^4 + 9*a*b^3*d*g^4)/(9*b^3*g^4) + 2*b*d*x)*1i)/(a*d - b*c))*(3*A + B*n)*4i)/(9*b^3*g^4*(a*d - b*c))$$

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(b*g*x+a*g)**4, x)
```

```
[Out] Timed out
```

$$3.176 \quad \int \frac{(ci+dx)^2 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag+bgx)^5} dx$$

Optimal. Leaf size=319

$$\frac{bi^2(c+dx)^4 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)^2}{4g^5(a+bx)^4(bc-ad)^2} - \frac{bBi^2n(c+dx)^4 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{8g^5(a+bx)^4(bc-ad)^2} + \frac{di^2(c+dx)^3 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{3g^5(a+bx)^3(bc-ad)^2}$$

[Out] $2/27*B^2*d*i^2*n^2*(d*x+c)^3/(-a*d+b*c)^2/g^5/(b*x+a)^3-1/32*b*B^2*i^2*n^2*(d*x+c)^4/(-a*d+b*c)^2/g^5/(b*x+a)^4+2/9*B*d*i^2*n*(d*x+c)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^2/g^5/(b*x+a)^3-1/8*b*B*i^2*n*(d*x+c)^4*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^2/g^5/(b*x+a)^4+1/3*d*i^2*(d*x+c)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^2/g^5/(b*x+a)^3-1/4*b*i^2*(d*x+c)^4*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^2/g^5/(b*x+a)^4$

Rubi [C] time = 3.79, antiderivative size = 989, normalized size of antiderivative = 3.10, number of steps used = 98, number of rules used = 11, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}} = 0.244$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{B^2i^2n^2 \log^2(a+bx)d^4}{12b^3(bc-ad)^2g^5} - \frac{B^2i^2n^2 \log^2(c+dx)d^4}{12b^3(bc-ad)^2g^5} + \frac{7B^2i^2n^2 \log(a+bx)d^4}{72b^3(bc-ad)^2g^5} + \frac{Bi^2n \log(a+bx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{6b^3(bc-ad)^2g^5}$$

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b*g*x)^5,x]

[Out] $-(B^2*(b*c - a*d)^2*i^2*n^2)/(32*b^3*g^5*(a + b*x)^4) - (11*B^2*d*(b*c - a*d)*i^2*n^2)/(216*b^3*g^5*(a + b*x)^3) + (5*B^2*d^2*i^2*n^2)/(144*b^3*g^5*(a + b*x)^2) + (7*B^2*d^3*i^2*n^2)/(72*b^3*(b*c - a*d)*g^5*(a + b*x)) + (7*B^2*d^4*i^2*n^2*Log[a + b*x])/(72*b^3*(b*c - a*d)^2*g^5) - (B^2*d^4*i^2*n^2*Log[a + b*x]^2)/(12*b^3*(b*c - a*d)^2*g^5) - (B*(b*c - a*d)^2*i^2*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(8*b^3*g^5*(a + b*x)^4) - (5*B*d*(b*c - a*d)*i^2*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(18*b^3*g^5*(a + b*x)^3) - (B*d^2*i^2*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(12*b^3*g^5*(a + b*x)^2) + (B*d^3*i^2*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(6*b^3*(b*c - a*d)*g^5*(a + b*x)) + (B*d^4*i^2*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(6*b^3*(b*c - a*d)^2*g^5) - ((b*c - a*d)^2*i^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(4*b^3*g^5*(a + b*x)^4) - (2*d*(b*c - a*d)*i^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(3*b^3*g^5*(a + b*x)^3) - (d^2*i^2*(A$

$$\begin{aligned}
& + B \cdot \text{Log}\left[e^{\left(\frac{a + b \cdot x}{c + d \cdot x}\right)^n}\right]^2 / (2 \cdot b^3 \cdot g^5 \cdot (a + b \cdot x)^2) - (7 \cdot B^2 \cdot d^4 \cdot i^2 \cdot n^2 \cdot \text{Log}[c + d \cdot x]) / (72 \cdot b^3 \cdot (b \cdot c - a \cdot d)^2 \cdot g^5) + (B^2 \cdot d^4 \cdot i^2 \cdot n^2 \cdot \text{Log}\left[-\left(\frac{d \cdot (a + b \cdot x)}{b \cdot c - a \cdot d}\right)\right] \cdot \text{Log}[c + d \cdot x]) / (6 \cdot b^3 \cdot (b \cdot c - a \cdot d)^2 \cdot g^5) - (B \cdot d^4 \cdot i^2 \cdot n^2 \cdot (A + B \cdot \text{Log}\left[e^{\left(\frac{a + b \cdot x}{c + d \cdot x}\right)^n}\right]) \cdot \text{Log}[c + d \cdot x]) / (6 \cdot b^3 \cdot (b \cdot c - a \cdot d)^2 \cdot g^5) - (B^2 \cdot d^4 \cdot i^2 \cdot n^2 \cdot \text{Log}[c + d \cdot x]^2) / (12 \cdot b^3 \cdot (b \cdot c - a \cdot d)^2 \cdot g^5) \\
& + (B^2 \cdot d^4 \cdot i^2 \cdot n^2 \cdot \text{Log}[a + b \cdot x] \cdot \text{Log}\left[\frac{b \cdot (c + d \cdot x)}{b \cdot c - a \cdot d}\right]) / (6 \cdot b^3 \cdot (b \cdot c - a \cdot d)^2 \cdot g^5) + (B^2 \cdot d^4 \cdot i^2 \cdot n^2 \cdot \text{PolyLog}[2, -\left(\frac{d \cdot (a + b \cdot x)}{b \cdot c - a \cdot d}\right)]) / (6 \cdot b^3 \cdot (b \cdot c - a \cdot d)^2 \cdot g^5) + (B^2 \cdot d^4 \cdot i^2 \cdot n^2 \cdot \text{PolyLog}[2, \frac{b \cdot (c + d \cdot x)}{b \cdot c - a \cdot d}]) / (6 \cdot b^3 \cdot (b \cdot c - a \cdot d)^2 \cdot g^5)
\end{aligned}$$
Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 44

```
Int[((a_) + (b_.)*(x_)^(m_.))*((c_.) + (d_.)*(x_)^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*((f_) + (g_.)*(x_)^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(176c + 176dx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag + bgx)^5} dx &= \int \left(\frac{30976(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^2 g^5 (a + bx)^5} + \frac{61952d(bc - ad)}{b^2 g^5} \right) dx \\
&= \frac{(30976d^2) \int \frac{\left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(a+bx)^3} dx}{b^2 g^5} + \frac{(61952d(bc - ad)) \int \frac{(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right))^2}{(a+bx)^3} dx}{b^2 g^5} \\
&= -\frac{7744(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^3 g^5 (a + bx)^4} - \frac{61952d(bc - ad)}{3b^3} \\
&= -\frac{7744(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^3 g^5 (a + bx)^4} - \frac{61952d(bc - ad)}{3b^3} \\
&= -\frac{7744(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^3 g^5 (a + bx)^4} - \frac{61952d(bc - ad)}{3b^3} \\
&= -\frac{7744(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^3 g^5 (a + bx)^4} - \frac{61952d(bc - ad)}{3b^3} \\
&= -\frac{7744(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^3 g^5 (a + bx)^4} - \frac{61952d(bc - ad)}{3b^3} \\
&= -\frac{3872B(bc - ad)^2 n \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^3 g^5 (a + bx)^4} - \frac{77440Bd(bc - ad)}{9} \\
&= -\frac{3872B(bc - ad)^2 n \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^3 g^5 (a + bx)^4} - \frac{77440Bd(bc - ad)}{9} \\
&= -\frac{3872B(bc - ad)^2 n \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^3 g^5 (a + bx)^4} - \frac{77440Bd(bc - ad)}{9} \\
&= -\frac{968B^2(bc - ad)^2 n^2}{b^3 g^5 (a + bx)^4} - \frac{42592B^2 d(bc - ad) n^2}{27b^3 g^5 (a + bx)^3} + \frac{9680B^2 d^2 n^2}{9b^3 g^5 (a + bx)^2} \\
&= -\frac{968B^2(bc - ad)^2 n^2}{b^3 g^5 (a + bx)^4} - \frac{42592B^2 d(bc - ad) n^2}{27b^3 g^5 (a + bx)^3} + \frac{9680B^2 d^2 n^2}{9b^3 g^5 (a + bx)^2} \\
&= -\frac{968B^2(bc - ad)^2 n^2}{b^3 g^5 (a + bx)^4} - \frac{42592B^2 d(bc - ad) n^2}{27b^3 g^5 (a + bx)^3} + \frac{9680B^2 d^2 n^2}{9b^3 g^5 (a + bx)^2}
\end{aligned}$$

Mathematica [C] time = 3.28, size = 1860, normalized size = 5.83

result too large to display

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b*g*x)^5,x]

[Out]
$$-1/864*(i^2*(216*(b*c - a*d)^4*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2 - 576*d*(-(b*c) + a*d)^3*(a + b*x)*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2 + 432*d^2*(b*c - a*d)^2*(a + b*x)^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2 + 216*B*d^2*n*(a + b*x)^2*(2*(b*c - a*d)^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]) + 4*d*(-(b*c) + a*d)*(a + b*x)*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]) - 4*d^2*(a + b*x)^2*\text{Log}[a + b*x]*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]) + 4*d^2*(a + b*x)^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])* \text{Log}[c + d*x] - 4*B*d*n*(a + b*x)*(b*c - a*d + d*(a + b*x)*\text{Log}[a + b*x] - d*(a + b*x)*\text{Log}[c + d*x]) + B*n*((b*c - a*d)^2 + 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d^2*(a + b*x)^2*\text{Log}[a + b*x] + 2*d^2*(a + b*x)^2*\text{Log}[c + d*x]) + 2*B*d^2*n*(a + b*x)^2*(\text{Log}[a + b*x]*(\text{Log}[a + b*x] - 2*\text{Log}[(b*(c + d*x))/(b*c - a*d)]) - 2*\text{PolyLog}[2, (d*(a + b*x))/(-(b*c) + a*d)]) - 2*B*d^2*n*(a + b*x)^2*((2*\text{Log}[(d*(a + b*x))/(-(b*c) + a*d)] - \text{Log}[c + d*x])* \text{Log}[c + d*x] + 2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]) + 32*B*d*n*(a + b*x)*(12*(b*c - a*d)^3*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]) - 18*d*(b*c - a*d)^2*(a + b*x)*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]) + 36*d^2*(b*c - a*d)*(a + b*x)^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]) + 36*d^3*(a + b*x)^3*\text{Log}[a + b*x]*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]) - 36*d^3*(a + b*x)^3*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])* \text{Log}[c + d*x] + 36*B*d^2*n*(a + b*x)^2*(b*c - a*d + d*(a + b*x)*\text{Log}[a + b*x] - d*(a + b*x)*\text{Log}[c + d*x]) - 9*B*d*n*(a + b*x)*((b*c - a*d)^2 + 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d^2*(a + b*x)^2*\text{Log}[a + b*x] + 2*d^2*(a + b*x)^2*\text{Log}[c + d*x]) + 2*B*n*(2*(b*c - a*d)^3 - 3*d*(b*c - a*d)^2*(a + b*x) + 6*d^2*(b*c - a*d)*(a + b*x)^2 + 6*d^3*(a + b*x)^3*\text{Log}[a + b*x] - 6*d^3*(a + b*x)^3*\text{Log}[c + d*x]) - 18*B*d^3*n*(a + b*x)^3*(\text{Log}[a + b*x]*(\text{Log}[a + b*x] - 2*\text{Log}[(b*(c + d*x))/(b*c - a*d)]) - 2*\text{PolyLog}[2, (d*(a + b*x))/(-(b*c) + a*d)]) + 18*B*d^3*n*(a + b*x)^3*((2*\text{Log}[(d*(a + b*x))/(-(b*c) + a*d)] - \text{Log}[c + d*x])* \text{Log}[c + d*x] + 2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]) + 3*B*n*(36*(b*c - a*d)^4*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]) + 48*d*(-(b*c) + a*d)^3*(a + b*x)*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]) + 72*d^2*(b*c - a*d)^2*(a + b*x)^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]) + 144*d^3*(-(b*c) + a*d)*(a + b*x)^3*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]) - 144*d^4*(a + b*x)^4*\text{Log}[a + b*x]*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]) + 144*d^4*(a + b*x)^4*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])* \text{Log}[c + d*x] - 144*B*d^3*n*(a + b*x)^3*(b*c - a*d + d*(a + b*x)*\text{Log}[a + b*x] - d*(a + b*x)*\text{Log}[c + d*x]) + 36*B*d^2*n*(a + b*x)^2*((b*c - a*d)^2 + 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d^2*(a + b*x)^2*\text{Log}[a + b*x] + 2*d^2*(a + b*x)^2*\text{Log}[c + d*x]) - 8*B*d*n*(a + b*x)*(2*($$

$$b*c - a*d)^3 - 3*d*(b*c - a*d)^2*(a + b*x) + 6*d^2*(b*c - a*d)*(a + b*x)^2 + 6*d^3*(a + b*x)^3*\text{Log}[a + b*x] - 6*d^3*(a + b*x)^3*\text{Log}[c + d*x] + 3*B*n*(3*(b*c - a*d)^4 + 4*d*(-(b*c) + a*d)^3*(a + b*x) + 6*d^2*(b*c - a*d)^2*(a + b*x)^2 + 12*d^3*(-(b*c) + a*d)*(a + b*x)^3 - 12*d^4*(a + b*x)^4*\text{Log}[a + b*x] + 12*d^4*(a + b*x)^4*\text{Log}[c + d*x]) + 72*B*d^4*n*(a + b*x)^4*(\text{Log}[a + b*x]*(\text{Log}[a + b*x] - 2*\text{Log}[(b*(c + d*x))/(b*c - a*d)]) - 2*\text{PolyLog}[2, (d*(a + b*x))/(-(b*c) + a*d)]) - 72*B*d^4*n*(a + b*x)^4*((2*\text{Log}[(d*(a + b*x))/(-(b*c) + a*d)] - \text{Log}[c + d*x])*\text{Log}[c + d*x] + 2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])))/((b^3*(b*c - a*d)^2*g^5*(a + b*x)^4)$$

fricas [B] time = 0.94, size = 1729, normalized size = 5.42

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^5,x,
algorithm="fricas")
```

```
[Out] -1/864*((27*B^2*b^4*c^4 - 64*B^2*a*b^3*c^3*d + 37*B^2*a^4*d^4)*i^2*n^2 + 12
*(9*A*B*b^4*c^4 - 16*A*B*a*b^3*c^3*d + 7*A*B*a^4*d^4)*i^2*n - 12*(7*(B^2*b^
4*c*d^3 - B^2*a*b^3*d^4)*i^2*n^2 + 12*(A*B*b^4*c*d^3 - A*B*a*b^3*d^4)*i^2*n
)*x^3 + 72*(3*A^2*b^4*c^4 - 4*A^2*a*b^3*c^3*d + A^2*a^4*d^4)*i^2 - 6*((5*B^
2*b^4*c^2*d^2 + 32*B^2*a*b^3*c*d^3 - 37*B^2*a^2*b^2*d^4)*i^2*n^2 - 12*(A*B*
b^4*c^2*d^2 - 8*A*B*a*b^3*c*d^3 + 7*A*B*a^2*b^2*d^4)*i^2*n - 72*(A^2*b^4*c^
2*d^2 - 2*A^2*a*b^3*c*d^3 + A^2*a^2*b^2*d^4)*i^2)*x^2 + 72*(6*(B^2*b^4*c^2*
d^2 - 2*B^2*a*b^3*c*d^3 + B^2*a^2*b^2*d^4)*i^2*x^2 + 4*(2*B^2*b^4*c^3*d - 3
*B^2*a*b^3*c^2*d^2 + B^2*a^3*b*d^4)*i^2*x + (3*B^2*b^4*c^4 - 4*B^2*a*b^3*c^
3*d + B^2*a^4*d^4)*i^2)*log(e)^2 - 72*(B^2*b^4*d^4*i^2*n^2*x^4 + 4*B^2*a*b^
3*d^4*i^2*n^2*x^3 - 6*(B^2*b^4*c^2*d^2 - 2*B^2*a*b^3*c*d^3)*i^2*n^2*x^2 - 4
*(2*B^2*b^4*c^3*d - 3*B^2*a*b^3*c^2*d^2)*i^2*n^2*x - (3*B^2*b^4*c^4 - 4*B^2
*a*b^3*c^3*d)*i^2*n^2)*log((b*x + a)/(d*x + c))^2 + 4*((11*B^2*b^4*c^3*d -
48*B^2*a*b^3*c^2*d^2 + 37*B^2*a^3*b*d^4)*i^2*n^2 + 12*(5*A*B*b^4*c^3*d - 12
*A*B*a*b^3*c^2*d^2 + 7*A*B*a^3*b*d^4)*i^2*n + 72*(2*A^2*b^4*c^3*d - 3*A^2*a
*b^3*c^2*d^2 + A^2*a^3*b*d^4)*i^2)*x - 12*(12*(B^2*b^4*c*d^3 - B^2*a*b^3*d^
4)*i^2*n*x^3 - (9*B^2*b^4*c^4 - 16*B^2*a*b^3*c^3*d + 7*B^2*a^4*d^4)*i^2*n -
12*(3*A*B*b^4*c^4 - 4*A*B*a*b^3*c^3*d + A*B*a^4*d^4)*i^2 - 6*((B^2*b^4*c^2
*d^2 - 8*B^2*a*b^3*c*d^3 + 7*B^2*a^2*b^2*d^4)*i^2*n + 12*(A*B*b^4*c^2*d^2 -
2*A*B*a*b^3*c*d^3 + A*B*a^2*b^2*d^4)*i^2)*x^2 - 4*((5*B^2*b^4*c^3*d - 12*B
^2*a*b^3*c^2*d^2 + 7*B^2*a^3*b*d^4)*i^2*n + 12*(2*A*B*b^4*c^3*d - 3*A*B*a*b
^3*c^2*d^2 + A*B*a^3*b*d^4)*i^2)*x + 12*(B^2*b^4*d^4*i^2*n*x^4 + 4*B^2*a*b^
3*d^4*i^2*n*x^3 - 6*(B^2*b^4*c^2*d^2 - 2*B^2*a*b^3*c*d^3)*i^2*n*x^2 - 4*(2*
B^2*b^4*c^3*d - 3*B^2*a*b^3*c^2*d^2)*i^2*n*x - (3*B^2*b^4*c^4 - 4*B^2*a*b^3
*c^3*d)*i^2*n)*log((b*x + a)/(d*x + c))*log(e) + 12*((9*B^2*b^4*c^4 - 16*B
^2*a*b^3*c^3*d)*i^2*n^2 - (7*B^2*b^4*d^4*i^2*n^2 + 12*A*B*b^4*d^4*i^2*n)*x^
4 + 12*(3*A*B*b^4*c^4 - 4*A*B*a*b^3*c^3*d)*i^2*n - 4*(12*A*B*a*b^3*d^4*i^2*
```


$n + (3B^2b^4cd^3 + 4B^2a^3b^3d^4)i^2n^2)x^3 + 6((B^2b^4c^2d^2 - 8B^2a^3b^3cd^3)i^2n^2 + 12(AB^2b^4c^2d^2 - 2AB^2a^3b^3cd^3)i^2n^2)x^2 + 4((5B^2b^4c^3d - 12B^2a^3b^3c^2d^2)i^2n^2 + 12(2AB^2b^4c^3d - 3AB^2a^3b^3c^2d^2)i^2n^2)x \log((bx+a)/(dx+c)) / ((b^9c^2 - 2a^8b^8cd + a^2b^7d^2)g^5x^4 + 4(a^8b^8c^2 - 2a^2b^7cd + a^3b^6d^2)g^5x^3 + 6(a^2b^7c^2 - 2a^3b^6cd + a^4b^5d^2)g^5x^2 + 4(a^3b^6c^2 - 2a^4b^5cd + a^5b^4d^2)g^5x + (a^4b^5c^2 - 2a^5b^4cd + a^6b^3d^2)g^5)$

giac [A] time = 163.53, size = 461, normalized size = 1.45

$$\frac{1}{864} \left(\frac{72 \left(3B^2bn^2 - \frac{4(bx+a)B^2dn^2}{dx+c} \right) \log\left(\frac{bx+a}{dx+c}\right)^2}{\frac{(bx+a)^4bcg^5}{(dx+c)^4} - \frac{(bx+a)^4adg^5}{(dx+c)^4}} + \frac{12 \left(9B^2bn^2 - \frac{16(bx+a)B^2dn^2}{dx+c} + 36ABbn + 36B^2bn - \frac{48(bx+a)ABdn}{dx+c} \right)}{\frac{(bx+a)^4bcg^5}{(dx+c)^4} - \frac{(bx+a)^4adg^5}{(dx+c)^4}} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^5,x, algorithm="giac")

[Out] $\frac{1}{864} \left(72 \left(3B^2b^4n^2 - 4(bx+a)B^2d^2n^2/(dx+c) \right) \log((bx+a)/(dx+c))^2 / ((bx+a)^4b^8c^2g^5/(dx+c)^4 - (bx+a)^4a^8d^2g^5/(dx+c)^4) + 12 \left(9B^2bn^2 - 16(bx+a)B^2dn^2/(dx+c) + 36ABbn + 36B^2bn - 48(bx+a)ABdn/(dx+c) - 48(bx+a)B^2dn/(dx+c) \right) \log((bx+a)/(dx+c)) / ((bx+a)^4b^8c^2g^5/(dx+c)^4 - (bx+a)^4a^8d^2g^5/(dx+c)^4) + (27B^2b^4n^2 - 64(bx+a)B^2d^2n^2/(dx+c) + 108ABbn + 108B^2bn - 192(bx+a)ABdn/(dx+c) - 192(bx+a)B^2dn/(dx+c) + 216A^2b + 432ABb + 216B^2b - 288(bx+a)A^2d/(dx+c) - 576(bx+a)ABd/(dx+c) - 288(bx+a)B^2d/(dx+c)) / ((bx+a)^4b^8c^2g^5/(dx+c)^4 - (bx+a)^4a^8d^2g^5/(dx+c)^4) \right) \cdot (bc/(bc - ad))^2 - ad/(bc - ad)^2$

maple [F] time = 0.46, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci)^2 \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)^2}{(bgx + ag)^5} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^5,x)

[Out] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^5,x)

maxima [B] time = 7.61, size = 8087, normalized size = 25.35

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^5,x,
algorithm="maxima")
```

```
[Out] 1/24*A*B*c^2*i^2*n*((12*b^3*d^3*x^3 - 3*b^3*c^3 + 13*a*b^2*c^2*d - 23*a^2*b
*c*d^2 + 25*a^3*d^3 - 6*(b^3*c*d^2 - 7*a*b^2*d^3)*x^2 + 4*(b^3*c^2*d - 5*a
b^2*c*d^2 + 13*a^2*b*d^3)*x)/((b^8*c^3 - 3*a*b^7*c^2*d + 3*a^2*b^6*c*d^2 -
a^3*b^5*d^3)*g^5*x^4 + 4*(a*b^7*c^3 - 3*a^2*b^6*c^2*d + 3*a^3*b^5*c*d^2 - a
^4*b^4*d^3)*g^5*x^3 + 6*(a^2*b^6*c^3 - 3*a^3*b^5*c^2*d + 3*a^4*b^4*c*d^2 -
a^5*b^3*d^3)*g^5*x^2 + 4*(a^3*b^5*c^3 - 3*a^4*b^4*c^2*d + 3*a^5*b^3*c*d^2 -
a^6*b^2*d^3)*g^5*x + (a^4*b^4*c^3 - 3*a^5*b^3*c^2*d + 3*a^6*b^2*c*d^2 - a^
7*b*d^3)*g^5) + 12*d^4*log(b*x + a)/((b^5*c^4 - 4*a*b^4*c^3*d + 6*a^2*b^3*c
^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)*g^5) - 12*d^4*log(d*x + c)/((b^5*c^4
- 4*a*b^4*c^3*d + 6*a^2*b^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)*g^5)) -
1/72*A*B*d^2*i^2*n*((13*a^2*b^3*c^3 - 75*a^3*b^2*c^2*d + 33*a^4*b*c*d^2 - 7
*a^5*d^3 - 12*(6*b^5*c^2*d - 4*a*b^4*c*d^2 + a^2*b^3*d^3)*x^3 + 6*(6*b^5*c^
3 - 46*a*b^4*c^2*d + 29*a^2*b^3*c*d^2 - 7*a^3*b^2*d^3)*x^2 + 4*(10*a*b^4*c^
3 - 63*a^2*b^3*c^2*d + 33*a^3*b^2*c*d^2 - 7*a^4*b*d^3)*x)/((b^10*c^3 - 3*a*
b^9*c^2*d + 3*a^2*b^8*c*d^2 - a^3*b^7*d^3)*g^5*x^4 + 4*(a*b^9*c^3 - 3*a^2*b
^8*c^2*d + 3*a^3*b^7*c*d^2 - a^4*b^6*d^3)*g^5*x^3 + 6*(a^2*b^8*c^3 - 3*a^3*
b^7*c^2*d + 3*a^4*b^6*c*d^2 - a^5*b^5*d^3)*g^5*x^2 + 4*(a^3*b^7*c^3 - 3*a^4
*b^6*c^2*d + 3*a^5*b^5*c*d^2 - a^6*b^4*d^3)*g^5*x + (a^4*b^6*c^3 - 3*a^5*b^
5*c^2*d + 3*a^6*b^4*c*d^2 - a^7*b^3*d^3)*g^5) - 12*(6*b^2*c^2*d^2 - 4*a*b*c
*d^3 + a^2*d^4)*log(b*x + a)/((b^7*c^4 - 4*a*b^6*c^3*d + 6*a^2*b^5*c^2*d^2
- 4*a^3*b^4*c*d^3 + a^4*b^3*d^4)*g^5) + 12*(6*b^2*c^2*d^2 - 4*a*b*c*d^3 + a
^2*d^4)*log(d*x + c)/((b^7*c^4 - 4*a*b^6*c^3*d + 6*a^2*b^5*c^2*d^2 - 4*a^3*
b^4*c*d^3 + a^4*b^3*d^4)*g^5)) - 1/36*A*B*c*d*i^2*n*((7*a*b^3*c^3 - 33*a^2*
b^2*c^2*d + 75*a^3*b*c*d^2 - 13*a^4*d^3 + 12*(4*b^4*c*d^2 - a*b^3*d^3)*x^3
- 6*(4*b^4*c^2*d - 29*a*b^3*c*d^2 + 7*a^2*b^2*d^3)*x^2 + 4*(4*b^4*c^3 - 21*
a*b^3*c^2*d + 57*a^2*b^2*c*d^2 - 13*a^3*b*d^3)*x)/((b^9*c^3 - 3*a*b^8*c^2*d
+ 3*a^2*b^7*c*d^2 - a^3*b^6*d^3)*g^5*x^4 + 4*(a*b^8*c^3 - 3*a^2*b^7*c^2*d
+ 3*a^3*b^6*c*d^2 - a^4*b^5*d^3)*g^5*x^3 + 6*(a^2*b^7*c^3 - 3*a^3*b^6*c^2*d
+ 3*a^4*b^5*c*d^2 - a^5*b^4*d^3)*g^5*x^2 + 4*(a^3*b^6*c^3 - 3*a^4*b^5*c^2*
d + 3*a^5*b^4*c*d^2 - a^6*b^3*d^3)*g^5*x + (a^4*b^5*c^3 - 3*a^5*b^4*c^2*d +
3*a^6*b^3*c*d^2 - a^7*b^2*d^3)*g^5) + 12*(4*b*c*d^3 - a*d^4)*log(b*x + a)/
((b^6*c^4 - 4*a*b^5*c^3*d + 6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d
^4)*g^5) - 12*(4*b*c*d^3 - a*d^4)*log(d*x + c)/((b^6*c^4 - 4*a*b^5*c^3*d +
6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*g^5)) - 1/6*(4*b*x + a)*
B^2*c*d*i^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)^2/(b^6*g^5*x^4 + 4*a*b^5
*g^5*x^3 + 6*a^2*b^4*g^5*x^2 + 4*a^3*b^3*g^5*x + a^4*b^2*g^5) - 1/12*(6*b^2
```

$$\begin{aligned}
& *x^2 + 4*a*b*x + a^2)*B^2*d^2*i^2*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n)^2/ \\
& (b^7*g^5*x^4 + 4*a*b^6*g^5*x^3 + 6*a^2*b^5*g^5*x^2 + 4*a^3*b^4*g^5*x + a^4* \\
& b^3*g^5) + 1/288*(12*n*((12*b^3*d^3*x^3 - 3*b^3*c^3 + 13*a*b^2*c^2*d - 23*a \\
& ^2*b*c*d^2 + 25*a^3*d^3 - 6*(b^3*c*d^2 - 7*a*b^2*d^3)*x^2 + 4*(b^3*c^2*d - \\
& 5*a*b^2*c*d^2 + 13*a^2*b*d^3)*x)/((b^8*c^3 - 3*a*b^7*c^2*d + 3*a^2*b^6*c*d^2 \\
& - a^3*b^5*d^3)*g^5*x^4 + 4*(a*b^7*c^3 - 3*a^2*b^6*c^2*d + 3*a^3*b^5*c*d^2 \\
& - a^4*b^4*d^3)*g^5*x^3 + 6*(a^2*b^6*c^3 - 3*a^3*b^5*c^2*d + 3*a^4*b^4*c*d^2 \\
& - a^5*b^3*d^3)*g^5*x^2 + 4*(a^3*b^5*c^3 - 3*a^4*b^4*c^2*d + 3*a^5*b^3*c*d^2 \\
& - a^6*b^2*d^3)*g^5*x + (a^4*b^4*c^3 - 3*a^5*b^3*c^2*d + 3*a^6*b^2*c*d^2 \\
& - a^7*b*d^3)*g^5) + 12*d^4*log(b*x + a)/((b^5*c^4 - 4*a*b^4*c^3*d + 6*a^2*b^3*c^2*d^2 - \\
& 4*a^3*b^2*c*d^3 + a^4*b*d^4)*g^5) - 12*d^4*log(d*x + c)/((b^5*c^4 - 4*a*b^4*c^3*d + 6*a^2*b^3*c^2*d^2 - \\
& 4*a^3*b^2*c*d^3 + a^4*b*d^4)*g^5) *log(e*(b*x/(d*x + c) + a/(d*x + c))^n) - (9*b^4*c^4 - 64*a*b^3*c^3*d + 21 \\
& 6*a^2*b^2*c^2*d^2 - 576*a^3*b*c*d^3 + 415*a^4*d^4 - 300*(b^4*c*d^3 - a*b^3*d^4)*x^3 + 6*(13*b^4*c^2*d^2 - 176*a*b^3*c*d^3 + 163*a^2*b^2*d^4)*x^2 + 72* \\
& (b^4*d^4*x^4 + 4*a*b^3*d^4*x^3 + 6*a^2*b^2*d^4*x^2 + 4*a^3*b*d^4*x + a^4*d^4)*log(b*x + a)^2 + 72*(b^4*d^4*x^4 + 4*a*b^3*d^4*x^3 + 6*a^2*b^2*d^4*x^2 + \\
& 4*a^3*b*d^4*x + a^4*d^4)*log(d*x + c)^2 - 4*(7*b^4*c^3*d - 60*a*b^3*c^2*d^2 \\
& + 324*a^2*b^2*c*d^3 - 271*a^3*b*d^4)*x - 300*(b^4*d^4*x^4 + 4*a*b^3*d^4*x^3 \\
& + 6*a^2*b^2*d^4*x^2 + 4*a^3*b*d^4*x + a^4*d^4)*log(b*x + a) + 12*(25*b^4 \\
& *d^4*x^4 + 100*a*b^3*d^4*x^3 + 150*a^2*b^2*d^4*x^2 + 100*a^3*b*d^4*x + 25*a^4 \\
& *d^4 - 12*(b^4*d^4*x^4 + 4*a*b^3*d^4*x^3 + 6*a^2*b^2*d^4*x^2 + 4*a^3*b*d^4 \\
& *x + a^4*d^4)*log(b*x + a))*log(d*x + c))*n^2/(a^4*b^5*c^4*g^5 - 4*a^5*b^4 \\
& *c^3*d*g^5 + 6*a^6*b^3*c^2*d^2*g^5 - 4*a^7*b^2*c*d^3*g^5 + a^8*b*d^4*g^5 + \\
& (b^9*c^4*g^5 - 4*a*b^8*c^3*d*g^5 + 6*a^2*b^7*c^2*d^2*g^5 - 4*a^3*b^6*c*d^3*g^5 \\
& + a^4*b^5*d^4*g^5)*x^4 + 4*(a*b^8*c^4*g^5 - 4*a^2*b^7*c^3*d*g^5 + 6*a^3 \\
& *b^6*c^2*d^2*g^5 - 4*a^4*b^5*c*d^3*g^5 + a^5*b^4*d^4*g^5)*x^3 + 6*(a^2*b^7*c^4 \\
& *g^5 - 4*a^3*b^6*c^3*d*g^5 + 6*a^4*b^5*c^2*d^2*g^5 - 4*a^5*b^4*c*d^3*g^5 \\
& + a^6*b^3*d^4*g^5)*x^2 + 4*(a^3*b^6*c^4*g^5 - 4*a^4*b^5*c^3*d*g^5 + 6*a^5*b^4*c^2 \\
& *d^2*g^5 - 4*a^6*b^3*c*d^3*g^5 + a^7*b^2*d^4*g^5)*x))*B^2*c^2*i^2 - \\
& 1/432*(12*n*((7*a*b^3*c^3 - 33*a^2*b^2*c^2*d + 75*a^3*b*c*d^2 - 13*a^4*d^3 \\
& + 12*(4*b^4*c*d^2 - a*b^3*d^3)*x^3 - 6*(4*b^4*c^2*d - 29*a*b^3*c*d^2 + 7*a^2 \\
& *b^2*d^3)*x^2 + 4*(4*b^4*c^3 - 21*a*b^3*c^2*d + 57*a^2*b^2*c*d^2 - 13*a^3*b \\
& *d^3)*x)/((b^9*c^3 - 3*a*b^8*c^2*d + 3*a^2*b^7*c*d^2 - a^3*b^6*d^3)*g^5*x^4 \\
& + 4*(a*b^8*c^3 - 3*a^2*b^7*c^2*d + 3*a^3*b^6*c*d^2 - a^4*b^5*d^3)*g^5*x^3 \\
& + 6*(a^2*b^7*c^3 - 3*a^3*b^6*c^2*d + 3*a^4*b^5*c*d^2 - a^5*b^4*d^3)*g^5*x^2 \\
& + 4*(a^3*b^6*c^3 - 3*a^4*b^5*c^2*d + 3*a^5*b^4*c*d^2 - a^6*b^3*d^3)*g^5*x \\
& + (a^4*b^5*c^3 - 3*a^5*b^4*c^2*d + 3*a^6*b^3*c*d^2 - a^7*b^2*d^3)*g^5) + 1 \\
& 2*(4*b*c*d^3 - a*d^4)*log(b*x + a)/((b^6*c^4 - 4*a*b^5*c^3*d + 6*a^2*b^4*c^2 \\
& *d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*g^5) - 12*(4*b*c*d^3 - a*d^4)*log(d*x \\
& + c)/((b^6*c^4 - 4*a*b^5*c^3*d + 6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4 \\
& *b^2*d^4)*g^5))*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + (37*a*b^4*c^4 - 3 \\
& 04*a^2*b^3*c^3*d + 1512*a^3*b^2*c^2*d^2 - 1360*a^4*b*c*d^3 + 115*a^5*d^4 + \\
& 12*(88*b^5*c^2*d^2 - 101*a*b^4*c*d^3 + 13*a^2*b^3*d^4)*x^3 - 6*(40*b^5*c^3*d \\
& - 609*a*b^4*c^2*d^2 + 648*a^2*b^3*c*d^3 - 79*a^3*b^2*d^4)*x^2 - 72*(4*a^4
\end{aligned}$$

$$\begin{aligned}
& *b*c*d^3 - a^5*d^4 + (4*b^5*c*d^3 - a*b^4*d^4)*x^4 + 4*(4*a*b^4*c*d^3 - a^2 \\
& *b^3*d^4)*x^3 + 6*(4*a^2*b^3*c*d^3 - a^3*b^2*d^4)*x^2 + 4*(4*a^3*b^2*c*d^3 \\
& - a^4*b*d^4)*x)*\log(b*x + a)^2 - 72*(4*a^4*b*c*d^3 - a^5*d^4 + (4*b^5*c*d^3 \\
& - a*b^4*d^4)*x^4 + 4*(4*a*b^4*c*d^3 - a^2*b^3*d^4)*x^3 + 6*(4*a^2*b^3*c*d^ \\
& 3 - a^3*b^2*d^4)*x^2 + 4*(4*a^3*b^2*c*d^3 - a^4*b*d^4)*x)*\log(d*x + c)^2 + \\
& 4*(16*b^5*c^4 - 163*a*b^4*c^3*d + 1068*a^2*b^3*c^2*d^2 - 1036*a^3*b^2*c*d^3 \\
& + 115*a^4*b*d^4)*x + 12*(88*a^4*b*c*d^3 - 13*a^5*d^4 + (88*b^5*c*d^3 - 13* \\
& a*b^4*d^4)*x^4 + 4*(88*a*b^4*c*d^3 - 13*a^2*b^3*d^4)*x^3 + 6*(88*a^2*b^3*c* \\
& d^3 - 13*a^3*b^2*d^4)*x^2 + 4*(88*a^3*b^2*c*d^3 - 13*a^4*b*d^4)*x)*\log(b*x \\
& + a) - 12*(88*a^4*b*c*d^3 - 13*a^5*d^4 + (88*b^5*c*d^3 - 13*a*b^4*d^4)*x^4 \\
& + 4*(88*a*b^4*c*d^3 - 13*a^2*b^3*d^4)*x^3 + 6*(88*a^2*b^3*c*d^3 - 13*a^3*b^ \\
& 2*d^4)*x^2 + 4*(88*a^3*b^2*c*d^3 - 13*a^4*b*d^4)*x - 12*(4*a^4*b*c*d^3 - a^ \\
& 5*d^4 + (4*b^5*c*d^3 - a*b^4*d^4)*x^4 + 4*(4*a*b^4*c*d^3 - a^2*b^3*d^4)*x^3 \\
& + 6*(4*a^2*b^3*c*d^3 - a^3*b^2*d^4)*x^2 + 4*(4*a^3*b^2*c*d^3 - a^4*b*d^4)* \\
& x)*\log(b*x + a))*\log(d*x + c))*n^2/(a^4*b^6*c^4*g^5 - 4*a^5*b^5*c^3*d*g^5 + \\
& 6*a^6*b^4*c^2*d^2*g^5 - 4*a^7*b^3*c*d^3*g^5 + a^8*b^2*d^4*g^5 + (b^10*c^4* \\
& g^5 - 4*a*b^9*c^3*d*g^5 + 6*a^2*b^8*c^2*d^2*g^5 - 4*a^3*b^7*c*d^3*g^5 + a^4 \\
& *b^6*d^4*g^5)*x^4 + 4*(a*b^9*c^4*g^5 - 4*a^2*b^8*c^3*d*g^5 + 6*a^3*b^7*c^2* \\
& d^2*g^5 - 4*a^4*b^6*c*d^3*g^5 + a^5*b^5*d^4*g^5)*x^3 + 6*(a^2*b^8*c^4*g^5 - \\
& 4*a^3*b^7*c^3*d*g^5 + 6*a^4*b^6*c^2*d^2*g^5 - 4*a^5*b^5*c*d^3*g^5 + a^6*b^ \\
& 4*d^4*g^5)*x^2 + 4*(a^3*b^7*c^4*g^5 - 4*a^4*b^6*c^3*d*g^5 + 6*a^5*b^5*c^2*d \\
& ^2*g^5 - 4*a^6*b^4*c*d^3*g^5 + a^7*b^3*d^4*g^5)*x))*B^2*c*d*i^2 - 1/864*(12 \\
& *n*((13*a^2*b^3*c^3 - 75*a^3*b^2*c^2*d + 33*a^4*b*c*d^2 - 7*a^5*d^3 - 12*(6 \\
& *b^5*c^2*d - 4*a*b^4*c*d^2 + a^2*b^3*d^3)*x^3 + 6*(6*b^5*c^3 - 46*a*b^4*c^2 \\
& *d + 29*a^2*b^3*c*d^2 - 7*a^3*b^2*d^3)*x^2 + 4*(10*a*b^4*c^3 - 63*a^2*b^3*c \\
& ^2*d + 33*a^3*b^2*c*d^2 - 7*a^4*b*d^3)*x)/(b^10*c^3 - 3*a*b^9*c^2*d + 3*a^ \\
& 2*b^8*c*d^2 - a^3*b^7*d^3)*g^5*x^4 + 4*(a*b^9*c^3 - 3*a^2*b^8*c^2*d + 3*a^3 \\
& *b^7*c*d^2 - a^4*b^6*d^3)*g^5*x^3 + 6*(a^2*b^8*c^3 - 3*a^3*b^7*c^2*d + 3*a^ \\
& 4*b^6*c*d^2 - a^5*b^5*d^3)*g^5*x^2 + 4*(a^3*b^7*c^3 - 3*a^4*b^6*c^2*d + 3*a \\
& ^5*b^5*c*d^2 - a^6*b^4*d^3)*g^5*x + (a^4*b^6*c^3 - 3*a^5*b^5*c^2*d + 3*a^6* \\
& b^4*c*d^2 - a^7*b^3*d^3)*g^5) - 12*(6*b^2*c^2*d^2 - 4*a*b*c*d^3 + a^2*d^4)* \\
& \log(b*x + a)/((b^7*c^4 - 4*a*b^6*c^3*d + 6*a^2*b^5*c^2*d^2 - 4*a^3*b^4*c*d^3 \\
& + a^4*b^3*d^4)*g^5) + 12*(6*b^2*c^2*d^2 - 4*a*b*c*d^3 + a^2*d^4)*\log(d*x \\
& + c)/((b^7*c^4 - 4*a*b^6*c^3*d + 6*a^2*b^5*c^2*d^2 - 4*a^3*b^4*c*d^3 + a^4* \\
& b^3*d^4)*g^5))*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + (115*a^2*b^4*c^4 - \\
& 1360*a^3*b^3*c^3*d + 1512*a^4*b^2*c^2*d^2 - 304*a^5*b*c*d^3 + 37*a^6*d^4 - \\
& 12*(108*b^6*c^3*d - 148*a*b^5*c^2*d^2 + 47*a^2*b^4*c*d^3 - 7*a^3*b^3*d^4)*x \\
& ^3 + 6*(36*b^6*c^4 - 712*a*b^5*c^3*d + 903*a^2*b^4*c^2*d^2 - 264*a^3*b^3*c* \\
& d^3 + 37*a^4*b^2*d^4)*x^2 + 72*(6*a^4*b^2*c^2*d^2 - 4*a^5*b*c*d^3 + a^6*d^4 \\
& + (6*b^6*c^2*d^2 - 4*a*b^5*c*d^3 + a^2*b^4*d^4)*x^4 + 4*(6*a*b^5*c^2*d^2 - \\
& 4*a^2*b^4*c*d^3 + a^3*b^3*d^4)*x^3 + 6*(6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^ \\
& 3 + a^4*b^2*d^4)*x^2 + 4*(6*a^3*b^3*c^2*d^2 - 4*a^4*b^2*c*d^3 + a^5*b*d^4)* \\
& x)*\log(b*x + a)^2 + 72*(6*a^4*b^2*c^2*d^2 - 4*a^5*b*c*d^3 + a^6*d^4 + (6*b^ \\
& 6*c^2*d^2 - 4*a*b^5*c*d^3 + a^2*b^4*d^4)*x^4 + 4*(6*a*b^5*c^2*d^2 - 4*a^2*b \\
& ^4*c*d^3 + a^3*b^3*d^4)*x^3 + 6*(6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*
\end{aligned}$$

$$\begin{aligned}
& b^2*d^4)*x^2 + 4*(6*a^3*b^3*c^2*d^2 - 4*a^4*b^2*c*d^3 + a^5*b*d^4)*x)*\log(d \\
& *x + c)^2 + 4*(76*a*b^5*c^4 - 1057*a^2*b^4*c^3*d + 1248*a^3*b^3*c^2*d^2 - 3 \\
& 04*a^4*b^2*c*d^3 + 37*a^5*b*d^4)*x - 12*(108*a^4*b^2*c^2*d^2 - 40*a^5*b*c*d \\
& ^3 + 7*a^6*d^4 + (108*b^6*c^2*d^2 - 40*a*b^5*c*d^3 + 7*a^2*b^4*d^4)*x^4 + 4 \\
& *(108*a*b^5*c^2*d^2 - 40*a^2*b^4*c*d^3 + 7*a^3*b^3*d^4)*x^3 + 6*(108*a^2*b^ \\
& 4*c^2*d^2 - 40*a^3*b^3*c*d^3 + 7*a^4*b^2*d^4)*x^2 + 4*(108*a^3*b^3*c^2*d^2 \\
& - 40*a^4*b^2*c*d^3 + 7*a^5*b*d^4)*x)*\log(b*x + a) + 12*(108*a^4*b^2*c^2*d^2 \\
& - 40*a^5*b*c*d^3 + 7*a^6*d^4 + (108*b^6*c^2*d^2 - 40*a*b^5*c*d^3 + 7*a^2*b^ \\
& ^4*d^4)*x^4 + 4*(108*a*b^5*c^2*d^2 - 40*a^2*b^4*c*d^3 + 7*a^3*b^3*d^4)*x^3 \\
& + 6*(108*a^2*b^4*c^2*d^2 - 40*a^3*b^3*c*d^3 + 7*a^4*b^2*d^4)*x^2 + 4*(108*a^ \\
& ^3*b^3*c^2*d^2 - 40*a^4*b^2*c*d^3 + 7*a^5*b*d^4)*x - 12*(6*a^4*b^2*c^2*d^2 \\
& - 4*a^5*b*c*d^3 + a^6*d^4 + (6*b^6*c^2*d^2 - 4*a*b^5*c*d^3 + a^2*b^4*d^4)*x \\
& ^4 + 4*(6*a*b^5*c^2*d^2 - 4*a^2*b^4*c*d^3 + a^3*b^3*d^4)*x^3 + 6*(6*a^2*b^4 \\
& *c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*x^2 + 4*(6*a^3*b^3*c^2*d^2 - 4*a^ \\
& 4*b^2*c*d^3 + a^5*b*d^4)*x)*\log(b*x + a))*\log(d*x + c))*n^2/(a^4*b^7*c^4*g^ \\
& 5 - 4*a^5*b^6*c^3*d*g^5 + 6*a^6*b^5*c^2*d^2*g^5 - 4*a^7*b^4*c*d^3*g^5 + a^8 \\
& *b^3*d^4*g^5 + (b^11*c^4*g^5 - 4*a*b^10*c^3*d*g^5 + 6*a^2*b^9*c^2*d^2*g^5 - \\
& 4*a^3*b^8*c*d^3*g^5 + a^4*b^7*d^4*g^5)*x^4 + 4*(a*b^10*c^4*g^5 - 4*a^2*b^9 \\
& *c^3*d*g^5 + 6*a^3*b^8*c^2*d^2*g^5 - 4*a^4*b^7*c*d^3*g^5 + a^5*b^6*d^4*g^5) \\
& *x^3 + 6*(a^2*b^9*c^4*g^5 - 4*a^3*b^8*c^3*d*g^5 + 6*a^4*b^7*c^2*d^2*g^5 - 4 \\
& *a^5*b^6*c*d^3*g^5 + a^6*b^5*d^4*g^5)*x^2 + 4*(a^3*b^8*c^4*g^5 - 4*a^4*b^7*c^ \\
& ^3*d*g^5 + 6*a^5*b^6*c^2*d^2*g^5 - 4*a^6*b^5*c*d^3*g^5 + a^7*b^4*d^4*g^5)* \\
& x))*B^2*d^2*i^2 - 1/3*(4*b*x + a)*A*B*c*d*i^2*\log(e*(b*x/(d*x + c) + a/(d*x \\
& + c))^n)/(b^6*g^5*x^4 + 4*a*b^5*g^5*x^3 + 6*a^2*b^4*g^5*x^2 + 4*a^3*b^3*g^ \\
& 5*x + a^4*b^2*g^5) - 1/6*(6*b^2*x^2 + 4*a*b*x + a^2)*A*B*d^2*i^2*\log(e*(b*x \\
& /(d*x + c) + a/(d*x + c))^n)/(b^7*g^5*x^4 + 4*a*b^6*g^5*x^3 + 6*a^2*b^5*g^ \\
& 5*x^2 + 4*a^3*b^4*g^5*x + a^4*b^3*g^5) - 1/4*B^2*c^2*i^2*\log(e*(b*x/(d*x + c) \\
& + a/(d*x + c))^n)^2/(b^5*g^5*x^4 + 4*a*b^4*g^5*x^3 + 6*a^2*b^3*g^5*x^2 + \\
& 4*a^3*b^2*g^5*x + a^4*b*g^5) - 1/6*(4*b*x + a)*A^2*c*d*i^2/(b^6*g^5*x^4 + 4 \\
& *a*b^5*g^5*x^3 + 6*a^2*b^4*g^5*x^2 + 4*a^3*b^3*g^5*x + a^4*b^2*g^5) - 1/12* \\
& (6*b^2*x^2 + 4*a*b*x + a^2)*A^2*d^2*i^2/(b^7*g^5*x^4 + 4*a*b^6*g^5*x^3 + 6* \\
& a^2*b^5*g^5*x^2 + 4*a^3*b^4*g^5*x + a^4*b^3*g^5) - 1/2*A*B*c^2*i^2*\log(e*(b \\
& *x/(d*x + c) + a/(d*x + c))^n)/(b^5*g^5*x^4 + 4*a*b^4*g^5*x^3 + 6*a^2*b^3*g^ \\
& ^5*x^2 + 4*a^3*b^2*g^5*x + a^4*b*g^5) - 1/4*A^2*c^2*i^2/(b^5*g^5*x^4 + 4*a* \\
& b^4*g^5*x^3 + 6*a^2*b^3*g^5*x^2 + 4*a^3*b^2*g^5*x + a^4*b*g^5)
\end{aligned}$$

mupad [B] time = 9.42, size = 1934, normalized size = 6.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{int}(((c*i + d*i*x)^2*(A + B*\log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x)^5, x)$

[Out] $-\log(e*((a + b*x)/(c + d*x))^n)*((a*(A*B*a*d^2*i^2 - (B^2*a*d^2*i^2*n))/2 +$

$$\begin{aligned}
& (B^2*b*c*d*i^2*n)/2 + 2*A*B*b*c*d*i^2) + x*(b*(A*B*a*d^2*i^2 - (B^2*a*d^2* \\
& i^2*n)/2 + (B^2*b*c*d*i^2*n)/2 + 2*A*B*b*c*d*i^2) + 3*A*B*a*b*d^2*i^2 + 6*A \\
& *B*b^2*c*d*i^2 - (3*B^2*a*b*d^2*i^2*n)/2 + (3*B^2*b^2*c*d*i^2*n)/2) + 3*A*B \\
& *b^2*c^2*i^2 - B^2*a^2*d^2*i^2*n + (B^2*b^2*c^2*i^2*n)/2 + 6*A*B*b^2*d^2*i^ \\
& 2*x^2 + (B^2*a*b*c*d*i^2*n)/2)/(6*a^4*b^3*g^5 + 6*b^7*g^5*x^4 + 24*a^3*b^4* \\
& g^5*x + 24*a*b^6*g^5*x^3 + 36*a^2*b^5*g^5*x^2) + (B^2*d^4*i^2*(x^2*(b*(b*((\\
& 3*a*b^3*g^5*n*(a*d - b*c))/(2*d) + (b^3*g^5*n*(a*d - b*c)*(4*a*d - b*c))/(2 \\
& *d^2)) + (3*a*b^4*g^5*n*(a*d - b*c))/d + (b^4*g^5*n*(a*d - b*c)*(4*a*d - b* \\
& c))/d^2) + (9*a*b^5*g^5*n*(a*d - b*c))/(2*d) + (3*b^5*g^5*n*(a*d - b*c)*(4* \\
& a*d - b*c))/(2*d^2) + a*(a*((3*a*b^3*g^5*n*(a*d - b*c))/(2*d) + (b^3*g^5*n \\
& *(a*d - b*c)*(4*a*d - b*c))/(2*d^2) + (b^3*g^5*n*(a*d - b*c)*(6*a^2*d^2 + \\
& b^2*c^2 - 4*a*b*c*d))/(2*d^3)) + x*(a*(b*((3*a*b^3*g^5*n*(a*d - b*c))/(2*d) \\
& + (b^3*g^5*n*(a*d - b*c)*(4*a*d - b*c))/(2*d^2) + (3*a*b^4*g^5*n*(a*d - b \\
& *c))/d + (b^4*g^5*n*(a*d - b*c)*(4*a*d - b*c))/d^2) + b*(a*((3*a*b^3*g^5*n* \\
& (a*d - b*c))/(2*d) + (b^3*g^5*n*(a*d - b*c)*(4*a*d - b*c))/(2*d^2) + (b^3* \\
& g^5*n*(a*d - b*c)*(6*a^2*d^2 + b^2*c^2 - 4*a*b*c*d))/(2*d^3) + (3*b^4*g^5* \\
& n*(a*d - b*c)*(6*a^2*d^2 + b^2*c^2 - 4*a*b*c*d))/(2*d^3) + (3*b^3*g^5*n*(a \\
& *d - b*c)*(4*a^3*d^3 - b^3*c^3 + 4*a*b^2*c^2*d - 6*a^2*b*c*d^2))/(2*d^4) + \\
& (6*b^6*g^5*n*x^3*(a*d - b*c))/d)/(6*b^3*g^5*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d \\
&)*(6*a^4*b^3*g^5 + 6*b^7*g^5*x^4 + 24*a^3*b^4*g^5*x + 24*a*b^6*g^5*x^3 + 36 \\
& *a^2*b^5*g^5*x^2))) - ((72*A^2*a^3*d^3*i^2 - 216*A^2*b^3*c^3*i^2 + 37*B^2*a \\
& ^3*d^3*i^2*n^2 - 27*B^2*b^3*c^3*i^2*n^2 + 72*A^2*a*b^2*c^2*d*i^2 + 72*A^2*a \\
& ^2*b*c*d^2*i^2 + 84*A*B*a^3*d^3*i^2*n - 108*A*B*b^3*c^3*i^2*n + 37*B^2*a*b^ \\
& 2*c^2*d*i^2*n^2 + 37*B^2*a^2*b*c*d^2*i^2*n^2 + 84*A*B*a*b^2*c^2*d*i^2*n + 8 \\
& 4*A*B*a^2*b*c*d^2*i^2*n)/(12*(a*d - b*c)) + (x^3*(7*B^2*b^3*d^3*i^2*n^2 + 1 \\
& 2*A*B*b^3*d^3*i^2*n))/(a*d - b*c) + (x*(72*A^2*a^2*b*d^3*i^2 - 144*A^2*b^3* \\
& c^2*d*i^2 + 72*A^2*a*b^2*c*d^2*i^2 + 37*B^2*a^2*b*d^3*i^2*n^2 - 11*B^2*b^3* \\
& c^2*d*i^2*n^2 - 60*A*B*b^3*c^2*d*i^2*n + 37*B^2*a*b^2*c*d^2*i^2*n^2 + 84*A* \\
& B*a^2*b*d^3*i^2*n + 84*A*B*a*b^2*c*d^2*i^2*n))/(3*(a*d - b*c)) + (x^2*(72*A \\
& ^2*a*b^2*d^3*i^2 - 72*A^2*b^3*c*d^2*i^2 + 37*B^2*a*b^2*d^3*i^2*n^2 + 5*B^2* \\
& b^3*c*d^2*i^2*n^2 - 12*A*B*b^3*c*d^2*i^2*n + 84*A*B*a*b^2*d^3*i^2*n))/(2*(a \\
& *d - b*c)))/(72*a^4*b^3*g^5 + 72*b^7*g^5*x^4 + 288*a^3*b^4*g^5*x + 288*a*b^ \\
& 6*g^5*x^3 + 432*a^2*b^5*g^5*x^2) - log(e*((a + b*x)/(c + d*x))^n)^2*((a*((B \\
& ^2*c*d*i^2)/(6*b^2) + (B^2*a*d^2*i^2)/(12*b^3)) + x*(b*((B^2*c*d*i^2)/(6*b^ \\
& 2) + (B^2*a*d^2*i^2)/(12*b^3)) + (B^2*c*d*i^2)/(2*b) + (B^2*a*d^2*i^2)/(4*b \\
& ^2)) + (B^2*c^2*i^2)/(4*b) + (B^2*d^2*i^2*x^2)/(2*b))/(a^4*g^5 + b^4*g^5*x^ \\
& 4 + 4*a*b^3*g^5*x^3 + 6*a^2*b^2*g^5*x^2 + 4*a^3*b*g^5*x) - (B^2*d^4*i^2)/(1 \\
& 2*b^3*g^5*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))) - (B*d^4*i^2*n*atan(((2*b*d*x - \\
& (72*b^5*c^2*g^5 - 72*a^2*b^3*d^2*g^5)/(72*b^3*g^5*(a*d - b*c))))*i)/(a*d - \\
& b*c))*(12*A + 7*B*n)*i)/(36*b^3*g^5*(a*d - b*c)^2)
\end{aligned}$$

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(b*g*x+a*g)**5, x)
```

```
[Out] Timed out
```

$$3.177 \quad \int \frac{(ci+dix)^2 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag+bgx)^6} dx$$

Optimal. Leaf size=493

$$\frac{b^2 i^2 (c+dx)^5 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)^2}{5g^6 (a+bx)^5 (bc-ad)^3} - \frac{2b^2 B i^2 n (c+dx)^5 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{25g^6 (a+bx)^5 (bc-ad)^3} - \frac{d^2 i^2 (c+dx)^3 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{3g^6 (a+bx)^3 (bc-ad)^3}$$

[Out] $-2/27*B^2*d^2*i^2*n^2*(d*x+c)^3/(-a*d+b*c)^3/g^6/(b*x+a)^3+1/16*b*B^2*d*i^2*n^2*(d*x+c)^4/(-a*d+b*c)^3/g^6/(b*x+a)^4-2/125*b^2*B^2*i^2*n^2*(d*x+c)^5/(-a*d+b*c)^3/g^6/(b*x+a)^5-2/9*B*d^2*i^2*n*(d*x+c)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^3/g^6/(b*x+a)^3+1/4*b*B*d*i^2*n*(d*x+c)^4*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^3/g^6/(b*x+a)^4-2/25*b^2*B*i^2*n*(d*x+c)^5*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^3/g^6/(b*x+a)^5-1/3*d^2*i^2*(d*x+c)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^3/g^6/(b*x+a)^3+1/2*b*d*i^2*(d*x+c)^4*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^3/g^6/(b*x+a)^4-1/5*b^2*i^2*(d*x+c)^5*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^3/g^6/(b*x+a)^5$

Rubi [C] time = 4.32, antiderivative size = 1085, normalized size of antiderivative = 2.20, number of steps used = 110, number of rules used = 11, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}} = 0.244$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{B^2 i^2 n^2 \log^2(a+bx) d^5}{30b^3 (bc-ad)^3 g^6} + \frac{B^2 i^2 n^2 \log^2(c+dx) d^5}{30b^3 (bc-ad)^3 g^6} - \frac{47B^2 i^2 n^2 \log(a+bx) d^5}{900b^3 (bc-ad)^3 g^6} - \frac{B i^2 n \log(a+bx) \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{15b^3 (bc-ad)^3 g^6}$$

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b*g*x)^6, x]

[Out] $(-2*B^2*(b*c - a*d)^2*i^2*n^2)/(125*b^3*g^6*(a + b*x)^5) - (7*B^2*d*(b*c - a*d)*i^2*n^2)/(400*b^3*g^6*(a + b*x)^4) + (43*B^2*d^2*i^2*n^2)/(2700*b^3*g^6*(a + b*x)^3) - (13*B^2*d^3*i^2*n^2)/(1800*b^3*(b*c - a*d)*g^6*(a + b*x)^2) - (47*B^2*d^4*i^2*n^2)/(900*b^3*(b*c - a*d)^2*g^6*(a + b*x)) - (47*B^2*d^5*i^2*n^2*Log[a + b*x])/(900*b^3*(b*c - a*d)^3*g^6) + (B^2*d^5*i^2*n^2*Log[a + b*x]^2)/(30*b^3*(b*c - a*d)^3*g^6) - (2*B*(b*c - a*d)^2*i^2*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(25*b^3*g^6*(a + b*x)^5) - (3*B*d*(b*c - a*d)*i^2*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(20*b^3*g^6*(a + b*x)^4) -$

$$\begin{aligned} & (B*d^2*i^2*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(45*b^3*g^6*(a + b*x)^3) + (B*d^3*i^2*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(30*b^3*(b*c - a*d)*g^6*(a + b*x)^2) - (B*d^4*i^2*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(15*b^3*(b*c - a*d)^2*g^6*(a + b*x)) - (B*d^5*i^2*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(15*b^3*(b*c - a*d)^3*g^6) - ((b*c - a*d)^2*i^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(5*b^3*g^6*(a + b*x)^5) - (d*(b*c - a*d)*i^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(2*b^3*g^6*(a + b*x)^4) - (d^2*i^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(3*b^3*g^6*(a + b*x)^3) + (47*B^2*d^5*i^2*n^2*Log[c + d*x])/((900*b^3*(b*c - a*d)^3*g^6) - (B^2*d^5*i^2*n^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x]))/(15*b^3*(b*c - a*d)^3*g^6) + (B*d^5*i^2*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x))/(15*b^3*(b*c - a*d)^3*g^6) + (B^2*d^5*i^2*n^2*Log[c + d*x]^2)/(30*b^3*(b*c - a*d)^3*g^6) - (B^2*d^5*i^2*n^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(15*b^3*(b*c - a*d)^3*g^6) - (B^2*d^5*i^2*n^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(15*b^3*(b*c - a*d)^3*g^6) - (B^2*d^5*i^2*n^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(15*b^3*(b*c - a*d)^3*g^6) \end{aligned}$$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 44

Int[((a_) + (b_)*(x_))^(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])

Rule 2301

Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2390

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)])*(b_)^(p_)*((f_) + (g_)*(x_))^(q_), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_)*((d_) + (e_)*(x_))^(n_)])/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))])*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e^n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x
), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.))/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_)^(m_.
), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunci
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(177c + 177dx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag + bgx)^6} dx &= \int \left(\frac{31329(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^2 g^6 (a + bx)^6} + \frac{62658d(bc - ad)}{b^2 g^6} \right) dx \\
&= \frac{(31329d^2) \int \frac{\left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(a+bx)^4} dx}{b^2 g^6} + \frac{(62658d(bc - ad)) \int \frac{\left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(a+bx)^6} dx}{b^2 g^6} \\
&= -\frac{31329(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{5b^3 g^6 (a + bx)^5} - \frac{31329d(bc - ad)}{2b^2 g^6} \\
&= -\frac{31329(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{5b^3 g^6 (a + bx)^5} - \frac{31329d(bc - ad)}{2b^2 g^6} \\
&= -\frac{31329(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{5b^3 g^6 (a + bx)^5} - \frac{31329d(bc - ad)}{2b^2 g^6} \\
&= -\frac{31329(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{5b^3 g^6 (a + bx)^5} - \frac{31329d(bc - ad)}{2b^2 g^6} \\
&= -\frac{62658B(bc - ad)^2 n \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{25b^3 g^6 (a + bx)^5} - \frac{93987Bd(bc - ad)}{2b^2 g^6} \\
&= -\frac{62658B(bc - ad)^2 n \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{25b^3 g^6 (a + bx)^5} - \frac{93987Bd(bc - ad)}{2b^2 g^6} \\
&= -\frac{62658B(bc - ad)^2 n \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{25b^3 g^6 (a + bx)^5} - \frac{93987Bd(bc - ad)}{2b^2 g^6} \\
&= -\frac{62658B^2(bc - ad)^2 n^2}{125b^3 g^6 (a + bx)^5} - \frac{219303B^2 d(bc - ad)n^2}{400b^3 g^6 (a + bx)^4} + \frac{149683B^2 d^2}{300b^3 g^6 (a + bx)^3} \\
&= -\frac{62658B^2(bc - ad)^2 n^2}{125b^3 g^6 (a + bx)^5} - \frac{219303B^2 d(bc - ad)n^2}{400b^3 g^6 (a + bx)^4} + \frac{149683B^2 d^2}{300b^3 g^6 (a + bx)^3} \\
&= -\frac{62658B^2(bc - ad)^2 n^2}{125b^3 g^6 (a + bx)^5} - \frac{219303B^2 d(bc - ad)n^2}{400b^3 g^6 (a + bx)^4} + \frac{149683B^2 d^2}{300b^3 g^6 (a + bx)^3}
\end{aligned}$$

Mathematica [C] time = 3.92, size = 2320, normalized size = 4.71

Result too large to show

Antiderivative was successfully verified.

[In] Integrate[(((c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b*g*x)^6,x]

[Out]
$$-1/54000*(i^2*(10800*(b*c - a*d)^5*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2 + 27000*d*(b*c - a*d)^4*(a + b*x)*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2 - 18000*d^2*(-(b*c) + a*d)^3*(a + b*x)^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2 + 1000*B*d^2*n*(a + b*x)^2*(12*(b*c - a*d)^3*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]) - 18*d*(b*c - a*d)^2*(a + b*x)*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]) + 36*d^2*(b*c - a*d)*(a + b*x)^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]) + 36*d^3*(a + b*x)^3*\text{Log}[a + b*x]*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]) - 36*d^3*(a + b*x)^3*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])* \text{Log}[c + d*x] + 36*B*d^2*n*(a + b*x)^2*(b*c - a*d + d*(a + b*x))* \text{Log}[a + b*x] - d*(a + b*x)* \text{Log}[c + d*x] - 9*B*d*n*(a + b*x)*((b*c - a*d)^2 + 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d^2*(a + b*x)^2*\text{Log}[a + b*x] + 2*d^2*(a + b*x)^2*\text{Log}[c + d*x]) + 2*B*n*(2*(b*c - a*d)^3 - 3*d*(b*c - a*d)^2*(a + b*x) + 6*d^2*(b*c - a*d)*(a + b*x)^2 + 6*d^3*(a + b*x)^3*\text{Log}[a + b*x] - 6*d^3*(a + b*x)^3*\text{Log}[c + d*x]) - 18*B*d^3*n*(a + b*x)^3*(\text{Log}[a + b*x]*(\text{Log}[a + b*x] - 2*\text{Log}[(b*(c + d*x))/(b*c - a*d)]) - 2*\text{PolyLog}[2, (d*(a + b*x))/(-(b*c) + a*d)]) + 18*B*d^3*n*(a + b*x)^3*((2*\text{Log}[(d*(a + b*x))/(-(b*c) + a*d)] - \text{Log}[c + d*x])* \text{Log}[c + d*x] + 2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]) + 375*B*d*n*(a + b*x)*(36*(b*c - a*d)^4*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]) + 48*d*(-(b*c) + a*d)^3*(a + b*x)*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]) + 72*d^2*(b*c - a*d)^2*(a + b*x)^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]) + 144*d^3*(-(b*c) + a*d)*(a + b*x)^3*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]) - 144*d^4*(a + b*x)^4*\text{Log}[a + b*x]*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]) + 144*d^4*(a + b*x)^4*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])* \text{Log}[c + d*x] - 144*B*d^3*n*(a + b*x)^3*(b*c - a*d + d*(a + b*x))* \text{Log}[a + b*x] - d*(a + b*x)* \text{Log}[c + d*x] + 36*B*d^2*n*(a + b*x)^2*((b*c - a*d)^2 + 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d^2*(a + b*x)^2*\text{Log}[a + b*x] + 2*d^2*(a + b*x)^2*\text{Log}[c + d*x]) - 8*B*d*n*(a + b*x)*(2*(b*c - a*d)^3 - 3*d*(b*c - a*d)^2*(a + b*x) + 6*d^2*(b*c - a*d)*(a + b*x)^2 + 6*d^3*(a + b*x)^3*\text{Log}[a + b*x] - 6*d^3*(a + b*x)^3*\text{Log}[c + d*x]) + 3*B*n*(3*(b*c - a*d)^4 + 4*d*(-(b*c) + a*d)^3*(a + b*x) + 6*d^2*(b*c - a*d)^2*(a + b*x)^2 + 12*d^3*(-(b*c) + a*d)*(a + b*x)^3 - 12*d^4*(a + b*x)^4*\text{Log}[a + b*x] + 12*d^4*(a + b*x)^4*\text{Log}[c + d*x]) + 72*B*d^4*n*(a + b*x)^4*(\text{Log}[a + b*x]*(\text{Log}[a + b*x] - 2*\text{Log}[(b*(c + d*x))/(b*c - a*d)]) - 2*\text{PolyLog}[2, (d*(a + b*x))/(-(b*c) + a*d)]) - 72*B*d^4*n*(a + b*x)^4*((2*\text{Log}[(d*(a + b*x))/(-(b*c) + a*d)] - \text{Log}[c + d*x])* \text{Log}[c + d*x] + 2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]) + 6*B*n*(-225*a*B*d*(b*c - a*d)^4*n + 144*B*(b*c - a*d)^5*n - 225*b*B*d*(b*c - a*d)^4*n*x + 300*a*B*d^2*(b*c - a*d)^3*n*(a + b*x) -$$

$$\begin{aligned}
& 180*B*d*(b*c - a*d)^4*n*(a + b*x) + 300*b*B*d^2*(b*c - a*d)^3*n*x*(a + b*x) \\
& - 450*a*B*d^3*(b*c - a*d)^2*n*(a + b*x)^2 + 640*B*d^2*(b*c - a*d)^3*n*(a + \\
& b*x)^2 - 450*b*B*d^3*(b*c - a*d)^2*n*x*(a + b*x)^2 + 900*a*B*d^4*(b*c - a \\
& d)*n*(a + b*x)^3 - 1860*B*d^3*(b*c - a*d)^2*n*(a + b*x)^3 + 900*b*B*d^4*(b* \\
& c - a*d)*n*x*(a + b*x)^3 + 3600*b*B*c*d^4*n*(a + b*x)^4 - 3600*a*B*d^5*n*(a \\
& + b*x)^4 + 3720*B*d^4*(b*c - a*d)*n*(a + b*x)^4 + 900*a*B*d^5*n*(a + b*x)^ \\
& 4*Log[a + b*x] + 900*b*B*d^5*n*x*(a + b*x)^4*Log[a + b*x] + 7320*B*d^5*n*(a \\
& + b*x)^5*Log[a + b*x] + 720*(b*c - a*d)^5*(A + B*Log[e*((a + b*x)/(c + d*x) \\
&)^n]) - 900*d*(b*c - a*d)^4*(a + b*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n \\
&]) + 1200*d^2*(b*c - a*d)^3*(a + b*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n \\
&]) - 1800*d^3*(b*c - a*d)^2*(a + b*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n \\
&]) + 3600*d^4*(b*c - a*d)*(a + b*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n \\
&]) + 3600*d^5*(a + b*x)^5*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n \\
&]) - 900*a*B*d^5*n*(a + b*x)^4*Log[c + d*x] - 900*b*B*d^5*n*x*(a + b*x)^4* \\
& Log[c + d*x] - 7320*B*d^5*n*(a + b*x)^5*Log[c + d*x] - 3600*d^5*(a + b*x)^5 \\
& *(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] - 1800*B*d^5*n*(a + b* \\
& x)^5*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*Po \\
& lyLog[2, (d*(a + b*x))/(-b*c + a*d)]) + 1800*B*d^5*n*(a + b*x)^5*((2*Log[\\
& (d*(a + b*x))/(-b*c + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (\\
& b*(c + d*x))/(b*c - a*d)])))/(b^3*(b*c - a*d)^3*g^6*(a + b*x)^5)
\end{aligned}$$

fricas [B] time = 1.19, size = 2633, normalized size = 5.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^6,x,
algorithm="fricas")

[Out] $-1/54000*((864*B^2*b^5*c^5 - 3375*B^2*a*b^4*c^4*d + 4000*B^2*a^2*b^3*c^3*d^2 - 1489*B^2*a^5*d^5)*i^2*n^2 + 60*(47*(B^2*b^5*c*d^4 - B^2*a*b^4*d^5)*i^2*n^2 + 60*(A*B*b^5*c*d^4 - A*B*a*b^4*d^5)*i^2*n)*x^4 + 60*(72*A*B*b^5*c^5 - 225*A*B*a*b^4*c^4*d + 200*A*B*a^2*b^3*c^3*d^2 - 47*A*B*a^5*d^5)*i^2*n + 30*((13*B^2*b^5*c^2*d^3 + 350*B^2*a*b^4*c*d^4 - 363*B^2*a^2*b^3*d^5)*i^2*n^2 - 60*(A*B*b^5*c^2*d^3 - 10*A*B*a*b^4*c*d^4 + 9*A*B*a^2*b^3*d^5)*i^2*n)*x^3 + 1800*(6*A^2*b^5*c^5 - 15*A^2*a*b^4*c^4*d + 10*A^2*a^2*b^3*c^3*d^2 - A^2*a^5*d^5)*i^2 - 10*((86*B^2*b^5*c^3*d^2 - 375*B^2*a*b^4*c^2*d^3 - 1200*B^2*a^2*b^3*c*d^4 + 1489*B^2*a^3*b^2*d^5)*i^2*n^2 - 60*(2*A*B*b^5*c^3*d^2 - 15*A*B*a*b^4*c^2*d^3 + 60*A*B*a^2*b^3*c*d^4 - 47*A*B*a^3*b^2*d^5)*i^2*n - 1800*(A^2*b^5*c^3*d^2 - 3*A^2*a*b^4*c^2*d^3 + 3*A^2*a^2*b^3*c*d^4 - A^2*a^3*b^2*d^5)*i^2)*x^2 + 1800*(10*(B^2*b^5*c^3*d^2 - 3*B^2*a*b^4*c^2*d^3 + 3*B^2*a^2*b^3*c*d^4 - B^2*a^3*b^2*d^5)*i^2*x^2 + 5*(3*B^2*b^5*c^4*d - 8*B^2*a*b^4*c^3*d^2 + 6*B^2*a^2*b^3*c^2*d^3 - B^2*a^4*b*d^5)*i^2*x + (6*B^2*b^5*c^5 - 15*B^2*a*b^4*c^4*d + 10*B^2*a^2*b^3*c^3*d^2 - B^2*a^5*d^5)*i^2)*log(e)^2 + 1800*(B^2*b^5*d^5*i^2*n^2*x^5 + 5*B^2*a*b^4*d^5*i^2*n^2*x^4 + 10*B^2*a^2*b^3*d^5$

$$\begin{aligned}
& i^2 n^2 x^3 + 10(B^2 b^5 c^3 d^2 - 3B^2 a b^4 c^2 d^3 + 3B^2 a^2 b^3 c d^4) i^2 n^2 x^2 + 5(3B^2 b^5 c^4 d - 8B^2 a b^4 c^3 d^2 + 6B^2 a^2 b^3 c^2 d^3) i^2 n^2 x + (6B^2 b^5 c^5 - 15B^2 a b^4 c^4 d + 10B^2 a^2 b^3 c^3 d^2) i^2 n^2 \log((b x + a)/(d x + c))^2 + 5((189B^2 b^5 c^4 d - 1100B^2 a b^4 c^3 d^2 + 2400B^2 a^2 b^3 c^2 d^3 - 1489B^2 a^4 b d^5) i^2 n^2 + 60(27A B b^5 c^4 d - 100A B a b^4 c^3 d^2 + 120A B a^2 b^3 c^2 d^3 - 47A B a^4 b d^5) i^2 n + 1800(3A^2 b^5 c^4 d - 8A^2 a b^4 c^3 d^2 + 6A^2 a^2 b^3 c^2 d^3 - A^2 a^4 b d^5) i^2) x + 60(60(B^2 b^5 c^4 d - B^2 a b^4 d^5) i^2 n x^4 - 30(B^2 b^5 c^2 d^3 - 10B^2 a b^4 c^3 d^4 + 9B^2 a^2 b^3 d^5) i^2 n x^3 + (72B^2 b^5 c^5 - 225B^2 a b^4 c^4 d + 200B^2 a^2 b^3 c^3 d^2 - 47B^2 a^5 d^5) i^2 n + 60(6A B b^5 c^5 - 15A B a b^4 c^4 d + 10A B a^2 b^3 c^3 d^2 - A B a^5 d^5) i^2 + 10((2B^2 b^5 c^3 d^2 - 15B^2 a b^4 c^2 d^3 + 60B^2 a^2 b^3 c^2 d^4 - 47B^2 a^3 b^2 d^5) i^2 n + 60(A B b^5 c^3 d^2 - 3A B a b^4 c^2 d^3 + 3A B a^2 b^3 c^2 d^4 - A B a^3 b^2 d^5) i^2) x^2 + 5((27B^2 b^5 c^4 d - 100B^2 a b^4 c^3 d^2 + 120B^2 a^2 b^3 c^2 d^3 - 47B^2 a^4 b d^5) i^2 n + 60(3A B b^5 c^4 d - 8A B a b^4 c^3 d^2 + 6A B a^2 b^3 c^2 d^3 - A B a^4 b d^5) i^2) x + 60(B^2 b^5 d^5 i^2 n x^5 + 5B^2 a b^4 d^5 i^2 n x^4 + 10B^2 a^2 b^3 d^5 i^2 n x^3 + 10(B^2 b^5 c^3 d^2 - 3B^2 a b^4 c^2 d^3 + 3B^2 a^2 b^3 c^2 d^4) i^2 n x^2 + 5(3B^2 b^5 c^4 d - 8B^2 a b^4 c^3 d^2 + 6B^2 a^2 b^3 c^2 d^3) i^2 n x + (6B^2 b^5 c^5 - 15B^2 a b^4 c^4 d + 10B^2 a^2 b^3 c^3 d^2) i^2 n) \log((b x + a)/(d x + c)) \log(e) + 60((47B^2 b^5 d^5 i^2 n^2 + 60A B b^5 d^5 i^2 n) x^5 + (72B^2 b^5 c^5 - 225B^2 a b^4 c^4 d + 200B^2 a^2 b^3 c^3 d^2) i^2 n^2 + 5(60A B a b^4 d^5 i^2 n + (12B^2 b^5 c^4 d + 35B^2 a b^4 d^5) i^2 n^2) x^4 + 60(6A B b^5 c^5 - 15A B a b^4 c^4 d + 10A B a^2 b^3 c^3 d^2) i^2 n + 10(60A B a^2 b^3 d^5 i^2 n - (3B^2 b^5 c^2 d^3 - 30B^2 a b^4 c^2 d^4 - 20B^2 a^2 b^3 d^5) i^2 n^2) x^3 + 10((2B^2 b^5 c^3 d^2 - 15B^2 a b^4 c^2 d^3 + 60B^2 a^2 b^3 c^2 d^4) i^2 n^2 + 60(A B b^5 c^3 d^2 - 3A B a b^4 c^2 d^3 + 3A B a^2 b^3 c^2 d^4) i^2 n) x^2 + 5((27B^2 b^5 c^4 d - 100B^2 a b^4 c^3 d^2 + 120B^2 a^2 b^3 c^2 d^3) i^2 n^2 + 60(3A B b^5 c^4 d - 8A B a b^4 c^3 d^2 + 6A B a^2 b^3 c^2 d^3) i^2 n) x) \log((b x + a)/(d x + c)) / ((b^{11} c^3 - 3a b^{10} c^2 d + 3a^2 b^9 c^2 d^2 - a^3 b^8 d^3) g^6 x^5 + 5(a b^{10} c^3 - 3a^2 b^9 c^2 d + 3a^3 b^8 c^2 d^2 - a^4 b^7 d^3) g^6 x^4 + 10(a^2 b^9 c^3 - 3a^3 b^8 c^2 d + 3a^4 b^7 c^2 d^2 - a^5 b^6 d^3) g^6 x^3 + 10(a^3 b^8 c^3 - 3a^4 b^7 c^2 d + 3a^5 b^6 c^2 d^2 - a^6 b^5 d^3) g^6 x^2 + 5(a^4 b^7 c^3 - 3a^5 b^6 c^2 d + 3a^6 b^5 c^2 d^2 - a^7 b^4 d^3) g^6 x + (a^5 b^6 c^3 - 3a^6 b^5 c^2 d + 3a^7 b^4 c^2 d^2 - a^8 b^3 d^3) g^6)
\end{aligned}$$

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^6,x,

```
algorithm="giac")
```

```
[Out] Timed out
```

```
maple [F] time = 0.45, size = 0, normalized size = 0.00
```

$$\int \frac{(dix + ci)^2 \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)^2}{(bgx + ag)^6} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^6,x)
```

```
[Out] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^6,x)
```

```
maxima [B] time = 11.75, size = 10936, normalized size = 22.18
```

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^6,x,
algorithm="maxima")
```

```
[Out] -1/150*A*B*c^2*i^2*n*((60*b^4*d^4*x^4 + 12*b^4*c^4 - 63*a*b^3*c^3*d + 137*a^2*b^2*c^2*d^2 - 163*a^3*b*c*d^3 + 137*a^4*d^4 - 30*(b^4*c*d^3 - 9*a*b^3*d^4)*x^3 + 10*(2*b^4*c^2*d^2 - 13*a*b^3*c*d^3 + 47*a^2*b^2*d^4)*x^2 - 5*(3*b^4*c^3*d - 17*a*b^3*c^2*d^2 + 43*a^2*b^2*c*d^3 - 77*a^3*b*d^4)*x)/((b^10*c^4 - 4*a*b^9*c^3*d + 6*a^2*b^8*c^2*d^2 - 4*a^3*b^7*c*d^3 + a^4*b^6*d^4)*g^6*x^5 + 5*(a*b^9*c^4 - 4*a^2*b^8*c^3*d + 6*a^3*b^7*c^2*d^2 - 4*a^4*b^6*c*d^3 + a^5*b^5*d^4)*g^6*x^4 + 10*(a^2*b^8*c^4 - 4*a^3*b^7*c^3*d + 6*a^4*b^6*c^2*d^2 - 4*a^5*b^5*c*d^3 + a^6*b^4*d^4)*g^6*x^3 + 10*(a^3*b^7*c^4 - 4*a^4*b^6*c^3*d + 6*a^5*b^5*c^2*d^2 - 4*a^6*b^4*c*d^3 + a^7*b^3*d^4)*g^6*x^2 + 5*(a^4*b^6*c^4 - 4*a^5*b^5*c^3*d + 6*a^6*b^4*c^2*d^2 - 4*a^7*b^3*c*d^3 + a^8*b^2*d^4)*g^6*x + (a^5*b^5*c^4 - 4*a^6*b^4*c^3*d + 6*a^7*b^3*c^2*d^2 - 4*a^8*b^2*c*d^3 + a^9*b*d^4)*g^6) + 60*d^5*log(b*x + a)/((b^6*c^5 - 5*a*b^5*c^4*d + 10*a^2*b^4*c^3*d^2 - 10*a^3*b^3*c^2*d^3 + 5*a^4*b^2*c*d^4 - a^5*b*d^5)*g^6) - 60*d^5*log(d*x + c)/((b^6*c^5 - 5*a*b^5*c^4*d + 10*a^2*b^4*c^3*d^2 - 10*a^3*b^3*c^2*d^3 + 5*a^4*b^2*c*d^4 - a^5*b*d^5)*g^6)) - 1/900*A*B*d^2*i^2*n*((47*a^2*b^4*c^4 - 278*a^3*b^3*c^3*d + 822*a^4*b^2*c^2*d^2 - 278*a^5*b*c*d^3 + 47*a^6*d^4 + 60*(10*b^6*c^2*d^2 - 5*a*b^5*c*d^3 + a^2*b^4*d^4)*x^4 - 30*(10*b^6*c^3*d - 95*a*b^5*c^2*d^2 + 46*a^2*b^4*c*d^3 - 9*a^3*b^3*d^4)*x^3 + 10*(20*b^6*c^4 - 140*a*b^5*c^3*d + 537*a^2*b^4*c^2*d^2 - 248*a^3*b^3*c*d^3 + 47*a^4*b^2*d^4)*x^2 + 5*(35*a*b^5*c^4 - 218*a^2*b^4*c^3*d + 702*a^3*b^3*c^2*d^2 - 278*a^4*b^2*c*d^3 + 47*a^5*b*d^4)*x)/((b^12*c^4 - 4*a*b^11*c^3*d +
```


$$\begin{aligned}
& 6a^2b^{10}c^2d^2 - 4a^3b^9c^3d^3 + a^4b^8d^4)g^6x^5 + 5(a^2b^{10}c^4 - 4a^2b^{10}c^3d + 6a^3b^9c^2d^2 - 4a^4b^8c^3d^3 + a^5b^7d^4)g^6x^4 \\
& + 10(a^2b^{10}c^4 - 4a^3b^9c^3d + 6a^4b^8c^2d^2 - 4a^5b^7c^3d^3 + a^6b^6d^4)g^6x^3 + 10(a^3b^9c^4 - 4a^4b^8c^3d + 6a^5b^7c^2d^2 - 4a^6b^6c^3d^3 + a^7b^5d^4)g^6x^2 \\
& + 5(a^4b^8c^4 - 4a^5b^7c^3d + 6a^6b^6c^2d^2 - 4a^7b^5c^3d^3 + a^8b^4d^4)g^6x + (a^5b^7c^4 - 4a^6b^6c^3d + 6a^7b^5c^2d^2 - 4a^8b^4c^3d^3 + a^9b^3d^4)g^6 \\
& + 60(10b^2c^2d^3 - 5ab^3c^4d + a^2d^5)\log(bx + a)/((b^8c^5 - 5ab^7c^4d + 10a^2b^6c^3d^2 - 10a^3b^5c^2d^3 + 5a^4b^4c^3d^4 - a^5b^3d^5)g^6) \\
& - 60(10b^2c^2d^3 - 5ab^3c^4d + a^2d^5)\log(dx + c)/((b^8c^5 - 5ab^7c^4d + 10a^2b^6c^3d^2 - 10a^3b^5c^2d^3 + 5a^4b^4c^3d^4 - a^5b^3d^5)g^6) \\
& - 1/300ABcd^2n((27ab^4c^4 - 148a^2b^3c^3d + 352a^3b^2c^2d^2 - 548a^4b^3c^3d + 77a^5d^4 - 60(5b^5c^3d^3 - ab^4d^4)x^4 + 30(5b^5c^2d^2 - 46ab^4c^3d^3 + 9a^2b^3d^4)x^3 - 10(10b^5c^3d - 67ab^4c^2d^2 + 248a^2b^3c^3d^3 - 47a^3b^2d^4)x^2 + 5(15b^5c^4 - 88ab^4c^3d + 232a^2b^3c^2d^2 - 428a^3b^2c^3d^3 + 77a^4b^3d^4)x)/(b^11c^4 - 4ab^10c^3d + 6a^2b^9c^2d^2 - 4a^3b^8c^3d^3 + a^4b^7d^4)g^6x^5 + 5(a^2b^{10}c^4 - 4a^2b^9c^3d + 6a^3b^8c^2d^2 - 4a^4b^7c^3d^3 + a^5b^6d^4)g^6x^4 + 10(a^2b^9c^4 - 4a^3b^8c^3d + 6a^4b^7c^2d^2 - 4a^5b^6c^3d^3 + a^6b^5d^4)g^6x^3 + 10(a^3b^8c^4 - 4a^4b^7c^3d + 6a^5b^6c^2d^2 - 4a^6b^5c^3d^3 + a^7b^4d^4)g^6x^2 + 5(a^4b^7c^4 - 4a^5b^6c^3d + 6a^6b^5c^2d^2 - 4a^7b^4c^3d^3 + a^8b^3d^4)g^6x + (a^5b^6c^4 - 4a^6b^5c^3d + 6a^7b^4c^2d^2 - 4a^8b^3c^3d^3 + a^9b^2d^4)g^6 - 60(5b^3c^4d - ad^5)\log(bx + a)/((b^7c^5 - 5ab^6c^4d + 10a^2b^5c^3d^2 - 10a^3b^4c^2d^3 + 5a^4b^3c^3d^4 - a^5b^2d^5)g^6) + 60(5b^3c^4d - ad^5)\log(dx + c)/((b^7c^5 - 5ab^6c^4d + 10a^2b^5c^3d^2 - 10a^3b^4c^2d^3 + 5a^4b^3c^3d^4 - a^5b^2d^5)g^6) - 1/10(5bx + a)B^2cd^2i^2\log(e*(bx/(dx + c) + a/(dx + c))^n)^2/(b^7g^6x^5 + 5ab^6g^6x^4 + 10a^2b^5g^6x^3 + 10a^3b^4g^6x^2 + 5a^4b^3g^6x + a^5b^2g^6) - 1/30(10b^2x^2 + 5ab^3x + a^2)B^2d^2i^2\log(e*(bx/(dx + c) + a/(dx + c))^n)^2/(b^8g^6x^5 + 5ab^7g^6x^4 + 10a^2b^6g^6x^3 + 10a^3b^5g^6x^2 + 5a^4b^4g^6x + a^5b^3g^6) - 1/9000(60n((60b^4d^4x^4 + 12b^4c^4 - 63ab^3c^3d + 137a^2b^2c^2d^2 - 163a^3b^3c^3d + 137a^4d^4 - 30(b^4c^3d^3 - 9ab^3d^4)x^3 + 10(2b^4c^2d^2 - 13ab^3c^3d + 47a^2b^2d^4)x^2 - 5(3b^4c^3d - 17ab^3c^2d^2 + 43a^2b^2c^3d - 77a^3b^3d^4)x)/(b^10c^4 - 4ab^9c^3d + 6a^2b^8c^2d^2 - 4a^3b^7c^3d^3 + a^4b^6d^4)g^6x^5 + 5(a^2b^9c^4 - 4a^2b^8c^3d + 6a^3b^7c^2d^2 - 4a^4b^6c^3d^3 + a^5b^5d^4)g^6x^4 + 10(a^2b^8c^4 - 4a^3b^7c^3d + 6a^4b^6c^2d^2 - 4a^5b^5c^3d^3 + a^6b^4d^4)g^6x^3 + 10(a^3b^7c^4 - 4a^4b^6c^3d + 6a^5b^5c^2d^2 - 4a^6b^4c^3d^3 + a^7b^3d^4)g^6x^2 + 5(a^4b^6c^4 - 4a^5b^5c^3d + 6a^6b^4c^2d^2 - 4a^7b^3c^3d^3 + a^8b^2d^4)g^6x + (a^5b^5c^4 - 4a^6b^4c^3d + 6a^7b^3c^2d^2 - 4a^8b^2c^3d^3 + a^9b^2d^4)g^6) + 60d^5\log(bx + a)/((b^6c^5 - 5ab^5c^4d + 10a^2b^4c^3d^3 + 10a^3b^4c^2d^3 + 5a^4b^3c^3d^4 - a^5b^2d^5)g^6)
\end{aligned}$$

$$\begin{aligned}
& ^3*d^2 - 10*a^3*b^3*c^2*d^3 + 5*a^4*b^2*c*d^4 - a^5*b*d^5)*g^6) - 60*d^5*\log(d*x + c)/((b^6*c^5 - 5*a*b^5*c^4*d + 10*a^2*b^4*c^3*d^2 - 10*a^3*b^3*c^2*d^3 + 5*a^4*b^2*c*d^4 - a^5*b*d^5)*g^6))*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + (144*b^5*c^5 - 1125*a*b^4*c^4*d + 4000*a^2*b^3*c^3*d^2 - 9000*a^3*b^2*c^2*d^3 + 18000*a^4*b*c*d^4 - 12019*a^5*d^5 + 8220*(b^5*c*d^4 - a*b^4*d^5))*x^4 - 30*(77*b^5*c^2*d^3 - 1250*a*b^4*c*d^4 + 1173*a^2*b^3*d^5)*x^3 + 10*(94*b^5*c^3*d^2 - 975*a*b^4*c^2*d^3 + 6600*a^2*b^3*c*d^4 - 5719*a^3*b^2*d^5)*x^2 - 1800*(b^5*d^5*x^5 + 5*a*b^4*d^5*x^4 + 10*a^2*b^3*d^5*x^3 + 10*a^3*b^2*d^5*x^2 + 5*a^4*b*d^5*x + a^5*d^5)*\log(b*x + a)^2 - 1800*(b^5*d^5*x^5 + 5*a*b^4*d^5*x^4 + 10*a^2*b^3*d^5*x^3 + 10*a^3*b^2*d^5*x^2 + 5*a^4*b*d^5*x + a^5*d^5)*\log(d*x + c)^2 - 5*(81*b^5*c^4*d - 700*a*b^4*c^3*d^2 + 3000*a^2*b^3*c^2*d^3 - 10800*a^3*b^2*c*d^4 + 8419*a^4*b*d^5)*x + 8220*(b^5*d^5*x^5 + 5*a*b^4*d^5*x^4 + 10*a^2*b^3*d^5*x^3 + 10*a^3*b^2*d^5*x^2 + 5*a^4*b*d^5*x + a^5*d^5)*\log(b*x + a) - 60*(137*b^5*d^5*x^5 + 685*a*b^4*d^5*x^4 + 1370*a^2*b^3*d^5*x^3 + 1370*a^3*b^2*d^5*x^2 + 685*a^4*b*d^5*x + 137*a^5*d^5 - 60*(b^5*d^5*x^5 + 5*a*b^4*d^5*x^4 + 10*a^2*b^3*d^5*x^3 + 10*a^3*b^2*d^5*x^2 + 5*a^4*b*d^5*x + a^5*d^5)*\log(b*x + a))*\log(d*x + c))^n^2/(a^5*b^6*c^5*g^6 - 5*a^6*b^5*c^4*d*g^6 + 10*a^7*b^4*c^3*d^2*g^6 - 10*a^8*b^3*c^2*d^3*g^6 + 5*a^9*b^2*c*d^4*g^6 - a^10*b*d^5*g^6 + (b^11*c^5*g^6 - 5*a*b^10*c^4*d*g^6 + 10*a^2*b^9*c^3*d^2*g^6 - 10*a^3*b^8*c^2*d^3*g^6 + 5*a^4*b^7*c*d^4*g^6 - a^5*b^6*d^5*g^6))*x^5 + 5*(a*b^10*c^5*g^6 - 5*a^2*b^9*c^4*d*g^6 + 10*a^3*b^8*c^3*d^2*g^6 - 10*a^4*b^7*c^2*d^3*g^6 + 5*a^5*b^6*c*d^4*g^6 - a^6*b^5*d^5*g^6))*x^4 + 10*(a^2*b^9*c^5*g^6 - 5*a^3*b^8*c^4*d*g^6 + 10*a^4*b^7*c^3*d^2*g^6 - 10*a^5*b^6*c^2*d^3*g^6 + 5*a^6*b^5*c*d^4*g^6 - a^7*b^4*d^5*g^6))*x^3 + 10*(a^3*b^8*c^5*g^6 - 5*a^4*b^7*c^4*d*g^6 + 10*a^5*b^6*c^3*d^2*g^6 - 10*a^6*b^5*c^2*d^3*g^6 + 5*a^7*b^4*c*d^4*g^6 - a^8*b^3*d^5*g^6))*x^2 + 5*(a^4*b^7*c^5*g^6 - 5*a^5*b^6*c^4*d*g^6 + 10*a^6*b^5*c^3*d^2*g^6 - 10*a^7*b^4*c^2*d^3*g^6 + 5*a^8*b^3*c*d^4*g^6 - a^9*b^2*d^5*g^6))*x) * B^2*c^2*i^2 - 1/18000*(60*n*((27*a*b^4*c^4 - 148*a^2*b^3*c^3*d + 352*a^3*b^2*c^2*d^2 - 548*a^4*b*c*d^3 + 77*a^5*d^4 - 60*(5*b^5*c*d^3 - a*b^4*d^4))*x^4 + 30*(5*b^5*c^2*d^2 - 46*a*b^4*c*d^3 + 9*a^2*b^3*d^4))*x^3 - 10*(10*b^5*c^3*d - 67*a*b^4*c^2*d^2 + 248*a^2*b^3*c*d^3 - 47*a^3*b^2*d^4))*x^2 + 5*(15*b^5*c^4 - 88*a*b^4*c^3*d + 232*a^2*b^3*c^2*d^2 - 428*a^3*b^2*c*d^3 + 77*a^4*b*d^4))*x)/((b^11*c^4 - 4*a*b^10*c^3*d + 6*a^2*b^9*c^2*d^2 - 4*a^3*b^8*c*d^3 + a^4*b^7*d^4)*g^6*x^5 + 5*(a*b^10*c^4 - 4*a^2*b^9*c^3*d + 6*a^3*b^8*c^2*d^2 - 4*a^4*b^7*c*d^3 + a^5*b^6*d^4)*g^6*x^4 + 10*(a^2*b^9*c^4 - 4*a^3*b^8*c^3*d + 6*a^4*b^7*c^2*d^2 - 4*a^5*b^6*c*d^3 + a^6*b^5*d^4)*g^6*x^3 + 10*(a^3*b^8*c^4 - 4*a^4*b^7*c^3*d + 6*a^5*b^6*c^2*d^2 - 4*a^6*b^5*c*d^3 + a^7*b^4*d^4)*g^6*x^2 + 5*(a^4*b^7*c^4 - 4*a^5*b^6*c^3*d + 6*a^6*b^5*c^2*d^2 - 4*a^7*b^4*c*d^3 + a^8*b^3*d^4)*g^6*x + (a^5*b^6*c^4 - 4*a^6*b^5*c^3*d + 6*a^7*b^4*c^2*d^2 - 4*a^8*b^3*c*d^3 + a^9*b^2*d^4)*g^6) - 60*(5*b*c*d^4 - a*d^5)*\log(b*x + a)/((b^7*c^5 - 5*a*b^6*c^4*d + 10*a^2*b^5*c^3*d^2 - 10*a^3*b^4*c^2*d^3 + 5*a^4*b^3*c*d^4 - a^5*b^2*d^5)*g^6) + 60*(5*b*c*d^4 - a*d^5)*\log(d*x + c)/((b^7*c^5 - 5*a*b^6*c^4*d + 10*a^2*b^5*c^3*d^2 - 10*a^3*b^4*c^2*d^3 + 5*a^4*b^3*c*d^4 - a^5*b^2*d^5)*g^6))*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + (549*a*b^5*c^5 - 4625*a^2*b^4*c
\end{aligned}$$

$$\begin{aligned}
&^4*d + 19000*a^3*b^3*c^3*d^2 - 63000*a^4*b^2*c^2*d^3 + 51875*a^5*b*c*d^4 - \\
&3799*a^6*d^5 - 60*(625*b^6*c^2*d^3 - 702*a*b^5*c*d^4 + 77*a^2*b^4*d^5)*x^4 \\
&+ 30*(325*b^6*c^3*d^2 - 5667*a*b^5*c^2*d^3 + 5975*a^2*b^4*c*d^4 - 633*a^3*b \\
&^3*d^5)*x^3 - 10*(350*b^6*c^4*d - 3949*a*b^5*c^3*d^2 + 29475*a^2*b^4*c^2*d^ \\
&3 - 28775*a^3*b^3*c*d^4 + 2899*a^4*b^2*d^5)*x^2 + 1800*(5*a^5*b*c*d^4 - a^6 \\
&*d^5 + (5*b^6*c*d^4 - a*b^5*d^5)*x^5 + 5*(5*a*b^5*c*d^4 - a^2*b^4*d^5)*x^4 \\
&+ 10*(5*a^2*b^4*c*d^4 - a^3*b^3*d^5)*x^3 + 10*(5*a^3*b^3*c*d^4 - a^4*b^2*d^ \\
&5)*x^2 + 5*(5*a^4*b^2*c*d^4 - a^5*b*d^5)*x*log(b*x + a)^2 + 1800*(5*a^5*b* \\
&c*d^4 - a^6*d^5 + (5*b^6*c*d^4 - a*b^5*d^5)*x^5 + 5*(5*a*b^5*c*d^4 - a^2*b^ \\
&4*d^5)*x^4 + 10*(5*a^2*b^4*c*d^4 - a^3*b^3*d^5)*x^3 + 10*(5*a^3*b^3*c*d^4 - \\
&a^4*b^2*d^5)*x^2 + 5*(5*a^4*b^2*c*d^4 - a^5*b*d^5)*x*log(d*x + c)^2 + 5*(\\
&225*b^6*c^5 - 2201*a*b^5*c^4*d + 10900*a^2*b^4*c^3*d^2 - 46200*a^3*b^3*c^2* \\
&d^3 + 41075*a^4*b^2*c*d^4 - 3799*a^5*b*d^5)*x - 60*(625*a^5*b*c*d^4 - 77*a^ \\
&6*d^5 + (625*b^6*c*d^4 - 77*a*b^5*d^5)*x^5 + 5*(625*a*b^5*c*d^4 - 77*a^2*b^ \\
&4*d^5)*x^4 + 10*(625*a^2*b^4*c*d^4 - 77*a^3*b^3*d^5)*x^3 + 10*(625*a^3*b^3* \\
&c*d^4 - 77*a^4*b^2*d^5)*x^2 + 5*(625*a^4*b^2*c*d^4 - 77*a^5*b*d^5)*x*log(b \\
&*x + a) + 60*(625*a^5*b*c*d^4 - 77*a^6*d^5 + (625*b^6*c*d^4 - 77*a*b^5*d^5) \\
&*x^5 + 5*(625*a*b^5*c*d^4 - 77*a^2*b^4*d^5)*x^4 + 10*(625*a^2*b^4*c*d^4 - 7 \\
&7*a^3*b^3*d^5)*x^3 + 10*(625*a^3*b^3*c*d^4 - 77*a^4*b^2*d^5)*x^2 + 5*(625*a \\
&^4*b^2*c*d^4 - 77*a^5*b*d^5)*x - 60*(5*a^5*b*c*d^4 - a^6*d^5 + (5*b^6*c*d^4 \\
&- a*b^5*d^5)*x^5 + 5*(5*a*b^5*c*d^4 - a^2*b^4*d^5)*x^4 + 10*(5*a^2*b^4*c*d \\
&^4 - a^3*b^3*d^5)*x^3 + 10*(5*a^3*b^3*c*d^4 - a^4*b^2*d^5)*x^2 + 5*(5*a^4*b \\
&^2*c*d^4 - a^5*b*d^5)*x*log(b*x + a))*log(d*x + c))*n^2/(a^5*b^7*c^5*g^6 - \\
&5*a^6*b^6*c^4*d*g^6 + 10*a^7*b^5*c^3*d^2*g^6 - 10*a^8*b^4*c^2*d^3*g^6 + 5* \\
&a^9*b^3*c*d^4*g^6 - a^10*b^2*d^5*g^6 + (b^12*c^5*g^6 - 5*a*b^11*c^4*d*g^6 + \\
&10*a^2*b^10*c^3*d^2*g^6 - 10*a^3*b^9*c^2*d^3*g^6 + 5*a^4*b^8*c*d^4*g^6 - a \\
&^5*b^7*d^5*g^6)*x^5 + 5*(a*b^11*c^5*g^6 - 5*a^2*b^10*c^4*d*g^6 + 10*a^3*b^9 \\
&*c^3*d^2*g^6 - 10*a^4*b^8*c^2*d^3*g^6 + 5*a^5*b^7*c*d^4*g^6 - a^6*b^6*d^5*g \\
&^6)*x^4 + 10*(a^2*b^10*c^5*g^6 - 5*a^3*b^9*c^4*d*g^6 + 10*a^4*b^8*c^3*d^2*g \\
&^6 - 10*a^5*b^7*c^2*d^3*g^6 + 5*a^6*b^6*c*d^4*g^6 - a^7*b^5*d^5*g^6)*x^3 + \\
&10*(a^3*b^9*c^5*g^6 - 5*a^4*b^8*c^4*d*g^6 + 10*a^5*b^7*c^3*d^2*g^6 - 10*a^6 \\
&*b^6*c^2*d^3*g^6 + 5*a^7*b^5*c*d^4*g^6 - a^8*b^4*d^5*g^6)*x^2 + 5*(a^4*b^8* \\
&c^5*g^6 - 5*a^5*b^7*c^4*d*g^6 + 10*a^6*b^6*c^3*d^2*g^6 - 10*a^7*b^5*c^2*d^3 \\
&*g^6 + 5*a^8*b^4*c*d^4*g^6 - a^9*b^3*d^5*g^6)*x) * B^2*c*d*i^2 - 1/54000*(60 \\
&*n*((47*a^2*b^4*c^4 - 278*a^3*b^3*c^3*d + 822*a^4*b^2*c^2*d^2 - 278*a^5*b*c \\
&*d^3 + 47*a^6*d^4 + 60*(10*b^6*c^2*d^2 - 5*a*b^5*c*d^3 + a^2*b^4*d^4)*x^4 - \\
&30*(10*b^6*c^3*d - 95*a*b^5*c^2*d^2 + 46*a^2*b^4*c*d^3 - 9*a^3*b^3*d^4)*x^ \\
&3 + 10*(20*b^6*c^4 - 140*a*b^5*c^3*d + 537*a^2*b^4*c^2*d^2 - 248*a^3*b^3*c* \\
&d^3 + 47*a^4*b^2*d^4)*x^2 + 5*(35*a*b^5*c^4 - 218*a^2*b^4*c^3*d + 702*a^3*b \\
&^3*c^2*d^2 - 278*a^4*b^2*c*d^3 + 47*a^5*b*d^4)*x)/((b^12*c^4 - 4*a*b^11*c^3 \\
&*d + 6*a^2*b^10*c^2*d^2 - 4*a^3*b^9*c*d^3 + a^4*b^8*d^4)*g^6*x^5 + 5*(a*b^1 \\
&1*c^4 - 4*a^2*b^10*c^3*d + 6*a^3*b^9*c^2*d^2 - 4*a^4*b^8*c*d^3 + a^5*b^7*d^ \\
&4)*g^6*x^4 + 10*(a^2*b^10*c^4 - 4*a^3*b^9*c^3*d + 6*a^4*b^8*c^2*d^2 - 4*a^5 \\
&*b^7*c*d^3 + a^6*b^6*d^4)*g^6*x^3 + 10*(a^3*b^9*c^4 - 4*a^4*b^8*c^3*d + 6*a \\
&^5*b^7*c^2*d^2 - 4*a^6*b^6*c*d^3 + a^7*b^5*d^4)*g^6*x^2 + 5*(a^4*b^8*c^4 -
\end{aligned}$$

$$\begin{aligned}
& 4*a^5*b^7*c^3*d + 6*a^6*b^6*c^2*d^2 - 4*a^7*b^5*c*d^3 + a^8*b^4*d^4)*g^6*x \\
& + (a^5*b^7*c^4 - 4*a^6*b^6*c^3*d + 6*a^7*b^5*c^2*d^2 - 4*a^8*b^4*c*d^3 + a^9*b^3*d^4)*g^6) + 60*(10*b^2*c^2*d^3 - 5*a*b*c*d^4 + a^2*d^5)*\log(b*x + a)/ \\
& ((b^8*c^5 - 5*a*b^7*c^4*d + 10*a^2*b^6*c^3*d^2 - 10*a^3*b^5*c^2*d^3 + 5*a^4 \\
& *b^4*c*d^4 - a^5*b^3*d^5)*g^6) - 60*(10*b^2*c^2*d^3 - 5*a*b*c*d^4 + a^2*d^5 \\
&)*\log(d*x + c)/((b^8*c^5 - 5*a*b^7*c^4*d + 10*a^2*b^6*c^3*d^2 - 10*a^3*b^5* \\
& c^2*d^3 + 5*a^4*b^4*c*d^4 - a^5*b^3*d^5)*g^6))*\log(e*(b*x/(d*x + c) + a/(d* \\
& x + c))^n) + (1489*a^2*b^5*c^5 - 14375*a^3*b^4*c^4*d + 85000*a^4*b^3*c^3*d^2 \\
& - 85000*a^5*b^2*c^2*d^3 + 14375*a^6*b*c*d^4 - 1489*a^7*d^5 + 60*(1100*b^7 \\
& *c^3*d^2 - 1425*a*b^6*c^2*d^3 + 372*a^2*b^5*c*d^4 - 47*a^3*b^4*d^5))*x^4 - 3 \\
& 0*(500*b^7*c^4*d - 9825*a*b^6*c^3*d^2 + 11937*a^2*b^5*c^2*d^3 - 2975*a^3*b^ \\
& 4*c*d^4 + 363*a^4*b^3*d^5))*x^3 + 10*(400*b^7*c^5 - 5450*a*b^6*c^4*d + 49189 \\
& *a^2*b^5*c^3*d^2 - 55525*a^3*b^4*c^2*d^3 + 12875*a^4*b^3*c*d^4 - 1489*a^5*b \\
& ^2*d^5))*x^2 - 1800*(10*a^5*b^2*c^2*d^3 - 5*a^6*b*c*d^4 + a^7*d^5 + (10*b^7* \\
& c^2*d^3 - 5*a*b^6*c*d^4 + a^2*b^5*d^5))*x^5 + 5*(10*a*b^6*c^2*d^3 - 5*a^2*b^ \\
& 5*c*d^4 + a^3*b^4*d^5))*x^4 + 10*(10*a^2*b^5*c^2*d^3 - 5*a^3*b^4*c*d^4 + a^4 \\
& *b^3*d^5))*x^3 + 10*(10*a^3*b^4*c^2*d^3 - 5*a^4*b^3*c*d^4 + a^5*b^2*d^5))*x^2 \\
& + 5*(10*a^4*b^3*c^2*d^3 - 5*a^5*b^2*c*d^4 + a^6*b*d^5))*x*\log(b*x + a)^2 - \\
& 1800*(10*a^5*b^2*c^2*d^3 - 5*a^6*b*c*d^4 + a^7*d^5 + (10*b^7*c^2*d^3 - 5*a \\
& *b^6*c*d^4 + a^2*b^5*d^5))*x^5 + 5*(10*a*b^6*c^2*d^3 - 5*a^2*b^5*c*d^4 + a^3 \\
& *b^4*d^5))*x^4 + 10*(10*a^2*b^5*c^2*d^3 - 5*a^3*b^4*c*d^4 + a^4*b^3*d^5))*x^3 \\
& + 10*(10*a^3*b^4*c^2*d^3 - 5*a^4*b^3*c*d^4 + a^5*b^2*d^5))*x^2 + 5*(10*a^4* \\
& b^3*c^2*d^3 - 5*a^5*b^2*c*d^4 + a^6*b*d^5))*x*\log(d*x + c)^2 + 5*(925*a*b^6 \\
& *c^5 - 9911*a^2*b^5*c^4*d + 67900*a^3*b^4*c^3*d^2 - 71800*a^4*b^3*c^2*d^3 + \\
& 14375*a^5*b^2*c*d^4 - 1489*a^6*b*d^5))*x + 60*(1100*a^5*b^2*c^2*d^3 - 325*a \\
& ^6*b*c*d^4 + 47*a^7*d^5 + (1100*b^7*c^2*d^3 - 325*a*b^6*c*d^4 + 47*a^2*b^5* \\
& d^5))*x^5 + 5*(1100*a*b^6*c^2*d^3 - 325*a^2*b^5*c*d^4 + 47*a^3*b^4*d^5))*x^4 \\
& + 10*(1100*a^2*b^5*c^2*d^3 - 325*a^3*b^4*c*d^4 + 47*a^4*b^3*d^5))*x^3 + 10*(\\
& 1100*a^3*b^4*c^2*d^3 - 325*a^4*b^3*c*d^4 + 47*a^5*b^2*d^5))*x^2 + 5*(1100*a^ \\
& 4*b^3*c^2*d^3 - 325*a^5*b^2*c*d^4 + 47*a^6*b*d^5))*x*\log(b*x + a) - 60*(110 \\
& 0*a^5*b^2*c^2*d^3 - 325*a^6*b*c*d^4 + 47*a^7*d^5 + (1100*b^7*c^2*d^3 - 325* \\
& a*b^6*c*d^4 + 47*a^2*b^5*d^5))*x^5 + 5*(1100*a*b^6*c^2*d^3 - 325*a^2*b^5*c*d \\
& ^4 + 47*a^3*b^4*d^5))*x^4 + 10*(1100*a^2*b^5*c^2*d^3 - 325*a^3*b^4*c*d^4 + 4 \\
& 7*a^4*b^3*d^5))*x^3 + 10*(1100*a^3*b^4*c^2*d^3 - 325*a^4*b^3*c*d^4 + 47*a^5* \\
& b^2*d^5))*x^2 + 5*(1100*a^4*b^3*c^2*d^3 - 325*a^5*b^2*c*d^4 + 47*a^6*b*d^5))* \\
& x - 60*(10*a^5*b^2*c^2*d^3 - 5*a^6*b*c*d^4 + a^7*d^5 + (10*b^7*c^2*d^3 - 5* \\
& a*b^6*c*d^4 + a^2*b^5*d^5))*x^5 + 5*(10*a*b^6*c^2*d^3 - 5*a^2*b^5*c*d^4 + a^ \\
& 3*b^4*d^5))*x^4 + 10*(10*a^2*b^5*c^2*d^3 - 5*a^3*b^4*c*d^4 + a^4*b^3*d^5))*x^ \\
& 3 + 10*(10*a^3*b^4*c^2*d^3 - 5*a^4*b^3*c*d^4 + a^5*b^2*d^5))*x^2 + 5*(10*a^4 \\
& *b^3*c^2*d^3 - 5*a^5*b^2*c*d^4 + a^6*b*d^5))*x*\log(b*x + a))*\log(d*x + c))* \\
& n^2/(a^5*b^8*c^5*g^6 - 5*a^6*b^7*c^4*d*g^6 + 10*a^7*b^6*c^3*d^2*g^6 - 10*a^ \\
& 8*b^5*c^2*d^3*g^6 + 5*a^9*b^4*c*d^4*g^6 - a^10*b^3*d^5*g^6 + (b^13*c^5*g^6 \\
& - 5*a*b^12*c^4*d*g^6 + 10*a^2*b^11*c^3*d^2*g^6 - 10*a^3*b^10*c^2*d^3*g^6 + \\
& 5*a^4*b^9*c*d^4*g^6 - a^5*b^8*d^5*g^6))*x^5 + 5*(a*b^12*c^5*g^6 - 5*a^2*b^11 \\
& *c^4*d*g^6 + 10*a^3*b^10*c^3*d^2*g^6 - 10*a^4*b^9*c^2*d^3*g^6 + 5*a^5*b^8*c
\end{aligned}$$

$$\begin{aligned}
& d^4 g^6 - a^6 b^7 d^5 g^6) x^4 + 10(a^2 b^{11} c^5 g^6 - 5a^3 b^{10} c^4 d g^6 \\
& + 10a^4 b^9 c^3 d^2 g^6 - 10a^5 b^8 c^2 d^3 g^6 + 5a^6 b^7 c d^4 g^6 - a^7 b^6 d^5 g^6) x^3 + 10(a^3 b^{10} c^5 g^6 - 5a^4 b^9 c^4 d g^6 + 10a^5 b^8 c^3 d^2 g^6 - 10a^6 b^7 c^2 d^3 g^6 + 5a^7 b^6 c d^4 g^6 - a^8 b^5 d^5 g^6) x^2 + 5(a^4 b^9 c^5 g^6 - 5a^5 b^8 c^4 d g^6 + 10a^6 b^7 c^3 d^2 g^6 - 10a^7 b^6 c^2 d^3 g^6 + 5a^8 b^5 c d^4 g^6 - a^9 b^4 d^5 g^6) x) \\
& * B^2 d^2 i^2 - 1/5(5b^5 x + a) * A * B * c * d * i^2 * \log(e * (b * x / (d * x + c) + a / (d * x + c)))^n) / (b^7 g^6 x^5 + 5a * b^6 g^6 x^4 + 10a^2 b^5 g^6 x^3 + 10a^3 b^4 g^6 x^2 + 5a^4 b^3 g^6 x + a^5 b^2 g^6) - 1/15(10b^2 x^2 + 5a * b * x + a^2) * A * B * d^2 i^2 * \log(e * (b * x / (d * x + c) + a / (d * x + c)))^n) / (b^8 g^6 x^5 + 5a * b^7 g^6 x^4 + 10a^2 b^6 g^6 x^3 + 10a^3 b^5 g^6 x^2 + 5a^4 b^4 g^6 x + a^5 b^3 g^6) - 1/5 * B^2 * c^2 * i^2 * \log(e * (b * x / (d * x + c) + a / (d * x + c)))^n)^2 / (b^6 g^6 x^5 + 5a * b^5 g^6 x^4 + 10a^2 b^4 g^6 x^3 + 10a^3 b^3 g^6 x^2 + 5a^4 b^2 g^6 x + a^5 b * g^6) - 1/10(5b^5 x + a) * A^2 * c * d * i^2 / (b^7 g^6 x^5 + 5a * b^6 g^6 x^4 + 10a^2 b^5 g^6 x^3 + 10a^3 b^4 g^6 x^2 + 5a^4 b^3 g^6 x + a^5 b^2 g^6) - 1/30(10b^2 x^2 + 5a * b * x + a^2) * A^2 * d^2 * i^2 / (b^8 g^6 x^5 + 5a * b^7 g^6 x^4 + 10a^2 b^6 g^6 x^3 + 10a^3 b^5 g^6 x^2 + 5a^4 b^4 g^6 x + a^5 b^3 g^6) - 2/5 * A * B * c^2 * i^2 * \log(e * (b * x / (d * x + c) + a / (d * x + c)))^n) / (b^6 g^6 x^5 + 5a * b^5 g^6 x^4 + 10a^2 b^4 g^6 x^3 + 10a^3 b^3 g^6 x^2 + 5a^4 b^2 g^6 x + a^5 b * g^6) - 1/5 * A^2 * c^2 * i^2 / (b^6 g^6 x^5 + 5a * b^5 g^6 x^4 + 10a^2 b^4 g^6 x^3 + 10a^3 b^3 g^6 x^2 + 5a^4 b^2 g^6 x + a^5 b * g^6)
\end{aligned}$$

mupad [B] time = 11.15, size = 3296, normalized size = 6.69

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{int}(((c*i + d*i*x)^2 * (A + B * \log(e * ((a + b*x)/(c + d*x))^n))^2) / (a*g + b*g*x)^6, x)$

[Out] $((1800 * A^2 * a^4 * d^4 * i^2 + 10800 * A^2 * b^4 * c^4 * i^2 + 1489 * B^2 * a^4 * d^4 * i^2 * n^2 + 864 * B^2 * b^4 * c^4 * i^2 * n^2 - 16200 * A^2 * a * b^3 * c^3 * d * i^2 + 1800 * A^2 * a^3 * b * c * d^3 * i^2 + 2820 * A * B * a^4 * d^4 * i^2 * n + 4320 * A * B * b^4 * c^4 * i^2 * n + 1800 * A^2 * a^2 * b^2 * c^2 * d^2 * i^2 + 1489 * B^2 * a^2 * b^2 * c^2 * d^2 * i^2 * n^2 - 2511 * B^2 * a * b^3 * c^3 * d * i^2 * n^2 + 1489 * B^2 * a^3 * b * c * d^3 * i^2 * n^2 + 2820 * A * B * a^2 * b^2 * c^2 * d^2 * i^2 * n - 9180 * A * B * a * b^3 * c^3 * d * i^2 * n + 2820 * A * B * a^3 * b * c * d^3 * i^2 * n) / (60 * (a * d - b * c)) + (x * (1800 * A^2 * a^3 * b * d^4 * i^2 + 5400 * A^2 * b^4 * c^3 * d * i^2 - 9000 * A^2 * a * b^3 * c^2 * d^2 * i^2 + 1800 * A^2 * a^2 * b^2 * c * d^3 * i^2 + 1489 * B^2 * a^3 * b * d^4 * i^2 * n^2 + 189 * B^2 * b^4 * c^3 * d * i^2 * n^2 + 1620 * A * B * b^4 * c^3 * d * i^2 * n - 911 * B^2 * a * b^3 * c^2 * d^2 * i^2 * n^2 + 1489 * B^2 * a^2 * b^2 * c * d^3 * i^2 * n^2 + 2820 * A * B * a^3 * b * d^4 * i^2 * n - 4380 * A * B * a * b^3 * c^2 * d^2 * i^2 * n + 2820 * A * B * a^2 * b^2 * c * d^3 * i^2 * n) / (12 * (a * d - b * c)) + (x^2 * (1800 * A^2 * a^2 * b^2 * d^4 * i^2 + 1800 * A^2 * b^4 * c^2 * d^2 * i^2 - 3600 * A^2 * a * b^3 * c * d^3 * i^2 + 1489 * B^2 * a^2 * b^2 * d^4 * i^2 * n^2 - 86 * B^2 * b^4 * c^2 * d^2 * i^2 * n^2 + 2820 * A * B * a^2 * b^2 * d^4 * i^2 * n + 120 * A * B * b^4 * c^2 * d^2 * i^2 * n + 289 * B^2 * a * b^3 * c * d^3 * i^2 * n^2 - 780 * A * B * a * b^3 * c * d^3 * i^2 * n) / (6 * (a * d - b * c)) + (x^3 * (363 * B^2 * a * b^3 * d^4 * i^2 * n^2$

$$\begin{aligned}
& + 13*B^2*b^4*c*d^3*i^2*n^2 - 60*A*B*b^4*c*d^3*i^2*n + 540*A*B*a*b^3*d^4*i^2 \\
& *n)/(2*(a*d - b*c)) + (d*x^4*(47*B^2*b^4*d^3*i^2*n^2 + 60*A*B*b^4*d^3*i^2* \\
& n))/(a*d - b*c))/(x*(4500*a^4*b^5*c*g^6 - 4500*a^5*b^4*d*g^6) - x^4*(4500*a \\
& ^2*b^7*d*g^6 - 4500*a*b^8*c*g^6) + x^5*(900*b^9*c*g^6 - 900*a*b^8*d*g^6) + \\
& x^2*(9000*a^3*b^6*c*g^6 - 9000*a^4*b^5*d*g^6) + x^3*(9000*a^2*b^7*c*g^6 - 9 \\
& 000*a^3*b^6*d*g^6) + 900*a^5*b^4*c*g^6 - 900*a^6*b^3*d*g^6) - \log(e*((a + b \\
& *x)/(c + d*x))^n)^2*((a*((B^2*c*d*i^2)/(10*b^2) + (B^2*a*d^2*i^2)/(30*b^3)) \\
& + x*(b*((B^2*c*d*i^2)/(10*b^2) + (B^2*a*d^2*i^2)/(30*b^3)) + (2*B^2*c*d*i^ \\
& 2)/(5*b) + (2*B^2*a*d^2*i^2)/(15*b^2)) + (B^2*c^2*i^2)/(5*b) + (B^2*d^2*i^2 \\
& *x^2)/(3*b)))/(a^5*g^6 + b^5*g^6*x^5 + 5*a*b^4*g^6*x^4 + 10*a^3*b^2*g^6*x^2 \\
& + 10*a^2*b^3*g^6*x^3 + 5*a^4*b*g^6*x) - (B^2*d^5*i^2)/(30*b^3*g^6*(a^3*d^3 \\
& - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2))) - \log(e*((a + b*x)/(c + d*x))^ \\
& n)*((a*(A*B*a*d^2*i^2 - (B^2*a*d^2*i^2*n)/2 + (B^2*b*c*d*i^2*n)/2 + 3*A*B*b \\
& *c*d*i^2) + x*(b*(A*B*a*d^2*i^2 - (B^2*a*d^2*i^2*n)/2 + (B^2*b*c*d*i^2*n)/2 \\
& + 3*A*B*b*c*d*i^2) + 4*A*B*a*b*d^2*i^2 + 12*A*B*b^2*c*d*i^2 - 2*B^2*a*b*d^ \\
& 2*i^2*n + 2*B^2*b^2*c*d*i^2*n) + 6*A*B*b^2*c^2*i^2 - B^2*a^2*d^2*i^2*n + B^ \\
& 2*b^2*c^2*i^2*n + 10*A*B*b^2*d^2*i^2*x^2)/(15*a^5*b^3*g^6 + 15*b^8*g^6*x^5 \\
& + 75*a^4*b^4*g^6*x + 75*a*b^7*g^6*x^4 + 150*a^3*b^5*g^6*x^2 + 150*a^2*b^6*g \\
& ^6*x^3) + (B^2*d^5*i^2*(x^3*(b*(b*(b*((3*a*b^3*g^6*n*(a*d - b*c))/d + (3*b^ \\
& 3*g^6*n*(a*d - b*c)*(5*a*d - b*c))/(4*d^2)) + (6*a*b^4*g^6*n*(a*d - b*c))/d \\
& + (3*b^4*g^6*n*(a*d - b*c)*(5*a*d - b*c))/(2*d^2)) + (9*a*b^5*g^6*n*(a*d - \\
& b*c))/d + (9*b^5*g^6*n*(a*d - b*c)*(5*a*d - b*c))/(4*d^2)) + (12*a*b^6*g^6 \\
& *n*(a*d - b*c))/d + (3*b^6*g^6*n*(a*d - b*c)*(5*a*d - b*c))/d^2) + x*(a*(a \\
& (b*((3*a*b^3*g^6*n*(a*d - b*c))/d + (3*b^3*g^6*n*(a*d - b*c)*(5*a*d - b*c)) \\
& / (4*d^2)) + (6*a*b^4*g^6*n*(a*d - b*c))/d + (3*b^4*g^6*n*(a*d - b*c)*(5*a*d \\
& - b*c))/(2*d^2)) + b*(a*((3*a*b^3*g^6*n*(a*d - b*c))/d + (3*b^3*g^6*n*(a*d \\
& - b*c)*(5*a*d - b*c))/(4*d^2)) + (b^3*g^6*n*(a*d - b*c)*(10*a^2*d^2 + b^2* \\
& c^2 - 5*a*b*c*d))/(2*d^3)) + (3*b^4*g^6*n*(a*d - b*c)*(10*a^2*d^2 + b^2*c^2 \\
& - 5*a*b*c*d))/(2*d^3)) + b*(a*(a*((3*a*b^3*g^6*n*(a*d - b*c))/d + (3*b^3*g \\
& ^6*n*(a*d - b*c)*(5*a*d - b*c))/(4*d^2)) + (b^3*g^6*n*(a*d - b*c)*(10*a^2*d \\
& ^2 + b^2*c^2 - 5*a*b*c*d))/(2*d^3)) + (3*b^3*g^6*n*(a*d - b*c)*(10*a^3*d^3 \\
& - b^3*c^3 + 5*a*b^2*c^2*d - 10*a^2*b*c*d^2))/(4*d^4)) + (3*b^4*g^6*n*(a*d - \\
& b*c)*(10*a^3*d^3 - b^3*c^3 + 5*a*b^2*c^2*d - 10*a^2*b*c*d^2))/d^4) + x^2*(\\
& a*(b*(b*((3*a*b^3*g^6*n*(a*d - b*c))/d + (3*b^3*g^6*n*(a*d - b*c)*(5*a*d - \\
& b*c))/(4*d^2)) + (6*a*b^4*g^6*n*(a*d - b*c))/d + (3*b^4*g^6*n*(a*d - b*c)*(\\
& 5*a*d - b*c))/(2*d^2)) + (9*a*b^5*g^6*n*(a*d - b*c))/d + (9*b^5*g^6*n*(a*d \\
& - b*c)*(5*a*d - b*c))/(4*d^2)) + b*(a*(b*((3*a*b^3*g^6*n*(a*d - b*c))/d + (\\
& 3*b^3*g^6*n*(a*d - b*c)*(5*a*d - b*c))/(4*d^2)) + (6*a*b^4*g^6*n*(a*d - b*c) \\
&)/d + (3*b^4*g^6*n*(a*d - b*c)*(5*a*d - b*c))/(2*d^2)) + b*(a*((3*a*b^3*g^ \\
& 6*n*(a*d - b*c))/d + (3*b^3*g^6*n*(a*d - b*c)*(5*a*d - b*c))/(4*d^2)) + (b^ \\
& 3*g^6*n*(a*d - b*c)*(10*a^2*d^2 + b^2*c^2 - 5*a*b*c*d))/(2*d^3)) + (3*b^4*g \\
& ^6*n*(a*d - b*c)*(10*a^2*d^2 + b^2*c^2 - 5*a*b*c*d))/d^3) + a*(a*(a*((3*a*b^3* \\
& g^6*n*(a*d - b*c))/d + (3*b^3*g^6*n*(a*d - b*c)*(5*a*d - b*c))/(4*d^2)) + (\\
& b^3*g^6*n*(a*d - b*c)*(10*a^2*d^2 + b^2*c^2 - 5*a*b*c*d))/(2*d^3)) + (3*b^3
\end{aligned}$$

$$\begin{aligned}
& *g^6*n*(a*d - b*c)*(10*a^3*d^3 - b^3*c^3 + 5*a*b^2*c^2*d - 10*a^2*b*c*d^2)) \\
& / (4*d^4) + (15*b^7*g^6*n*x^4*(a*d - b*c))/d + (3*b^3*g^6*n*(a*d - b*c)*(5* \\
& a^4*d^4 + b^4*c^4 + 10*a^2*b^2*c^2*d^2 - 5*a*b^3*c^3*d - 10*a^3*b*c*d^3))/d \\
& ^5)/((15*b^3*g^6*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2)*(15*a^ \\
& 5*b^3*g^6 + 15*b^8*g^6*x^5 + 75*a^4*b^4*g^6*x + 75*a*b^7*g^6*x^4 + 150*a^3* \\
& b^5*g^6*x^2 + 150*a^2*b^6*g^6*x^3))) - (B*d^5*i^2*n*atan((B*d^5*i^2*n*(60*A \\
& + 47*B*n)*((b^6*c^3*g^6 + a^3*b^3*d^3*g^6 - a*b^5*c^2*d*g^6 - a^2*b^4*c*d^ \\
& 2*g^6)/(b^5*c^2*g^6 + a^2*b^3*d^2*g^6 - 2*a*b^4*c*d*g^6) + 2*b*d*x)*(b^5*c^ \\
& 2*g^6 + a^2*b^3*d^2*g^6 - 2*a*b^4*c*d*g^6)*1i)/(b^3*g^6*(47*B^2*d^5*i^2*n^2 \\
& + 60*A*B*d^5*i^2*n)*(a*d - b*c)^3))*(60*A + 47*B*n)*1i)/(450*b^3*g^6*(a*d \\
& - b*c)^3)
\end{aligned}$$

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(b*g*x+a*g)**6, x)

[Out] Timed out

$$3.178 \quad \int (ag+bgx)^3(ci+dix)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx$$

Optimal. Leaf size=1172

$$\frac{Bg^3i^3n \left(6A + 11Bn + 6B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) \log \left(\frac{bc-ad}{b(c+dx)} \right) (bc-ad)^7}{420b^4d^4} - \frac{B^2g^3i^3n^2 \log \left(\frac{a+bx}{c+dx} \right) (bc-ad)^7}{210b^4d^4} - \frac{11B^2g^3i^3n^2}{70b^4d^4}$$

[Out] $5/84*B^2*(-a*d+b*c)^6*g^3*i^3*n^2*x/b^3/d^3+1/140*B^2*(-a*d+b*c)^3*g^3*i^3*n^2*(b*x+a)^4/b^4-29/840*B^2*(-a*d+b*c)^5*g^3*i^3*n^2*(d*x+c)^2/b^2/d^4+47/1260*B^2*(-a*d+b*c)^4*g^3*i^3*n^2*(d*x+c)^3/b/d^4-13/420*B^2*(-a*d+b*c)^3*g^3*i^3*n^2*(d*x+c)^4/d^4+1/105*b*B^2*(-a*d+b*c)^2*g^3*i^3*n^2*(d*x+c)^5/d^4-1/210*B*(-a*d+b*c)^4*g^3*i^3*n*(b*x+a)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^4/d-3/140*B*(-a*d+b*c)^3*g^3*i^3*n*(b*x+a)^4*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^4-1/35*B*(-a*d+b*c)^2*g^3*i^3*n*(b*x+a)^4*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^3+2/21*B*(-a*d+b*c)^4*g^3*i^3*n*(d*x+c)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b/d^4-3/14*B*(-a*d+b*c)^3*g^3*i^3*n*(d*x+c)^4*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/d^4+6/35*b*B*(-a*d+b*c)^2*g^3*i^3*n*(d*x+c)^5*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/d^4-1/21*b^2*B*(-a*d+b*c)*g^3*i^3*n*(d*x+c)^6*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/d^4+1/140*(-a*d+b*c)^3*g^3*i^3*(b*x+a)^4*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/b^4+1/35*(-a*d+b*c)^2*g^3*i^3*(b*x+a)^4*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/b^3+1/14*(-a*d+b*c)*g^3*i^3*(b*x+a)^4*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/b^2+1/7*g^3*i^3*(b*x+a)^4*(d*x+c)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/b+1/420*B*(-a*d+b*c)^5*g^3*i^3*n*(b*x+a)^2*(3*A+B*n+3*B*\ln(e*((b*x+a)/(d*x+c))^n))/b^4/d^2-1/420*B*(-a*d+b*c)^6*g^3*i^3*n*(b*x+a)*(6*A+5*B*n+6*B*\ln(e*((b*x+a)/(d*x+c))^n))/b^4/d^3-1/420*B*(-a*d+b*c)^7*g^3*i^3*n*(6*A+11*B*n+6*B*\ln(e*((b*x+a)/(d*x+c))^n))*\ln((-a*d+b*c)/b/(d*x+c))/b^4/d^4-1/210*B^2*(-a*d+b*c)^7*g^3*i^3*n^2*\ln((b*x+a)/(d*x+c))/b^4/d^4-11/420*B^2*(-a*d+b*c)^7*g^3*i^3*n^2*\ln(d*x+c)/b^4/d^4-1/70*B^2*(-a*d+b*c)^7*g^3*i^3*n^2*polylog(2,d*(b*x+a)/b/(d*x+c))/b^4/d^4$

Rubi [A] time = 4.48, antiderivative size = 961, normalized size of antiderivative = 0.82, number of steps used = 118, number of rules used = 13, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}} = 0.289$, Rules used = {2528, 2525, 12, 2486, 31, 43, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$\frac{B^2g^3i^3n^2 \log^2(c+dx)(bc-ad)^7}{140b^4d^4} - \frac{B^2g^3i^3n^2 \log \left(-\frac{d(a+bx)}{bc-ad} \right) \log(c+dx)(bc-ad)^7}{70b^4d^4} + \frac{Bg^3i^3n \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{70b^4d^4}$$

Antiderivative was successfully verified.

[In] Int[(a*g + b*g*x)^3*(c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2,x]

[Out]
$$-(A*B*(b*c - a*d)^6*g^3*i^3*n*x)/(70*b^3*d^3) + (B^2*(b*c - a*d)^6*g^3*i^3*n^2*x)/(70*b^3*d^3) - (3*B^2*(b*c - a*d)^5*g^3*i^3*n^2*(a + b*x)^2)/(280*b^4*d^2) + (11*B^2*(b*c - a*d)^4*g^3*i^3*n^2*(a + b*x)^3)/(1260*b^4*d) + (B^2*(b*c - a*d)^3*g^3*i^3*n^2*(a + b*x)^4)/(42*b^4) + (B^2*d*(b*c - a*d)^2*g^3*i^3*n^2*(a + b*x)^5)/(105*b^4) - (B^2*(b*c - a*d)^6*g^3*i^3*n*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n])/(70*b^4*d^3) + (B*(b*c - a*d)^5*g^3*i^3*n*(a + b*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(140*b^4*d^2) - (B*(b*c - a*d)^4*g^3*i^3*n*(a + b*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(210*b^4*d) - (17*B*(b*c - a*d)^3*g^3*i^3*n*(a + b*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(140*b^4) - (B*d*(b*c - a*d)^2*g^3*i^3*n*(a + b*x)^5*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(7*b^4) - (B*d^2*(b*c - a*d)*g^3*i^3*n*(a + b*x)^6*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(21*b^4) + ((b*c - a*d)^3*g^3*i^3*(a + b*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(4*b^4) + (3*d*(b*c - a*d)^2*g^3*i^3*(a + b*x)^5*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(5*b^4) + (d^2*(b*c - a*d)*g^3*i^3*(a + b*x)^6*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(2*b^4) + (d^3*g^3*i^3*(a + b*x)^7*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(7*b^4) - (B^2*(b*c - a*d)^7*g^3*i^3*n^2*Log[-((d*(a + b*x))/(b*c - a*d))] * Log[c + d*x])/(70*b^4*d^4) + (B*(b*c - a*d)^7*g^3*i^3*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) * Log[c + d*x])/(70*b^4*d^4) + (B^2*(b*c - a*d)^7*g^3*i^3*n^2*Log[c + d*x]^2)/(140*b^4*d^4) - (B^2*(b*c - a*d)^7*g^3*i^3*n^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(70*b^4*d^4)$$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 31

Int[((a_) + (b_)*(x_))^(n_), x_Symbol] := Simp[Log[RemoveContent[a + b*x, x]]/b, x] /; FreeQ[{a, b}, x]

Rule 43

Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && (!IntegerQ[n] || (EqQ[c, 0] && LeQ[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])]

Rule 2301

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.)
)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_))^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] := Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)
^q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q]^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

Mathematica [B] time = 3.57, size = 2448, normalized size = 2.09

Result too large to show

Antiderivative was successfully verified.

[In] Integrate[(a*g + b*g*x)^3*(c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2,x]

[Out] $(g^3 i^3 (35(b^3 c - a^3 d)^3 (a + b x)^4 (A + B \log[e((a + b x)/(c + d x))]^n))^2 + 84 d (b^3 c - a^3 d)^2 (a + b x)^5 (A + B \log[e((a + b x)/(c + d x))]^n)^2 + 70 d^2 (b^3 c - a^3 d) (a + b x)^6 (A + B \log[e((a + b x)/(c + d x))]^n)^2 + 20 d^3 (a + b x)^7 (A + B \log[e((a + b x)/(c + d x))]^n)^2 - (35 B (b^3 c - a^3 d)^4 n (6 A b d (b^3 c - a^3 d)^2 x + 6 B d (b^3 c - a^3 d)^2 (a + b x) \log[e((a + b x)/(c + d x))]^n + 3 d^2 (-b^3 c + a^3 d) (a + b x)^2 (A + B \log[e((a + b x)/(c + d x))]^n) + 2 d^3 (a + b x)^3 (A + B \log[e((a + b x)/(c + d x))]^n) - 6 B (b^3 c - a^3 d)^3 n \log[c + d x] - 6 (b^3 c - a^3 d)^3 (A + B \log[e((a + b x)/(c + d x))]^n) \log[c + d x] + B (b^3 c - a^3 d) n (2 b d (b^3 c - a^3 d) x - d^2 (a + b x)^2 - 2 (b^3 c - a^3 d)^2 \log[c + d x]) + 3 B (b^3 c - a^3 d)^2 n (b d x + (-b^3 c + a^3 d) \log[c + d x]) + 3 B (b^3 c - a^3 d)^3 n ((2 \log[(d(a + b x))/(-b^3 c + a^3 d)] - \log[c + d x]) \log[c + d x] + 2 \text{PolyLog}[2, (b(c + d x))/(b^3 c - a^3 d)])))/(3 d^4) + (7 B (b^3 c - a^3 d)^3 n (24 A b d (b^3 c - a^3 d)^3 x + 24 B d (b^3 c - a^3 d)^3 (a + b x) \log[e((a + b x)/(c + d x))]^n - 12 d^2 (b^3 c - a^3 d)^2 (a + b x)^2 (A + B \log[e((a + b x)/(c + d x))]^n) + 8 d^3 (b^3 c - a^3 d) (a + b x)^3 (A + B \log[e((a + b x)/(c + d x))]^n) - 6 d^4 (a + b x)^4 (A + B \log[e((a + b x)/(c + d x))]^n) - 24 B (b^3 c - a^3 d)^4 n \log[c + d x] - 24 (b^3 c - a^3 d)^4 (A + B \log[e((a + b x)/(c + d x))]^n) \log[c + d x] + 4 B (b^3 c - a^3 d)^2 n (2 b d (b^3 c - a^3 d) x - d^2 (a + b x)^2 - 2 (b^3 c - a^3 d)^2 \log[c + d x]) + B (b^3 c - a^3 d) n (6 b d (b^3 c - a^3 d)^2 x + 3 d^2 (-b^3 c + a^3 d) (a + b x)^2 + 2 d^3 (a + b x)^3 - 6 (b^3 c - a^3 d)^3 \log[c + d x]) + 12 B (b^3 c - a^3 d)^3 n (b d x + (-b^3 c + a^3 d) \log[c + d x]) + 12 B (b^3 c - a^3 d)^4 n ((2 \log[(d(a + b x))/(-b^3 c + a^3 d)] - \log[c + d x]) \log[c + d x] + 2 \text{PolyLog}[2, (b(c + d x))/(b^3 c - a^3 d)])))/d^4 - (7 B (b^3 c - a^3 d)^2 n (120 A b d (b^3 c - a^3 d)^4 x + 120 B d (b^3 c - a^3 d)^4 (a + b x) \log[e((a + b x)/(c + d x))]^n + 60 d^2 (-b^3 c + a^3 d)^3 (a + b x)^2 (A + B \log[e((a + b x)/(c + d x))]^n) + 40 d^3 (b^3 c - a^3 d)^2 (a + b x)^3 (A + B \log[e((a + b x)/(c + d x))]^n) + 30 d^4 (-b^3 c + a^3 d) (a + b x)^4 (A + B \log[e((a + b x)/(c + d x))]^n) + 24 d^5 (a + b x)^5 (A + B \log[e((a + b x)/(c + d x))]^n) - 120 B (b^3 c - a^3 d)^5 n \log[c + d x] - 120 (b^3 c - a^3 d)^5 (A + B \log[e((a + b x)/(c + d x))]^n) \log[c + d x] + 20 B (b^3 c - a^3 d)^3 n (2 b d (b^3 c - a^3 d) x - d^2 (a + b x)^2 - 2 (b^3 c - a^3 d)^2 \log[c + d x]) + 5 B (b^3 c - a^3 d)^2 n (6 b d (b^3 c - a^3 d)^2 x + 3 d^2 (-b^3 c + a^3 d) (a + b x)^2 + 2 d^3 (a + b x)^3 - 6 (b^3 c - a^3 d)^3 \log[c + d x]) + 2 B (b^3 c - a^3 d) n (12 b d (b^3 c - a^3 d)^3 x - 6 d^2 (b^3 c - a^3 d)^2 (a + b x)^2 + 4 d^3 (b^3 c - a^3 d) (a + b x)^3 - 3 d^4 (a + b x)^4 - 12 (b^3 c - a^3 d)^4 \log[c + d x]) + 60 B (b^3 c - a^3 d)^4 n (b$

```

*d*x + (-(b*c) + a*d)*Log[c + d*x]] + 60*B*(b*c - a*d)^5*n*((2*Log[(d*(a +
b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d
*x))/(b*c - a*d)])))/(6*d^4) + (B*(b*c - a*d)*n*(360*A*b*d*(b*c - a*d)^5*x
+ 60*b^2*B*c*d*(b*c - a*d)^4*n*x - 60*a*b*B*d^2*(b*c - a*d)^4*n*x + 462*b*B
*d*(b*c - a*d)^5*n*x - 30*b*B*c*d^2*(b*c - a*d)^3*n*(a + b*x)^2 + 30*a*B*d^
3*(b*c - a*d)^3*n*(a + b*x)^2 - 141*B*d^2*(b*c - a*d)^4*n*(a + b*x)^2 + 20*
b*B*c*d^3*(b*c - a*d)^2*n*(a + b*x)^3 - 20*a*B*d^4*(b*c - a*d)^2*n*(a + b*x
)^3 + 54*B*d^3*(b*c - a*d)^3*n*(a + b*x)^3 - 15*b*B*c*d^4*(b*c - a*d)*n*(a
+ b*x)^4 + 15*a*B*d^5*(b*c - a*d)*n*(a + b*x)^4 - 18*B*d^4*(b*c - a*d)^2*n*
(a + b*x)^4 + 12*b*B*c*d^5*n*(a + b*x)^5 - 12*a*B*d^6*n*(a + b*x)^5 + 360*B
*d*(b*c - a*d)^5*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n] - 180*d^2*(b*c -
a*d)^4*(a + b*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 120*d^3*(b*c -
a*d)^3*(a + b*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 90*d^4*(b*c - a
*d)^2*(a + b*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 72*d^5*(b*c - a*
d)*(a + b*x)^5*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 60*d^6*(a + b*x)^6*
(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 60*b*B*c*(b*c - a*d)^5*n*Log[c + d
*x] + 60*a*B*d*(b*c - a*d)^5*n*Log[c + d*x] - 822*B*(b*c - a*d)^6*n*Log[c +
d*x] - 360*(b*c - a*d)^6*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*
x] + 180*B*(b*c - a*d)^6*n*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c +
d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(9*d^4)))/(
140*b^4)

```

fricas [F] time = 1.03, size = 0, normalized size = 0.00

$$\text{integral} \left(A^2 b^3 d^3 g^3 i^3 x^6 + A^2 a^3 c^3 g^3 i^3 + 3 (A^2 b^3 c d^2 + A^2 a b^2 d^3) g^3 i^3 x^5 + 3 (A^2 b^3 c^2 d + 3 A^2 a b^2 c d^2 + A^2 a^2 b d^3) g^3 i^3 x^4 + \dots \right)$$

Verification of antiderivative is not currently implemented for this CAS.

```

[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x,
algorithm="fricas")

```

```

[Out] integral(A^2*b^3*d^3*g^3*i^3*x^6 + A^2*a^3*c^3*g^3*i^3 + 3*(A^2*b^3*c*d^2 +
A^2*a*b^2*d^3)*g^3*i^3*x^5 + 3*(A^2*b^3*c^2*d + 3*A^2*a*b^2*c*d^2 + A^2*a^
2*b*d^3)*g^3*i^3*x^4 + (A^2*b^3*c^3 + 9*A^2*a*b^2*c^2*d + 9*A^2*a^2*b*c*d^2
+ A^2*a^3*d^3)*g^3*i^3*x^3 + 3*(A^2*a*b^2*c^3 + 3*A^2*a^2*b*c^2*d + A^2*a^
3*c*d^2)*g^3*i^3*x^2 + 3*(A^2*a^2*b*c^3 + A^2*a^3*c^2*d)*g^3*i^3*x + (B^2*b
^3*d^3*g^3*i^3*x^6 + B^2*a^3*c^3*g^3*i^3 + 3*(B^2*b^3*c*d^2 + B^2*a*b^2*d^3
)*g^3*i^3*x^5 + 3*(B^2*b^3*c^2*d + 3*B^2*a*b^2*c*d^2 + B^2*a^2*b*d^3)*g^3*i
^3*x^4 + (B^2*b^3*c^3 + 9*B^2*a*b^2*c^2*d + 9*B^2*a^2*b*c*d^2 + B^2*a^3*d^3
)*g^3*i^3*x^3 + 3*(B^2*a*b^2*c^3 + 3*B^2*a^2*b*c^2*d + B^2*a^3*c*d^2)*g^3*i
^3*x^2 + 3*(B^2*a^2*b*c^3 + B^2*a^3*c^2*d)*g^3*i^3*x)*log(e*((b*x + a)/(d*x
+ c))^n)^2 + 2*(A*B*b^3*d^3*g^3*i^3*x^6 + A*B*a^3*c^3*g^3*i^3 + 3*(A*B*b^3
*c*d^2 + A*B*a*b^2*d^3)*g^3*i^3*x^5 + 3*(A*B*b^3*c^2*d + 3*A*B*a*b^2*c*d^2
+ A*B*a^2*b*d^3)*g^3*i^3*x^4 + (A*B*b^3*c^3 + 9*A*B*a*b^2*c^2*d + 9*A*B*a^
2*b*d^3)

```

$*b*c*d^2 + A*B*a^3*d^3)*g^3*i^3*x^3 + 3*(A*B*a*b^2*c^3 + 3*A*B*a^2*b*c^2*d + A*B*a^3*c*d^2)*g^3*i^3*x^2 + 3*(A*B*a^2*b*c^3 + A*B*a^3*c^2*d)*g^3*i^3*x) * \log(e*((b*x + a)/(d*x + c))^n), x$

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, algorithm="giac")

[Out] Timed out

maple [F] time = 0.48, size = 0, normalized size = 0.00

$$\int (bgx + ag)^3 (dix + ci)^3 \left(B \ln \left(e \left(\frac{bx + a}{dx + c} \right)^n \right) + A \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)^3*(d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)

[Out] int((b*g*x+a*g)^3*(d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)

maxima [B] time = 6.36, size = 7845, normalized size = 6.69

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, algorithm="maxima")

[Out] $2/7*A*B*b^3*d^3*g^3*i^3*x^7*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/7*A^2*b^3*d^3*g^3*i^3*x^7 + A*B*b^3*c*d^2*g^3*i^3*x^6*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A*B*a*b^2*d^3*g^3*i^3*x^6*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/2*A^2*b^3*c*d^2*g^3*i^3*x^6 + 1/2*A^2*a*b^2*d^3*g^3*i^3*x^6 + 6/5*A*B*b^3*c^2*d*g^3*i^3*x^5*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 18/5*A*B*a*b^2*c*d^2*g^3*i^3*x^5*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 6/5*A*B*a^2*b*d^3*g^3*i^3*x^5*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 3/5*A^2*b^3*c^2*d*g^3*i^3*x^5 + 9/5*A^2*a*b^2*c*d^2*g^3*i^3*x^5 + 3/5*A^2*a^2*b*d^3*g^3*i^3*x^5 + 1/2*A*B*b^3*c^3*g^3*i^3*x^4*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 9/2*A*B*a*b^2*c^2*d*g^3*i^3*x^4*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 9/2*A*B*a^2*b*c*d^2*g^3*i^3*x^4*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/2*A*B*a^3*d^3*g^3*i^3*x^4*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/4*A$

$$\begin{aligned}
& ^2b^3c^3g^3i^3x^4 + 9/4A^2a^2b^2c^2d^2g^3i^3x^4 + 9/4A^2a^2b^2c^2d^2g^3i^3x^4 + 1/4A^2a^3d^3g^3i^3x^4 + 2ABa^2b^2c^3g^3i^3x^3 \\
& * \log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 6ABa^2b^2c^2d^2g^3i^3x^3 * \log(e*(b*x/(d*x + c) + a/(d*x + c))^n) \\
& + 2ABa^3c^2d^2g^3i^3x^3 * \log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A^2a^2b^2c^3g^3i^3x^3 + 3A^2a^2b^2c^2d^2g^3i^3x^3 \\
& + A^2a^3c^2d^2g^3i^3x^3 + 3ABa^2b^2c^3g^3i^3x^2 * \log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 3ABa^3c^2d^2g^3i^3x^2 * \log(e*(b*x/(d*x + c) + a/(d*x + c))^n) \\
& + 3/2A^2a^2b^2c^3g^3i^3x^2 + 3/2A^2a^3c^2d^2g^3i^3x^2 + 1/210ABb^3d^3g^3i^3n*(60a^7*log(b*x + a)/b^7 - 60c^7*log(d*x + c)/d^7 \\
& - (10*(b^6*c*d^5 - a*b^5*d^6)*x^6 - 12*(b^6*c^2*d^4 - a^2*b^4*d^6)*x^5 + 15*(b^6*c^3*d^3 - a^3*b^3*d^6)*x^4 - 20*(b^6*c^4*d^2 - a^4*b^2*d^6)*x^3 \\
& + 30*(b^6*c^5*d - a^5*b*d^6)*x^2 - 60*(b^6*c^6 - a^6*d^6)*x)/(b^6*d^6) - 1/60ABb^3c^2d^2g^3i^3n*(60a^6*log(b*x + a)/b^6 - 60c^6*log(d*x + c)/d^6 \\
& + (12*(b^5*c*d^4 - a*b^4*d^5)*x^5 - 15*(b^5*c^2*d^3 - a^2*b^3*d^5)*x^4 + 20*(b^5*c^3*d^2 - a^3*b^2*d^5)*x^3 - 30*(b^5*c^4*d - a^4*b*d^5)*x^2 \\
& + 60*(b^5*c^5 - a^5*d^5)*x)/(b^5*d^5) - 1/60ABa^2b^2d^3g^3i^3n*(60a^6*log(b*x + a)/b^6 - 60c^6*log(d*x + c)/d^6 + (12*(b^5*c*d^4 - a*b^4*d^5)*x^5 \\
& - 15*(b^5*c^2*d^3 - a^2*b^3*d^5)*x^4 + 20*(b^5*c^3*d^2 - a^3*b^2*d^5)*x^3 - 30*(b^5*c^4*d - a^4*b*d^5)*x^2 + 60*(b^5*c^5 - a^5*d^5)*x)/(b^5*d^5) \\
& + 1/10ABb^3c^2d^2g^3i^3n*(12a^5*log(b*x + a)/b^5 - 12c^5*log(d*x + c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4*c^2*d^2 - a^2*b^2*d^4)*x^3 \\
& + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 - a^4*d^4)*x)/(b^4*d^4) + 3/10ABa^2b^2c^2d^2g^3i^3n*(12a^5*log(b*x + a)/b^5 - 12c^5*log(d*x + c)/d^5 \\
& - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4*c^2*d^2 - a^2*b^2*d^4)*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 - a^4*d^4)*x)/(b^4*d^4) \\
& + 1/10ABa^2b^2d^3g^3i^3n*(12a^5*log(b*x + a)/b^5 - 12c^5*log(d*x + c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4*c^2*d^2 - a^2*b^2*d^4)*x^3 \\
& + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 - a^4*d^4)*x)/(b^4*d^4) - 1/12ABb^3c^3g^3i^3n*(6a^4*log(b*x + a)/b^4 - 6c^4*log(d*x + c)/d^4 \\
& + (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3) - 3/4ABa^2b^2c^2d^2g^3i^3n*(6a^4*log(b*x + a)/b^4 \\
& - 6c^4*log(d*x + c)/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3) - 3/4ABa^2b^2c^2d^2g^3i^3n*(6a^4*log(b*x + a)/b^4 \\
& - 6c^4*log(d*x + c)/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3) - 1/12ABa^3d^3g^3i^3n*(6a^4*log(b*x + a)/b^4 \\
& - 6c^4*log(d*x + c)/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3) + ABa^2b^2c^3g^3i^3n*(2a^3*log(b*x + a)/b^3 \\
& - 2c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2) + 3ABa^2b^2c^2d^2g^3i^3n*(2a^3*log(b*x + a)/b^3 - 2c^3*log(d*x + c)/d^3 \\
& - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2) - 3ABa^2b^2c^3g^3i^3n*(a^2*log(b*x + a)/b^2 - c^2*log(d*x + c)/d^2 + (b*c - a*d)*x/(b*d)) - 3ABa^3c^2
\end{aligned}$$

$$\begin{aligned}
& *d*g^3*i^3*n*(a^2*\log(b*x + a)/b^2 - c^2*\log(d*x + c)/d^2 + (b*c - a*d)*x/(\\
& b*d)) + 2*A*B*a^3*c^3*g^3*i^3*n*(a*\log(b*x + a)/b - c*\log(d*x + c)/d) + 2*A \\
& *B*a^3*c^3*g^3*i^3*x*\log(e*(b*x/(d*x + c) + a/(d*x + c)))^n) + A^2*a^3*c^3*g \\
& ^3*i^3*x - 1/420*(107*a^4*b^2*c^3*d^4*g^3*i^3*n^2 - 39*a^5*b*c^2*d^5*g^3*i^ \\
& 3*n^2 + 6*a^6*c*d^6*g^3*i^3*n^2 - 6*b^6*c^7*g^3*i^3*n*\log(e) - 6*(g^3*i^3*n \\
& ^2 - 7*g^3*i^3*n*\log(e))*a*b^5*c^6*d + 3*(13*g^3*i^3*n^2 - 42*g^3*i^3*n*\log \\
& (e))*a^2*b^4*c^5*d^2 - (107*g^3*i^3*n^2 - 210*g^3*i^3*n*\log(e))*a^3*b^3*c^4 \\
& *d^3)*B^2*\log(d*x + c)/(b^3*d^4) + 1/70*(b^7*c^7*g^3*i^3*n^2 - 7*a*b^6*c^6* \\
& d*g^3*i^3*n^2 + 21*a^2*b^5*c^5*d^2*g^3*i^3*n^2 - 35*a^3*b^4*c^4*d^3*g^3*i^3 \\
& *n^2 + 35*a^4*b^3*c^3*d^4*g^3*i^3*n^2 - 21*a^5*b^2*c^2*d^5*g^3*i^3*n^2 + 7* \\
& a^6*b*c*d^6*g^3*i^3*n^2 - a^7*d^7*g^3*i^3*n^2)*(log(b*x + a)*log((b*d*x + a \\
& *d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d)))*B^2/(b^4*d^4) + 1 \\
& /2520*(360*B^2*b^7*d^7*g^3*i^3*x^7*\log(e)^2 - 60*((2*g^3*i^3*n*\log(e) - 21* \\
& g^3*i^3*\log(e)^2)*b^7*c*d^6 - (2*g^3*i^3*n*\log(e) + 21*g^3*i^3*\log(e)^2)*a* \\
& b^6*d^7)*B^2*x^6 + 24*((g^3*i^3*n^2 - 15*g^3*i^3*n*\log(e) + 63*g^3*i^3*\log(e) \\
& ^2)*b^7*c^2*d^5 - (2*g^3*i^3*n^2 - 189*g^3*i^3*\log(e)^2)*a*b^6*c*d^6 + (g \\
& ^3*i^3*n^2 + 15*g^3*i^3*n*\log(e) + 63*g^3*i^3*\log(e)^2)*a^2*b^5*d^7)*B^2*x^ \\
& 5 + 6*((10*g^3*i^3*n^2 - 51*g^3*i^3*n*\log(e) + 105*g^3*i^3*\log(e)^2)*b^7*c^ \\
& 3*d^4 - (10*g^3*i^3*n^2 + 147*g^3*i^3*n*\log(e) - 945*g^3*i^3*\log(e)^2)*a*b^ \\
& 6*c^2*d^5 - (10*g^3*i^3*n^2 - 147*g^3*i^3*n*\log(e) - 945*g^3*i^3*\log(e)^2)* \\
& a^2*b^5*c*d^6 + (10*g^3*i^3*n^2 + 51*g^3*i^3*n*\log(e) + 105*g^3*i^3*\log(e)^ \\
& 2)*a^3*b^4*d^7)*B^2*x^4 + 2*((11*g^3*i^3*n^2 - 6*g^3*i^3*n*\log(e))*b^7*c^4* \\
& d^3 + 4*(19*g^3*i^3*n^2 - 147*g^3*i^3*n*\log(e) + 315*g^3*i^3*\log(e)^2)*a*b^ \\
& 6*c^3*d^4 - 6*(29*g^3*i^3*n^2 - 630*g^3*i^3*\log(e)^2)*a^2*b^5*c^2*d^5 + 4*(\\
& 19*g^3*i^3*n^2 + 147*g^3*i^3*n*\log(e) + 315*g^3*i^3*\log(e)^2)*a^3*b^4*c*d^6 \\
& + (11*g^3*i^3*n^2 + 6*g^3*i^3*n*\log(e))*a^4*b^3*d^7)*B^2*x^3 - 3*(3*(3*g^3 \\
& *i^3*n^2 - 2*g^3*i^3*n*\log(e))*b^7*c^5*d^2 - (67*g^3*i^3*n^2 - 42*g^3*i^3*n \\
& *\log(e))*a*b^6*c^4*d^3 + 2*(29*g^3*i^3*n^2 + 252*g^3*i^3*n*\log(e) - 630*g^3 \\
& *i^3*\log(e)^2)*a^2*b^5*c^3*d^4 + 2*(29*g^3*i^3*n^2 - 252*g^3*i^3*n*\log(e) - \\
& 630*g^3*i^3*\log(e)^2)*a^3*b^4*c^2*d^5 - (67*g^3*i^3*n^2 + 42*g^3*i^3*n*\log \\
& (e))*a^4*b^3*c*d^6 + 3*(3*g^3*i^3*n^2 + 2*g^3*i^3*n*\log(e))*a^5*b^2*d^7)*B^ \\
& 2*x^2 - 18*(35*a^4*b^3*c^3*d^4*g^3*i^3*n^2 - 21*a^5*b^2*c^2*d^5*g^3*i^3*n^2 \\
& + 7*a^6*b*c*d^6*g^3*i^3*n^2 - a^7*d^7*g^3*i^3*n^2)*B^2*\log(b*x + a)^2 - 36 \\
& *(b^7*c^7*g^3*i^3*n^2 - 7*a*b^6*c^6*d*g^3*i^3*n^2 + 21*a^2*b^5*c^5*d^2*g^3* \\
& i^3*n^2 - 35*a^3*b^4*c^4*d^3*g^3*i^3*n^2)*B^2*\log(b*x + a)*\log(d*x + c) + 1 \\
& 8*(b^7*c^7*g^3*i^3*n^2 - 7*a*b^6*c^6*d*g^3*i^3*n^2 + 21*a^2*b^5*c^5*d^2*g^3* \\
& i^3*n^2 - 35*a^3*b^4*c^4*d^3*g^3*i^3*n^2)*B^2*\log(d*x + c)^2 + 6*(6*(g^3*i \\
& ^3*n^2 - g^3*i^3*n*\log(e))*b^7*c^6*d - 3*(15*g^3*i^3*n^2 - 14*g^3*i^3*n*\log \\
& (e))*a*b^6*c^5*d^2 + 2*(73*g^3*i^3*n^2 - 63*g^3*i^3*n*\log(e))*a^2*b^5*c^4*d \\
& ^3 - 2*(107*g^3*i^3*n^2 - 210*g^3*i^3*\log(e)^2)*a^3*b^4*c^3*d^4 + 2*(73*g^3 \\
& *i^3*n^2 + 63*g^3*i^3*n*\log(e))*a^4*b^3*c^2*d^5 - 3*(15*g^3*i^3*n^2 + 14*g^ \\
& 3*i^3*n*\log(e))*a^5*b^2*c*d^6 + 6*(g^3*i^3*n^2 + g^3*i^3*n*\log(e))*a^6*b*d^ \\
& 7)*B^2*x - 6*(6*a*b^6*c^6*d*g^3*i^3*n^2 - 39*a^2*b^5*c^5*d^2*g^3*i^3*n^2 + \\
& 107*a^3*b^4*c^4*d^3*g^3*i^3*n^2 + 6*a^7*d^7*g^3*i^3*n*\log(e) - (107*g^3*i^3 \\
& *n^2 + 210*g^3*i^3*n*\log(e))*a^4*b^3*c^3*d^4 + 3*(13*g^3*i^3*n^2 + 42*g^3*i
\end{aligned}$$

$$\begin{aligned}
& ^3n \cdot \log(e)) \cdot a^5 b^2 c^2 d^5 - 6 \cdot (g^3 i^3 n^2 + 7 g^3 i^3 n \cdot \log(e)) \cdot a^6 b^c \\
& \cdot d^6) \cdot B^2 \cdot \log(bx + a) + 18 \cdot (20 B^2 b^7 d^7 g^3 i^3 x^7 + 140 B^2 a^3 b^4 c \\
& ^3 d^4 g^3 i^3 x + 70 \cdot (b^7 c^2 d^6 g^3 i^3 + a b^6 d^7 g^3 i^3) \cdot B^2 x^6 + 84 \cdot \\
& (b^7 c^2 d^5 g^3 i^3 + 3 a b^6 c^2 d^6 g^3 i^3 + a^2 b^5 d^7 g^3 i^3) \cdot B^2 x^5 \\
& + 35 \cdot (b^7 c^3 d^4 g^3 i^3 + 9 a b^6 c^2 d^5 g^3 i^3 + 9 a^2 b^5 c^2 d^6 g^3 i^3 \cdot \\
& i^3 + a^3 b^4 d^7 g^3 i^3) \cdot B^2 x^4 + 140 \cdot (a b^6 c^3 d^4 g^3 i^3 + 3 a^2 b^5 \\
& c^2 d^5 g^3 i^3 + a^3 b^4 c^2 d^6 g^3 i^3) \cdot B^2 x^3 + 210 \cdot (a^2 b^5 c^3 d^4 g^3 \\
& i^3 + a^3 b^4 c^2 d^5 g^3 i^3) \cdot B^2 x^2) \cdot \log((bx + a)^n)^2 + 18 \cdot (20 B^2 b^7 \\
& d^7 g^3 i^3 x^7 + 140 B^2 a^3 b^4 c^3 d^4 g^3 i^3 x + 70 \cdot (b^7 c^2 d^6 g^3 i^3 \\
& i^3 + a b^6 d^7 g^3 i^3) \cdot B^2 x^6 + 84 \cdot (b^7 c^2 d^5 g^3 i^3 + 3 a b^6 c^2 d^6 \\
& g^3 i^3 + a^2 b^5 d^7 g^3 i^3) \cdot B^2 x^5 + 35 \cdot (b^7 c^3 d^4 g^3 i^3 + 9 a b^6 c^2 \\
& d^5 g^3 i^3 + 9 a^2 b^5 c^2 d^6 g^3 i^3 + a^3 b^4 d^7 g^3 i^3) \cdot B^2 x^4 + \\
& 140 \cdot (a b^6 c^3 d^4 g^3 i^3 + 3 a^2 b^5 c^2 d^5 g^3 i^3 + a^3 b^4 c^2 d^6 g^3 i^3) \cdot B^2 \\
& x^3 + 210 \cdot (a^2 b^5 c^3 d^4 g^3 i^3 + a^3 b^4 c^2 d^5 g^3 i^3) \cdot B^2 \\
& x^2) \cdot \log((dx + c)^n)^2 + 6 \cdot (120 B^2 b^7 d^7 g^3 i^3 x^7 \cdot \log(e) - 20 \cdot ((g^3 i^3 n \\
& - 21 g^3 i^3 \cdot \log(e)) \cdot b^7 c^2 d^6 - (g^3 i^3 n + 21 g^3 i^3 \cdot \log(e)) \cdot a b^6 \\
& d^7) \cdot B^2 x^6 + 12 \cdot (126 a b^6 c^2 d^6 g^3 i^3 \cdot \log(e) - (5 g^3 i^3 n - 42 g^3 \\
& i^3 \cdot \log(e)) \cdot b^7 c^2 d^5 + (5 g^3 i^3 n + 42 g^3 i^3 \cdot \log(e)) \cdot a^2 b^5 d^7) \cdot B \\
& ^2 x^5 - 3 \cdot ((17 g^3 i^3 n - 70 g^3 i^3 \cdot \log(e)) \cdot b^7 c^3 d^4 + 7 \cdot (7 g^3 i^3 n \\
& - 90 g^3 i^3 \cdot \log(e)) \cdot a b^6 c^2 d^5 - 7 \cdot (7 g^3 i^3 n + 90 g^3 i^3 \cdot \log(e)) \cdot a \\
& ^2 b^5 c^2 d^6 - (17 g^3 i^3 n + 70 g^3 i^3 \cdot \log(e)) \cdot a^3 b^4 d^7) \cdot B^2 x^4 - 2 \cdot \\
& (b^7 c^4 d^3 g^3 i^3 n - a^4 b^3 d^7 g^3 i^3 n - 1260 a^2 b^5 c^2 d^5 g^3 i^3 \\
& ^3 \cdot \log(e) + 14 \cdot (7 g^3 i^3 n - 30 g^3 i^3 \cdot \log(e)) \cdot a b^6 c^3 d^4 - 14 \cdot (7 g^3 i^3 \\
& i^3 n + 30 g^3 i^3 \cdot \log(e)) \cdot a^3 b^4 c^2 d^6) \cdot B^2 x^3 + 3 \cdot (b^7 c^5 d^2 g^3 i^3 n \\
& n - 7 a b^6 c^4 d^3 g^3 i^3 n + 7 a^4 b^3 c^2 d^6 g^3 i^3 n - a^5 b^2 d^7 g^3 \\
& i^3 n - 84 \cdot (g^3 i^3 n - 5 g^3 i^3 \cdot \log(e)) \cdot a^2 b^5 c^3 d^4 + 84 \cdot (g^3 i^3 n \\
& + 5 g^3 i^3 \cdot \log(e)) \cdot a^3 b^4 c^2 d^5) \cdot B^2 x^2 - 6 \cdot (b^7 c^6 d g^3 i^3 n - 7 a \\
& b^6 c^5 d^2 g^3 i^3 n + 21 a^2 b^5 c^4 d^3 g^3 i^3 n - 21 a^4 b^3 c^2 d^5 g^3 \\
& i^3 n + 7 a^5 b^2 c^2 d^6 g^3 i^3 n - a^6 b d^7 g^3 i^3 n - 140 a^3 b^4 c^3 \\
& d^4 g^3 i^3 \cdot \log(e)) \cdot B^2 x + 6 \cdot (35 a^4 b^3 c^3 d^4 g^3 i^3 n - 21 a^5 b^2 \\
& c^2 d^5 g^3 i^3 n + 7 a^6 b c^2 d^6 g^3 i^3 n - a^7 d^7 g^3 i^3 n) \cdot B^2 \cdot \log(b \\
& x + a) + 6 \cdot (b^7 c^7 g^3 i^3 n - 7 a b^6 c^6 d g^3 i^3 n + 21 a^2 b^5 c^5 d^2 \\
& g^3 i^3 n - 35 a^3 b^4 c^4 d^3 g^3 i^3 n) \cdot B^2 \cdot \log(dx + c)) \cdot \log((bx + a) \\
& ^n) - 6 \cdot (120 B^2 b^7 d^7 g^3 i^3 x^7 \cdot \log(e) - 20 \cdot ((g^3 i^3 n - 21 g^3 i^3 \cdot \\
& \log(e)) \cdot b^7 c^2 d^6 - (g^3 i^3 n + 21 g^3 i^3 \cdot \log(e)) \cdot a b^6 d^7) \cdot B^2 x^6 + 12 \\
& \cdot (126 a b^6 c^2 d^6 g^3 i^3 \cdot \log(e) - (5 g^3 i^3 n - 42 g^3 i^3 \cdot \log(e)) \cdot b^7 c^2 \\
& d^5 + (5 g^3 i^3 n + 42 g^3 i^3 \cdot \log(e)) \cdot a^2 b^5 d^7) \cdot B^2 x^5 - 3 \cdot ((17 g^3 \\
& i^3 n - 70 g^3 i^3 \cdot \log(e)) \cdot b^7 c^3 d^4 + 7 \cdot (7 g^3 i^3 n - 90 g^3 i^3 \cdot \log(e) \\
&)) \cdot a b^6 c^2 d^5 - 7 \cdot (7 g^3 i^3 n + 90 g^3 i^3 \cdot \log(e)) \cdot a^2 b^5 c^2 d^6 - (17 g^3 \\
& i^3 n + 70 g^3 i^3 \cdot \log(e)) \cdot a^3 b^4 d^7) \cdot B^2 x^4 - 2 \cdot (b^7 c^4 d^3 g^3 i^3 \\
& n - a^4 b^3 d^7 g^3 i^3 n - 1260 a^2 b^5 c^2 d^5 g^3 i^3 \cdot \log(e) + 14 \cdot (7 g^3 \\
& i^3 n - 30 g^3 i^3 \cdot \log(e)) \cdot a b^6 c^3 d^4 - 14 \cdot (7 g^3 i^3 n + 30 g^3 i^3 \cdot \\
& \log(e)) \cdot a^3 b^4 c^2 d^6) \cdot B^2 x^3 + 3 \cdot (b^7 c^5 d^2 g^3 i^3 n - 7 a b^6 c^4 d^3 \\
& g^3 i^3 n + 7 a^4 b^3 c^2 d^6 g^3 i^3 n - a^5 b^2 d^7 g^3 i^3 n - 84 \cdot (g^3 i^3 \\
& n - 5 g^3 i^3 \cdot \log(e)) \cdot a^2 b^5 c^3 d^4 + 84 \cdot (g^3 i^3 n + 5 g^3 i^3 \cdot \log(e))
\end{aligned}$$

```

*a^3*b^4*c^2*d^5)*B^2*x^2 - 6*(b^7*c^6*d*g^3*i^3*n - 7*a*b^6*c^5*d^2*g^3*i^
3*n + 21*a^2*b^5*c^4*d^3*g^3*i^3*n - 21*a^4*b^3*c^2*d^5*g^3*i^3*n + 7*a^5*b
^2*c*d^6*g^3*i^3*n - a^6*b*d^7*g^3*i^3*n - 140*a^3*b^4*c^3*d^4*g^3*i^3*log(
e))*B^2*x + 6*(35*a^4*b^3*c^3*d^4*g^3*i^3*n - 21*a^5*b^2*c^2*d^5*g^3*i^3*n
+ 7*a^6*b*c*d^6*g^3*i^3*n - a^7*d^7*g^3*i^3*n)*B^2*log(b*x + a) + 6*(b^7*c^
7*g^3*i^3*n - 7*a*b^6*c^6*d*g^3*i^3*n + 21*a^2*b^5*c^5*d^2*g^3*i^3*n - 35*a
^3*b^4*c^4*d^3*g^3*i^3*n)*B^2*log(d*x + c) + 6*(20*B^2*b^7*d^7*g^3*i^3*x^7
+ 140*B^2*a^3*b^4*c^3*d^4*g^3*i^3*x + 70*(b^7*c*d^6*g^3*i^3 + a*b^6*d^7*g^3
*i^3)*B^2*x^6 + 84*(b^7*c^2*d^5*g^3*i^3 + 3*a*b^6*c*d^6*g^3*i^3 + a^2*b^5*d
^7*g^3*i^3)*B^2*x^5 + 35*(b^7*c^3*d^4*g^3*i^3 + 9*a*b^6*c^2*d^5*g^3*i^3 + 9
*a^2*b^5*c*d^6*g^3*i^3 + a^3*b^4*d^7*g^3*i^3)*B^2*x^4 + 140*(a*b^6*c^3*d^4*
g^3*i^3 + 3*a^2*b^5*c^2*d^5*g^3*i^3 + a^3*b^4*c*d^6*g^3*i^3)*B^2*x^3 + 210*
(a^2*b^5*c^3*d^4*g^3*i^3 + a^3*b^4*c^2*d^5*g^3*i^3)*B^2*x^2)*log((b*x + a)^
n))*log((d*x + c)^n))/(b^4*d^4)

```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (ag + bgx)^3 (ci + dix)^3 \left(A + B \ln \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)^3*(c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2,x)
```

```
[Out] int((a*g + b*g*x)^3*(c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**3*(d*i*x+c*i)**3*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2,x)
```

```
[Out] Timed out
```

$$3.179 \quad \int (ag+bgx)^2(ci+dix)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx$$

Optimal. Leaf size=976

$$\frac{Bg^2i^3n \left(2A + 3Bn + 2B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) \log \left(\frac{bc-ad}{b(c+dx)} \right) (bc-ad)^6}{60b^4d^3} + \frac{B^2g^2i^3n^2 \log \left(\frac{a+bx}{c+dx} \right) (bc-ad)^6}{36b^4d^3} + \frac{11B^2g^2i^3n^2 \log \left(\frac{a+bx}{c+dx} \right) (bc-ad)^6}{18b^4d^3}$$

[Out]
$$\begin{aligned} & -7/180*B^2*(-a*d+b*c)^5*g^2*i^3*n^2*x/b^3/d^2-7/360*B^2*(-a*d+b*c)^4*g^2*i^3*n^2*(d*x+c)^2/b^2/d^3-1/60*B^2*(-a*d+b*c)^3*g^2*i^3*n^2*(d*x+c)^3/b/d^3+1/60*B^2*(-a*d+b*c)^2*g^2*i^3*n^2*(d*x+c)^4/d^3-1/60*B*(-a*d+b*c)^4*g^2*i^3*n*(b*x+a)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^4/d-1/30*B*(-a*d+b*c)^3*g^2*i^3*n*(b*x+a)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^4-1/10*B*(-a*d+b*c)^4*g^2*i^3*n*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^2/d^3+1/45*B*(-a*d+b*c)^3*g^2*i^3*n*(d*x+c)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b/d^3+7/60*B*(-a*d+b*c)^2*g^2*i^3*n*(d*x+c)^4*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/d^3-1/15*b*B*(-a*d+b*c)*g^2*i^3*n*(d*x+c)^5*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/d^3+1/60*(-a*d+b*c)^3*g^2*i^3*(b*x+a)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/b^4+1/20*(-a*d+b*c)^2*g^2*i^3*(b*x+a)^3*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/b^3+1/10*(-a*d+b*c)*g^2*i^3*(b*x+a)^3*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/b^2+1/6*g^2*i^3*(b*x+a)^3*(d*x+c)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/b+1/60*B*(-a*d+b*c)^5*g^2*i^3*n*(b*x+a)*(2*A+B*n+2*B*\ln(e*((b*x+a)/(d*x+c))^n))/b^4/d^2+1/60*B*(-a*d+b*c)^6*g^2*i^3*n*(2*A+3*B*n+2*B*\ln(e*((b*x+a)/(d*x+c))^n))*\ln((-a*d+b*c)/b/(d*x+c))/b^4/d^3+1/36*B^2*(-a*d+b*c)^6*g^2*i^3*n^2*\ln((b*x+a)/(d*x+c))/b^4/d^3+11/180*B^2*(-a*d+b*c)^6*g^2*i^3*n^2*\ln(d*x+c)/b^4/d^3+1/30*B^2*(-a*d+b*c)^6*g^2*i^3*n^2*polylog(2,d*(b*x+a)/b/(d*x+c))/b^4/d^3 \end{aligned}$$

Rubi [A] time = 3.20, antiderivative size = 886, normalized size of antiderivative = 0.91, number of steps used = 83, number of rules used = 13, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}} = 0.289$, Rules used = {2528, 2525, 12, 2486, 31, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 43}

$$\frac{B^2g^2i^3n^2 \log^2(a+bx)(bc-ad)^6}{60b^4d^3} - \frac{B^2g^2i^3n^2 \log(a+bx)(bc-ad)^6}{45b^4d^3} - \frac{Bg^2i^3n \log(a+bx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) (bc-ad)^6}{30b^4d^3}$$

Antiderivative was successfully verified.

[In] Int[(a*g + b*g*x)^2*(c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2,x]

[Out]
$$-(A*B*(b*c - a*d)^5*g^2*i^3*n*x)/(30*b^3*d^2) - (B^2*(b*c - a*d)^5*g^2*i^3*n^2*x)/(45*b^3*d^2) - (7*B^2*(b*c - a*d)^4*g^2*i^3*n^2*(c + d*x)^2)/(360*b^3*d^2)$$

$$\begin{aligned}
& 2*d^3) - (B^2*(b*c - a*d)^3*g^2*i^3*n^2*(c + d*x)^3)/(60*b*d^3) + (B^2*(b*c \\
& - a*d)^2*g^2*i^3*n^2*(c + d*x)^4)/(60*d^3) - (B^2*(b*c - a*d)^6*g^2*i^3*n^2 \\
& *Log[a + b*x])/(45*b^4*d^3) + (B^2*(b*c - a*d)^6*g^2*i^3*n^2*Log[a + b*x]^2) \\
& /((60*b^4*d^3) - (B^2*(b*c - a*d)^5*g^2*i^3*n*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n]) \\
& /((30*b^4*d^2) - (B*(b*c - a*d)^4*g^2*i^3*n*(c + d*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])) \\
& /((60*b^2*d^3) - (B*(b*c - a*d)^3*g^2*i^3*n*(c + d*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])) \\
& /((90*b*d^3) + (7*B*(b*c - a*d)^2*g^2*i^3*n*(c + d*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n])) \\
& /((60*d^3) - (b*B*(b*c - a*d)*g^2*i^3*n*(c + d*x)^5*(A + B*Log[e*((a + b*x)/(c + d*x))^n])) \\
& /((15*d^3) - (B*(b*c - a*d)^6*g^2*i^3*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n])) \\
& /((30*b^4*d^3) + ((b*c - a*d)^2*g^2*i^3*(c + d*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2) \\
& /((4*d^3) - (2*b*(b*c - a*d)*g^2*i^3*(c + d*x)^5*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2) \\
& /((5*d^3) + (b^2*g^2*i^3*(c + d*x)^6*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2) \\
& /((6*d^3) + (B^2*(b*c - a*d)^6*g^2*i^3*n^2*Log[c + d*x])/(30*b^4*d^3) - (B^2*(b*c - a*d)^6*g^2 \\
& *i^3*n^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(30*b^4*d^3) - (B^2*(b*c - a*d)^6*g^2 \\
& *i^3*n^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(30*b^4*d^3)
\end{aligned}$$
Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 31

Int[((a_) + (b_.)*(x_))^-1, x_Symbol] := Simp[Log[RemoveContent[a + b*x, x]]/b, x] /; FreeQ[{a, b}, x]

Rule 43

Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && (!IntegerQ[n] || (EqQ[c, 0] && LeQ[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])

Rule 2301

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_.)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E

qQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))])*(b_.)/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))])*(b_.)/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e^n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2418

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))])*(b_.)^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]

Rule 2486

Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_)^(p_.))*((c_.) + (d_.)*(x_)^(q_.))^(r_.))^(s_.), x_Symbol] := Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]

Rule 2524

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)])*(b_.)^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]

Rule 2525

```

Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]

```

Rule 2528

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Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]

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Rubi steps

$$\begin{aligned}
\int (179c + 179dx)^3 (ag + bgx)^2 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2 dx &= \int \left(\frac{(-bc + ad)^2 g^2 (179c + 179dx)^3 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2}{d^2} \right) dx \\
&= \frac{(b^2 g^2) \int (179c + 179dx)^5 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2 dx}{32041 d^2} \\
&= \frac{5735339 (bc - ad)^2 g^2 (c + dx)^4 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2}{4d^3} \\
&= \frac{5735339 (bc - ad)^2 g^2 (c + dx)^4 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2}{4d^3} \\
&= \frac{5735339 (bc - ad)^2 g^2 (c + dx)^4 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2}{4d^3} \\
&= \frac{5735339 (bc - ad)^2 g^2 (c + dx)^4 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2}{4d^3} \\
&= \frac{5735339 (bc - ad)^2 g^2 (c + dx)^4 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2}{4d^3} \\
&= \frac{5735339 AB (bc - ad)^5 g^2 nx}{30b^3 d^2} - \frac{5735339 B (bc - ad)^5 g^2 nx}{30b^3 d^2} \\
&= \frac{5735339 AB (bc - ad)^5 g^2 nx}{30b^3 d^2} - \frac{5735339 B^2 (bc - ad)^5 g^2 nx}{45b^3 d^2} \\
&= \frac{5735339 AB (bc - ad)^5 g^2 nx}{30b^3 d^2} - \frac{5735339 B^2 (bc - ad)^5 g^2 nx}{45b^3 d^2} \\
&= \frac{5735339 AB (bc - ad)^5 g^2 nx}{30b^3 d^2} - \frac{5735339 B^2 (bc - ad)^5 g^2 nx}{45b^3 d^2} \\
&= \frac{5735339 AB (bc - ad)^5 g^2 nx}{30b^3 d^2} - \frac{5735339 B^2 (bc - ad)^5 g^2 nx}{45b^3 d^2} \\
&= \frac{5735339 AB (bc - ad)^5 g^2 nx}{30b^3 d^2} - \frac{5735339 B^2 (bc - ad)^5 g^2 nx}{45b^3 d^2}
\end{aligned}$$

Mathematica [A] time = 1.56, size = 1627, normalized size = 1.67

result too large to display

Antiderivative was successfully verified.

[In] Integrate[(a*g + b*g*x)^2*(c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2,x]

[Out] $(g^2 i^3 (15(b^2 c - a^2 d)^2 (c + d x)^4 (A + B \log[e((a + b x)/(c + d x))^n])^2 - 24 b (b^2 c - a^2 d) (c + d x)^5 (A + B \log[e((a + b x)/(c + d x))^n])^2 + 10 b^2 (c + d x)^6 (A + B \log[e((a + b x)/(c + d x))^n])^2 - (5 B (b^2 c - a^2 d)^3 n (6 A b d (b^2 c - a^2 d)^2 x - 3 B (b^2 c - a^2 d)^2 n (b d x + (b^2 c - a^2 d) \log[a + b x]) - B (b^2 c - a^2 d) n (2 b d (b^2 c - a^2 d) x + b^2 (c + d x)^2 + 2 (b^2 c - a^2 d)^2 \log[a + b x]) + 6 B d (b^2 c - a^2 d)^2 (a + b x) \log[e((a + b x)/(c + d x))^n] + 3 b^2 (b^2 c - a^2 d) (c + d x)^2 (A + B \log[e((a + b x)/(c + d x))^n]) + 2 b^3 (c + d x)^3 (A + B \log[e((a + b x)/(c + d x))^n]) + 6 (b^2 c - a^2 d)^3 \log[a + b x] (A + B \log[e((a + b x)/(c + d x))^n]) - 6 B (b^2 c - a^2 d)^3 n \log[c + d x] - 3 B (b^2 c - a^2 d)^3 n (\log[a + b x] (\log[a + b x] - 2 \log[(b(c + d x))/(b^2 c - a^2 d)]) - 2 \text{PolyLog}[2, (d(a + b x))/(-(b^2 c) + a^2 d)])))/b^4 + (2 B (b^2 c - a^2 d)^2 n (24 A b d (b^2 c - a^2 d)^3 x - 12 B (b^2 c - a^2 d)^3 n (b d x + (b^2 c - a^2 d) \log[a + b x]) - 4 B (b^2 c - a^2 d)^2 n (2 b d (b^2 c - a^2 d) x + b^2 (c + d x)^2 + 2 (b^2 c - a^2 d)^2 \log[a + b x]) - B (b^2 c - a^2 d) n (6 b d (b^2 c - a^2 d)^2 x + 3 b^2 (b^2 c - a^2 d) (c + d x)^2 + 2 b^3 (c + d x)^3 + 6 (b^2 c - a^2 d)^3 \log[a + b x]) + 24 B d (b^2 c - a^2 d)^3 (a + b x) \log[e((a + b x)/(c + d x))^n] + 12 b^2 (b^2 c - a^2 d)^2 (c + d x)^2 (A + B \log[e((a + b x)/(c + d x))^n]) + 8 b^3 (b^2 c - a^2 d) (c + d x)^3 (A + B \log[e((a + b x)/(c + d x))^n]) + 6 b^4 (c + d x)^4 (A + B \log[e((a + b x)/(c + d x))^n]) + 24 (b^2 c - a^2 d)^4 \log[a + b x] (A + B \log[e((a + b x)/(c + d x))^n]) - 24 B (b^2 c - a^2 d)^4 n \log[c + d x] - 12 B (b^2 c - a^2 d)^4 n (\log[a + b x] (\log[a + b x] - 2 \log[(b(c + d x))/(b^2 c - a^2 d)]) - 2 \text{PolyLog}[2, (d(a + b x))/(-(b^2 c) + a^2 d)])))/b^4 - (B (b^2 c - a^2 d) n (120 A b d (b^2 c - a^2 d)^4 x - 60 B (b^2 c - a^2 d)^4 n (b d x + (b^2 c - a^2 d) \log[a + b x]) - 20 B (b^2 c - a^2 d)^3 n (2 b d (b^2 c - a^2 d) x + b^2 (c + d x)^2 + 2 (b^2 c - a^2 d)^2 \log[a + b x]) - 5 B (b^2 c - a^2 d)^2 n (6 b d (b^2 c - a^2 d)^2 x + 3 b^2 (b^2 c - a^2 d) (c + d x)^2 + 2 b^3 (c + d x)^3 + 6 (b^2 c - a^2 d)^3 \log[a + b x]) - 2 B (b^2 c - a^2 d) n (12 b d (b^2 c - a^2 d)^3 x + 6 b^2 (b^2 c - a^2 d)^2 (c + d x)^2 + 4 b^3 (b^2 c - a^2 d) (c + d x)^3 + 3 b^4 (c + d x)^4 + 12 (b^2 c - a^2 d)^4 \log[a + b x]) + 120 B d (b^2 c - a^2 d)^4 (a + b x) \log[e((a + b x)/(c + d x))^n] + 60 b^2 (b^2 c - a^2 d)^3 (c + d x)^2 (A + B \log[e((a + b x)/(c + d x))^n]) + 40 b^3 (b^2 c - a^2 d)^2 (c + d x)^3 (A + B \log[e((a + b x)/(c + d x))^n]) + 30 b^4 (b^2 c - a^2 d) (c + d x)^4 (A + B \log[e((a + b x)/(c + d x))^n]) + 24 b^5 (c + d x)^5 (A + B \log[e((a + b x)/(c + d x))^n]) + 120 (b^2 c - a^2 d)^5 \log[a + b x] (A + B \log[e((a + b x)/(c + d x))^n]) - 120 B (b^2 c - a^2 d)^5 n \log[c + d x] - 60 B (b^2 c - a^2 d)^5 n (\log[a + b x] (\log[a + b x] - 2 \log[(b(c + d x))/$

[Out] $\int ((b*gx+a*g)^2*(d*i*x+c*i)^3*(B*\ln(e*((b*x+a)/(d*x+c)))^n)+A)^2,x$

maxima [B] time = 5.59, size = 5931, normalized size = 6.08

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((b*g*x+a*g)^2*(d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c)))^n))^2,x,
algorithm="maxima")`

[Out]
$$\begin{aligned} & 1/3*A*B*b^2*d^3*g^2*i^3*x^6*\log(e*(b*x/(d*x+c)+a/(d*x+c))^n) + 1/6*A^2*b^2*d^3*g^2*i^3*x^6 + 6/5*A*B*b^2*c*d^2*g^2*i^3*x^5*\log(e*(b*x/(d*x+c) \\ & + a/(d*x+c))^n) + 4/5*A*B*a*b*d^3*g^2*i^3*x^5*\log(e*(b*x/(d*x+c)+a/(d*x+c))^n) + 3/5*A^2*b^2*c*d^2*g^2*i^3*x^5 + 2/5*A^2*a*b*d^3*g^2*i^3*x^5 + \\ & 3/2*A*B*b^2*c^2*d*g^2*i^3*x^4*\log(e*(b*x/(d*x+c)+a/(d*x+c))^n) + 3*A*B*a*b*c*d^2*g^2*i^3*x^4*\log(e*(b*x/(d*x+c)+a/(d*x+c))^n) + 1/2*A*B*a^2*d^3*g^2*i^3*x^4*\log(e*(b*x/(d*x+c)+a/(d*x+c))^n) + 3/4*A^2*b^2*c^2*d*g^2*i^3*x^4 + 3/2*A^2*a*b*c*d^2*g^2*i^3*x^4 + 1/4*A^2*a^2*d^3*g^2*i^3*x^4 + 2/3*A*B*b^2*c^3*g^2*i^3*x^3*\log(e*(b*x/(d*x+c)+a/(d*x+c))^n) + 4*A*B*a*b*c^2*d*g^2*i^3*x^3*\log(e*(b*x/(d*x+c)+a/(d*x+c))^n) + 2*A*B*a^2*c*d^2*g^2*i^3*x^3*\log(e*(b*x/(d*x+c)+a/(d*x+c))^n) + 1/3*A^2*b^2*c^3*g^2*i^3*x^3 + 2*A^2*a*b*c^2*d*g^2*i^3*x^3 + A^2*a^2*c*d^2*g^2*i^3*x^3 + 2*A*B*a*b*c^3*g^2*i^3*x^2*\log(e*(b*x/(d*x+c)+a/(d*x+c))^n) + 3*A*B*a^2*c^2*d*g^2*i^3*x^2*\log(e*(b*x/(d*x+c)+a/(d*x+c))^n) + A^2*a*b*c^3*g^2*i^3*x^2 + 3/2*A^2*a^2*c^2*d*g^2*i^3*x^2 - 1/180*A*B*b^2*d^3*g^2*i^3*n*(60*a^6*\log(b*x+a)/b^6 - 60*c^6*\log(d*x+c)/d^6 + (12*(b^5*c*d^4 - a*b^4*d^5)*x^5 - 15*(b^5*c^2*d^3 - a^2*b^3*d^5)*x^4 + 20*(b^5*c^3*d^2 - a^3*b^2*d^5)*x^3 - 30*(b^5*c^4*d - a^4*b*d^5)*x^2 + 60*(b^5*c^5 - a^5*d^5)*x)/(b^5*d^5) + 1/10*A*B*b^2*c*d^2*g^2*i^3*n*(12*a^5*\log(b*x+a)/b^5 - 12*c^5*\log(d*x+c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4*c^2*d^2 - a^2*b^2*d^4)*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 - a^4*d^4)*x)/(b^4*d^4) + 1/15*A*B*a*b*d^3*g^2*i^3*n*(12*a^5*\log(b*x+a)/b^5 - 12*c^5*\log(d*x+c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4*c^2*d^2 - a^2*b^2*d^4)*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 - a^4*d^4)*x)/(b^4*d^4) - 1/4*A*B*b^2*c^2*d*g^2*i^3*n*(6*a^4*\log(b*x+a)/b^4 - 6*c^4*\log(d*x+c)/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3) - 1/2*A*B*a*b*c*d^2*g^2*i^3*n*(6*a^4*\log(b*x+a)/b^4 - 6*c^4*\log(d*x+c)/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3) - 1/12*A*B*a^2*d^3*g^2*i^3*n*(6*a^4*\log(b*x+a)/b^4 - 6*c^4*\log(d*x+c)/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3) + 1/3*A*B*b^2*c^3*g^2*i^3*n*(2*a^3*\log(b*x+a)/b^3 - 2*c^3*\log(d*x+c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2) + 2*A*B*a*b*c^2*d*g^2*i^3*n*(2*a^3*\log(b*x+a)/b^3 - 2*c^3*\log(d*x+c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2) + \end{aligned}$$

$$\begin{aligned}
& A*B*a^2*c*d^2*g^2*i^3*n*(2*a^3*\log(b*x + a)/b^3 - 2*c^3*\log(d*x + c)/d^3 - \\
& ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) - 2*A*B*a*b* \\
& c^3*g^2*i^3*n*(a^2*\log(b*x + a)/b^2 - c^2*\log(d*x + c)/d^2 + (b*c - a*d)*x/ \\
& (b*d)) - 3*A*B*a^2*c^2*d*g^2*i^3*n*(a^2*\log(b*x + a)/b^2 - c^2*\log(d*x + c) \\
& /d^2 + (b*c - a*d)*x/(b*d)) + 2*A*B*a^2*c^3*g^2*i^3*n*(a*\log(b*x + a)/b - c \\
& *\log(d*x + c)/d) + 2*A*B*a^2*c^3*g^2*i^3*x*\log(e*(b*x/(d*x + c) + a/(d*x + \\
& c)))^n + A^2*a^2*c^3*g^2*i^3*x - 1/180*(74*a^3*b^2*c^3*d^3*g^2*i^3*n^2 - 33 \\
& *a^4*b*c^2*d^4*g^2*i^3*n^2 + 6*a^5*c*d^5*g^2*i^3*n^2 - 2*(g^2*i^3*n^2 - 3*g^ \\
& ^2*i^3*n*\log(e))*b^5*c^6 + 18*(g^2*i^3*n^2 - 2*g^2*i^3*n*\log(e))*a*b^4*c^5* \\
& d - 9*(7*g^2*i^3*n^2 - 10*g^2*i^3*n*\log(e))*a^2*b^3*c^4*d^2)*B^2*\log(d*x + \\
& c)/(b^3*d^3) - 1/30*(b^6*c^6*g^2*i^3*n^2 - 6*a*b^5*c^5*d*g^2*i^3*n^2 + 15*a \\
& ^2*b^4*c^4*d^2*g^2*i^3*n^2 - 20*a^3*b^3*c^3*d^3*g^2*i^3*n^2 + 15*a^4*b^2*c^ \\
& ^2*d^4*g^2*i^3*n^2 - 6*a^5*b*c*d^5*g^2*i^3*n^2 + a^6*d^6*g^2*i^3*n^2)*(log(b \\
& *x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a* \\
& d)))*B^2/(b^4*d^3) + 1/360*(60*B^2*b^6*d^6*g^2*i^3*x^6*\log(e)^2 - 24*((g^2*i^ \\
& ^3*n*\log(e) - 9*g^2*i^3*\log(e)^2)*b^6*c*d^5 - (g^2*i^3*n*\log(e) + 6*g^2*i^ \\
& ^3*\log(e)^2)*a*b^5*d^6)*B^2*x^5 + 6*((g^2*i^3*n^2 - 13*g^2*i^3*n*\log(e) + 45 \\
& *g^2*i^3*\log(e)^2)*b^6*c^2*d^4 - 2*(g^2*i^3*n^2 - 3*g^2*i^3*n*\log(e) - 45*g^ \\
& ^2*i^3*\log(e)^2)*a*b^5*c*d^5 + (g^2*i^3*n^2 + 7*g^2*i^3*n*\log(e) + 15*g^2*i^ \\
& ^3*\log(e)^2)*a^2*b^4*d^6)*B^2*x^4 + 2*((9*g^2*i^3*n^2 - 38*g^2*i^3*n*\log(e) \\
& + 60*g^2*i^3*\log(e)^2)*b^6*c^3*d^3 - 3*(5*g^2*i^3*n^2 + 14*g^2*i^3*n*\log(e) \\
&) - 120*g^2*i^3*\log(e)^2)*a*b^5*c^2*d^4 + 3*(g^2*i^3*n^2 + 26*g^2*i^3*n*\log \\
& (e) + 60*g^2*i^3*\log(e)^2)*a^2*b^4*c*d^5 + (3*g^2*i^3*n^2 + 2*g^2*i^3*n*\log \\
& (e))*a^3*b^3*d^6)*B^2*x^3 + ((11*g^2*i^3*n^2 - 6*g^2*i^3*n*\log(e))*b^6*c^4* \\
& d^2 + 2*(5*g^2*i^3*n^2 - 102*g^2*i^3*n*\log(e) + 180*g^2*i^3*\log(e)^2)*a*b^5 \\
& *c^3*d^3 - 60*(g^2*i^3*n^2 - 3*g^2*i^3*n*\log(e) - 9*g^2*i^3*\log(e)^2)*a^2*b \\
& ^4*c^2*d^4 + 2*(23*g^2*i^3*n^2 + 18*g^2*i^3*n*\log(e))*a^3*b^3*c*d^5 - (7*g^ \\
& ^2*i^3*n^2 + 6*g^2*i^3*n*\log(e))*a^4*b^2*d^6)*B^2*x^2 - 6*(20*a^3*b^3*c^3*d^ \\
& ^3*g^2*i^3*n^2 - 15*a^4*b^2*c^2*d^4*g^2*i^3*n^2 + 6*a^5*b*c*d^5*g^2*i^3*n^2 \\
& - a^6*d^6*g^2*i^3*n^2)*B^2*\log(b*x + a)^2 + 12*(b^6*c^6*g^2*i^3*n^2 - 6*a*b \\
& ^5*c^5*d*g^2*i^3*n^2 + 15*a^2*b^4*c^4*d^2*g^2*i^3*n^2)*B^2*\log(b*x + a)*log \\
& (d*x + c) - 6*(b^6*c^6*g^2*i^3*n^2 - 6*a*b^5*c^5*d*g^2*i^3*n^2 + 15*a^2*b^4 \\
& *c^4*d^2*g^2*i^3*n^2)*B^2*\log(d*x + c)^2 - 2*(2*(4*g^2*i^3*n^2 - 3*g^2*i^3* \\
& n*\log(e))*b^6*c^5*d - 3*(17*g^2*i^3*n^2 - 12*g^2*i^3*n*\log(e))*a*b^5*c^4*d^ \\
& ^2 + (97*g^2*i^3*n^2 + 30*g^2*i^3*n*\log(e) - 180*g^2*i^3*\log(e)^2)*a^2*b^4*c \\
& ^3*d^3 - (77*g^2*i^3*n^2 + 90*g^2*i^3*n*\log(e))*a^3*b^3*c^2*d^4 + 9*(3*g^2*i^ \\
& ^3*n^2 + 4*g^2*i^3*n*\log(e))*a^4*b^2*c*d^5 - 2*(2*g^2*i^3*n^2 + 3*g^2*i^3* \\
& n*\log(e))*a^5*b*d^6)*B^2*x + 2*(6*a*b^5*c^5*d*g^2*i^3*n^2 - 33*a^2*b^4*c^4* \\
& d^2*g^2*i^3*n^2 + 2*(17*g^2*i^3*n^2 + 60*g^2*i^3*n*\log(e))*a^3*b^3*c^3*d^3 \\
& - 3*(g^2*i^3*n^2 + 30*g^2*i^3*n*\log(e))*a^4*b^2*c^2*d^4 - 6*(g^2*i^3*n^2 - \\
& 6*g^2*i^3*n*\log(e))*a^5*b*c*d^5 + 2*(g^2*i^3*n^2 - 3*g^2*i^3*n*\log(e))*a^6* \\
& d^6)*B^2*\log(b*x + a) + 6*(10*B^2*b^6*d^6*g^2*i^3*x^6 + 60*B^2*a^2*b^4*c^3* \\
& d^3*g^2*i^3*x + 12*(3*b^6*c*d^5*g^2*i^3 + 2*a*b^5*d^6*g^2*i^3)*B^2*x^5 + 15 \\
& *(3*b^6*c^2*d^4*g^2*i^3 + 6*a*b^5*c*d^5*g^2*i^3 + a^2*b^4*d^6*g^2*i^3)*B^2* \\
& x^4 + 20*(b^6*c^3*d^3*g^2*i^3 + 6*a*b^5*c^2*d^4*g^2*i^3 + 3*a^2*b^4*c*d^5*g
\end{aligned}$$

$$\begin{aligned}
& ^2i^3) * B^2 * x^3 + 30 * (2 * a * b^5 * c^3 * d^3 * g^2 * i^3 + 3 * a^2 * b^4 * c^2 * d^4 * g^2 * i^3) * \\
& B^2 * x^2) * \log((b * x + a)^n)^2 + 6 * (10 * B^2 * b^6 * d^6 * g^2 * i^3 * x^6 + 60 * B^2 * a^2 * b^4 * \\
& c^3 * d^3 * g^2 * i^3 * x + 12 * (3 * b^6 * c^2 * d^5 * g^2 * i^3 + 2 * a * b^5 * d^6 * g^2 * i^3) * B^2 * x^5 \\
& + 15 * (3 * b^6 * c^2 * d^4 * g^2 * i^3 + 6 * a * b^5 * c * d^5 * g^2 * i^3 + a^2 * b^4 * d^6 * g^2 * i^3) \\
&) * B^2 * x^4 + 20 * (b^6 * c^3 * d^3 * g^2 * i^3 + 6 * a * b^5 * c^2 * d^4 * g^2 * i^3 + 3 * a^2 * b^4 * c * \\
& d^5 * g^2 * i^3) * B^2 * x^3 + 30 * (2 * a * b^5 * c^3 * d^3 * g^2 * i^3 + 3 * a^2 * b^4 * c^2 * d^4 * g^2 * \\
& i^3) * B^2 * x^2) * \log((d * x + c)^n)^2 + 2 * (60 * B^2 * b^6 * d^6 * g^2 * i^3 * x^6 * \log(e) - \\
& 12 * ((g^2 * i^3 * n - 18 * g^2 * i^3 * \log(e)) * b^6 * c * d^5 - (g^2 * i^3 * n + 12 * g^2 * i^3 * \log \\
& (e)) * a * b^5 * d^6) * B^2 * x^5 - 3 * ((13 * g^2 * i^3 * n - 90 * g^2 * i^3 * \log(e)) * b^6 * c^2 * d^4 \\
& - 6 * (g^2 * i^3 * n + 30 * g^2 * i^3 * \log(e)) * a * b^5 * c * d^5 - (7 * g^2 * i^3 * n + 30 * g^2 * i^3 * \\
& 3 * \log(e)) * a^2 * b^4 * d^6) * B^2 * x^4 + 2 * (a^3 * b^3 * d^6 * g^2 * i^3 * n - (19 * g^2 * i^3 * n - \\
& 60 * g^2 * i^3 * \log(e)) * b^6 * c^3 * d^3 - 3 * (7 * g^2 * i^3 * n - 120 * g^2 * i^3 * \log(e)) * a * b^5 * \\
& c^2 * d^4 + 3 * (13 * g^2 * i^3 * n + 60 * g^2 * i^3 * \log(e)) * a^2 * b^4 * c * d^5) * B^2 * x^3 - 3 * \\
& (b^6 * c^4 * d^2 * g^2 * i^3 * n - 6 * a^3 * b^3 * c * d^5 * g^2 * i^3 * n + a^4 * b^2 * d^6 * g^2 * i^3 * n \\
& + 2 * (17 * g^2 * i^3 * n - 60 * g^2 * i^3 * \log(e)) * a * b^5 * c^3 * d^3 - 30 * (g^2 * i^3 * n + 6 * g^2 * i^3 * \\
& ^2 * i^3 * \log(e)) * a^2 * b^4 * c^2 * d^4) * B^2 * x^2 + 6 * (b^6 * c^5 * d * g^2 * i^3 * n - 6 * a * b^5 * \\
& c^4 * d^2 * g^2 * i^3 * n + 15 * a^3 * b^3 * c^2 * d^4 * g^2 * i^3 * n - 6 * a^4 * b^2 * c * d^5 * g^2 * i^3 * n \\
& n + a^5 * b * d^6 * g^2 * i^3 * n - 5 * (g^2 * i^3 * n - 12 * g^2 * i^3 * \log(e)) * a^2 * b^4 * c^3 * d^3) \\
&) * B^2 * x + 6 * (20 * a^3 * b^3 * c^3 * d^3 * g^2 * i^3 * n - 15 * a^4 * b^2 * c^2 * d^4 * g^2 * i^3 * n + \\
& 6 * a^5 * b * c * d^5 * g^2 * i^3 * n - a^6 * d^6 * g^2 * i^3 * n) * B^2 * \log(b * x + a) - 6 * (b^6 * c^6 * \\
& g^2 * i^3 * n - 6 * a * b^5 * c^5 * d * g^2 * i^3 * n + 15 * a^2 * b^4 * c^4 * d^2 * g^2 * i^3 * n) * B^2 * \log \\
& (d * x + c) * \log((b * x + a)^n) - 2 * (60 * B^2 * b^6 * d^6 * g^2 * i^3 * x^6 * \log(e) - 12 * ((g^2 * i^3 * n - \\
& 18 * g^2 * i^3 * \log(e)) * b^6 * c * d^5 - (g^2 * i^3 * n + 12 * g^2 * i^3 * \log(e)) * a * \\
& b^5 * d^6) * B^2 * x^5 - 3 * ((13 * g^2 * i^3 * n - 90 * g^2 * i^3 * \log(e)) * b^6 * c^2 * d^4 - 6 * (\\
& g^2 * i^3 * n + 30 * g^2 * i^3 * \log(e)) * a * b^5 * c * d^5 - (7 * g^2 * i^3 * n + 30 * g^2 * i^3 * \log(\\
& e)) * a^2 * b^4 * d^6) * B^2 * x^4 + 2 * (a^3 * b^3 * d^6 * g^2 * i^3 * n - (19 * g^2 * i^3 * n - 60 * g^2 * \\
& 2 * i^3 * \log(e)) * b^6 * c^3 * d^3 - 3 * (7 * g^2 * i^3 * n - 120 * g^2 * i^3 * \log(e)) * a * b^5 * c^2 * \\
& d^4 + 3 * (13 * g^2 * i^3 * n + 60 * g^2 * i^3 * \log(e)) * a^2 * b^4 * c * d^5) * B^2 * x^3 - 3 * (b^6 * \\
& c^4 * d^2 * g^2 * i^3 * n - 6 * a^3 * b^3 * c * d^5 * g^2 * i^3 * n + a^4 * b^2 * d^6 * g^2 * i^3 * n + 2 * (\\
& 17 * g^2 * i^3 * n - 60 * g^2 * i^3 * \log(e)) * a * b^5 * c^3 * d^3 - 30 * (g^2 * i^3 * n + 6 * g^2 * i^3 * \\
& * \log(e)) * a^2 * b^4 * c^2 * d^4) * B^2 * x^2 + 6 * (b^6 * c^5 * d * g^2 * i^3 * n - 6 * a * b^5 * c^4 * d^2 * \\
& 2 * g^2 * i^3 * n + 15 * a^3 * b^3 * c^2 * d^4 * g^2 * i^3 * n - 6 * a^4 * b^2 * c * d^5 * g^2 * i^3 * n + a^5 * \\
& b * d^6 * g^2 * i^3 * n - 5 * (g^2 * i^3 * n - 12 * g^2 * i^3 * \log(e)) * a^2 * b^4 * c^3 * d^3) * B^2 * \\
& x + 6 * (20 * a^3 * b^3 * c^3 * d^3 * g^2 * i^3 * n - 15 * a^4 * b^2 * c^2 * d^4 * g^2 * i^3 * n + 6 * a^5 * \\
& b * c * d^5 * g^2 * i^3 * n - a^6 * d^6 * g^2 * i^3 * n) * B^2 * \log(b * x + a) - 6 * (b^6 * c^6 * g^2 * i^3 * \\
& 3 * n - 6 * a * b^5 * c^5 * d * g^2 * i^3 * n + 15 * a^2 * b^4 * c^4 * d^2 * g^2 * i^3 * n) * B^2 * \log(d * x + \\
& c) + 6 * (10 * B^2 * b^6 * d^6 * g^2 * i^3 * x^6 + 60 * B^2 * a^2 * b^4 * c^3 * d^3 * g^2 * i^3 * x + 12 * \\
& (3 * b^6 * c * d^5 * g^2 * i^3 + 2 * a * b^5 * d^6 * g^2 * i^3) * B^2 * x^5 + 15 * (3 * b^6 * c^2 * d^4 * g^2 * \\
& 2 * i^3 + 6 * a * b^5 * c * d^5 * g^2 * i^3 + a^2 * b^4 * d^6 * g^2 * i^3) * B^2 * x^4 + 20 * (b^6 * c^3 * \\
& d^3 * g^2 * i^3 + 6 * a * b^5 * c^2 * d^4 * g^2 * i^3 + 3 * a^2 * b^4 * c * d^5 * g^2 * i^3) * B^2 * x^3 + \\
& 30 * (2 * a * b^5 * c^3 * d^3 * g^2 * i^3 + 3 * a^2 * b^4 * c^2 * d^4 * g^2 * i^3) * B^2 * x^2) * \log((b * x \\
& + a)^n) * \log((d * x + c)^n) / (b^4 * d^3)
\end{aligned}$$

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (ag + bgx)^2 (ci + dix)^3 \left(A + B \ln \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a*g + b*g*x)^2*(c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2,x)

[Out] int((a*g + b*g*x)^2*(c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2, x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)**2*(d*i*x+c*i)**3*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2,x)

[Out] Timed out

$$3.180 \quad \int (ag+bgx)(ci+dix)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx$$

Optimal. Leaf size=786

$$\frac{Bgi^3n(bc-ad)^5 \log\left(\frac{bc-ad}{b(c+dx)}\right) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A + Bn \right)}{10b^4d^2} - \frac{Bgi^3n(a+bx)(bc-ad)^4 \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right)}{10b^4d}$$

[Out] $1/60*B^2*(-a*d+b*c)^4*g*i^3*n^2*x/b^3/d+1/30*B^2*(-a*d+b*c)^3*g*i^3*n^2*(d*x+c)^2/b^2/d^2+1/30*B^2*(-a*d+b*c)^2*g*i^3*n^2*(d*x+c)^3/b/d^2-1/10*B*(-a*d+b*c)^4*g*i^3*n*(b*x+a)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^4/d-1/10*B*(-a*d+b*c)^3*g*i^3*n*(b*x+a)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^4+3/20*B*(-a*d+b*c)^3*g*i^3*n*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^2/d^2+1/30*B*(-a*d+b*c)^2*g*i^3*n*(d*x+c)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b/d^2-1/10*B*(-a*d+b*c)*g*i^3*n*(d*x+c)^4*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/d^2+1/20*(-a*d+b*c)^3*g*i^3*(b*x+a)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/b^4+1/10*(-a*d+b*c)^2*g*i^3*(b*x+a)^2*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/b^3+3/20*(-a*d+b*c)*g*i^3*(b*x+a)^2*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/b^2+1/5*g*i^3*(b*x+a)^2*(d*x+c)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/b-1/10*B*(-a*d+b*c)^5*g*i^3*n*(A+B*n+B*\ln(e*((b*x+a)/(d*x+c))^n))*\ln((-a*d+b*c)/b/(d*x+c))/b^4/d^2-1/12*B^2*(-a*d+b*c)^5*g*i^3*n^2*\ln((b*x+a)/(d*x+c))/b^4/d^2-11/60*B^2*(-a*d+b*c)^5*g*i^3*n^2*\ln(d*x+c)/b^4/d^2-1/10*B^2*(-a*d+b*c)^5*g*i^3*n^2*polylog(2,d*(b*x+a)/b/(d*x+c))/b^4/d^2$

Rubi [A] time = 1.93, antiderivative size = 706, normalized size of antiderivative = 0.90, number of steps used = 52, number of rules used = 13, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.302$, Rules used = {2528, 2525, 12, 2486, 31, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 43}

$$\frac{B^2gi^3n^2(bc-ad)^5 \text{PolyLog}\left(2, -\frac{d(a+bx)}{bc-ad}\right)}{10b^4d^2} + \frac{Bgi^3n(bc-ad)^5 \log(a+bx) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A \right)}{10b^4d^2} + \frac{Bgi^3n(c+dx)^2}{10b^4d^2}$$

Antiderivative was successfully verified.

[In] Int[(a*g + b*g*x)*(c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2, x]

[Out] $(A*B*(b*c - a*d)^4*g*i^3*n*x)/(10*b^3*d) + (B^2*(b*c - a*d)^4*g*i^3*n^2*x)/(60*b^3*d) + (B^2*(b*c - a*d)^3*g*i^3*n^2*(c + d*x)^2)/(30*b^2*d^2) + (B^2*(b*c - a*d)^2*g*i^3*n^2*(c + d*x)^3)/(30*b*d^2) + (B^2*(b*c - a*d)^5*g*i^3*n^2*Log[a + b*x])/(60*b^4*d^2) - (B^2*(b*c - a*d)^5*g*i^3*n^2*Log[a + b*x]^2)/(20*b^4*d^2) + (B^2*(b*c - a*d)^4*g*i^3*n*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n])/(10*b^4*d^2)$

$$\begin{aligned} &+ d*x))^n]/(10*b^4*d) + (B*(b*c - a*d)^3*g*i^3*n*(c + d*x)^2*(A + B*Log[e* \\ &((a + b*x)/(c + d*x))^n]))/(20*b^2*d^2) + (B*(b*c - a*d)^2*g*i^3*n*(c + d*x) \\ &)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(30*b*d^2) - (B*(b*c - a*d)*g*i \\ &^3*n*(c + d*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(10*d^2) + (B*(b*c \\ &- a*d)^5*g*i^3*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(10* \\ &b^4*d^2) - ((b*c - a*d)*g*i^3*(c + d*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x) \\ &)^n]))^2/(4*d^2) + (b*g*i^3*(c + d*x)^5*(A + B*Log[e*((a + b*x)/(c + d*x))^ \\ &n]))^2/(5*d^2) - (B^2*(b*c - a*d)^5*g*i^3*n^2*Log[c + d*x])/(10*b^4*d^2) + \\ &(B^2*(b*c - a*d)^5*g*i^3*n^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(\\ &10*b^4*d^2) + (B^2*(b*c - a*d)^5*g*i^3*n^2*PolyLog[2, -((d*(a + b*x))/(b*c \\ &- a*d))])/(10*b^4*d^2) \end{aligned}$$

Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(n_), x_Symbol] := Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && (!IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)]^(n_.))* (b_.)/(x_), x_Symbol] := Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.))* (b_.)^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]/(x_), x_Symbol] := -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```


Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e^n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_)^(p_.))*((c_.) + (d_.)*(x_)^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q]^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_)^(m_.
)), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int (180c + 180dx)^3 (ag + bgx) \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2 dx &= \int \left(\frac{(-bc + ad)g(180c + 180dx)^3 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2}{d} \right. \\
&= \frac{(bg) \int (180c + 180dx)^4 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2}{180d} \\
&= -\frac{1458000(bc - ad)g(c + dx)^4 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2}{d^2} \\
&= -\frac{1458000(bc - ad)g(c + dx)^4 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2}{d^2} \\
&= -\frac{1458000(bc - ad)g(c + dx)^4 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2}{d^2} \\
&= -\frac{1458000(bc - ad)g(c + dx)^4 \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2}{d^2} \\
&= \frac{583200AB(bc - ad)^4 gnx}{b^3 d} + \frac{291600B(bc - ad)^3 g}{b^3 d} \\
&= \frac{583200AB(bc - ad)^4 gnx}{b^3 d} + \frac{583200B^2(bc - ad)^4 g}{b^3 d} \\
&= \frac{583200AB(bc - ad)^4 gnx}{b^3 d} + \frac{583200B^2(bc - ad)^4 g}{b^3 d} \\
&= \frac{583200AB(bc - ad)^4 gnx}{b^3 d} + \frac{97200B^2(bc - ad)^4 g}{b^3 d} \\
&= \frac{583200AB(bc - ad)^4 gnx}{b^3 d} + \frac{97200B^2(bc - ad)^4 g}{b^3 d} \\
&= \frac{583200AB(bc - ad)^4 gnx}{b^3 d} + \frac{97200B^2(bc - ad)^4 g}{b^3 d}
\end{aligned}$$

Mathematica [A] time = 0.76, size = 945, normalized size = 1.20

$$gi^3 \left(4b \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 (c+dx)^5 - 5(bc-ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 (c+dx)^4 + \frac{5B(bc-ad)^2 n \left(6 \log(a+bx) \right)}{\dots} \right)$$

Antiderivative was successfully verified.

[In] Integrate[(a*g + b*g*x)*(c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2,x]

[Out] (g*i^3*(-5*(b*c - a*d)*(c + d*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 + 4*b*(c + d*x)^5*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 + (5*B*(b*c - a*d)^2*n*(6*A*b*d*(b*c - a*d)^2*x - 3*B*(b*c - a*d)^2*n*(b*d*x + (b*c - a*d)*Log[a + b*x]) - B*(b*c - a*d)*n*(2*b*d*(b*c - a*d)*x + b^2*(c + d*x)^2 + 2*(b*c - a*d)^2*Log[a + b*x]) + 6*B*d*(b*c - a*d)^2*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n] + 3*b^2*(b*c - a*d)*(c + d*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 2*b^3*(c + d*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 6*(b*c - a*d)^3*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 6*B*(b*c - a*d)^3*n*Log[c + d*x] - 3*B*(b*c - a*d)^3*n*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d])) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c + a*d))])/(3*b^4) - (B*(b*c - a*d)*n*(24*A*b*d*(b*c - a*d)^3*x - 12*B*(b*c - a*d)^3*n*(b*d*x + (b*c - a*d)*Log[a + b*x]) - 4*B*(b*c - a*d)^2*n*(2*b*d*(b*c - a*d)*x + b^2*(c + d*x)^2 + 2*(b*c - a*d)^2*Log[a + b*x]) - B*(b*c - a*d)*n*(6*b*d*(b*c - a*d)^2*x + 3*b^2*(b*c - a*d)*(c + d*x)^2 + 2*b^3*(c + d*x)^3 + 6*(b*c - a*d)^3*Log[a + b*x]) + 24*B*d*(b*c - a*d)^3*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n] + 12*b^2*(b*c - a*d)^2*(c + d*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 8*b^3*(b*c - a*d)*(c + d*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 6*b^4*(c + d*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 24*(b*c - a*d)^4*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 24*B*(b*c - a*d)^4*n*Log[c + d*x] - 12*B*(b*c - a*d)^4*n*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d])) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c + a*d))])/(3*b^4)))/(20*d^2)

fricas [F] time = 0.95, size = 0, normalized size = 0.00

$$\text{integral} \left(A^2 b d^3 g i^3 x^4 + A^2 a c^3 g i^3 + (3 A^2 b c d^2 + A^2 a d^3) g i^3 x^3 + 3 (A^2 b c^2 d + A^2 a c d^2) g i^3 x^2 + (A^2 b c^3 + 3 A^2 a c^2 d) \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, algorithm="fricas")

```
[Out] integral(A^2*b*d^3*g*i^3*x^4 + A^2*a*c^3*g*i^3 + (3*A^2*b*c*d^2 + A^2*a*d^3)
)*g*i^3*x^3 + 3*(A^2*b*c^2*d + A^2*a*c*d^2)*g*i^3*x^2 + (A^2*b*c^3 + 3*A^2*
a*c^2*d)*g*i^3*x + (B^2*b*d^3*g*i^3*x^4 + B^2*a*c^3*g*i^3 + (3*B^2*b*c*d^2
+ B^2*a*d^3)*g*i^3*x^3 + 3*(B^2*b*c^2*d + B^2*a*c*d^2)*g*i^3*x^2 + (B^2*b*c
^3 + 3*B^2*a*c^2*d)*g*i^3*x)*log(e*((b*x + a)/(d*x + c))^n)^2 + 2*(A*B*b*d^
3*g*i^3*x^4 + A*B*a*c^3*g*i^3 + (3*A*B*b*c*d^2 + A*B*a*d^3)*g*i^3*x^3 + 3*(
A*B*b*c^2*d + A*B*a*c*d^2)*g*i^3*x^2 + (A*B*b*c^3 + 3*A*B*a*c^2*d)*g*i^3*x)
*log(e*((b*x + a)/(d*x + c))^n), x
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, a
lgorithm="giac")
```

[Out] Timed out

maple [F] time = 0.32, size = 0, normalized size = 0.00

$$\int (bgx + ag)(dix + ci)^3 \left(B \ln \left(e \left(\frac{bx + a}{dx + c} \right)^n \right) + A \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)*(d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)
```

```
[Out] int((b*g*x+a*g)*(d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)
```

maxima [B] time = 5.49, size = 3724, normalized size = 4.74

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, a
lgorithm="maxima")
```

```
[Out] 2/5*A*B*b*d^3*g*i^3*x^5*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/5*A^2*b*
d^3*g*i^3*x^5 + 3/2*A*B*b*c*d^2*g*i^3*x^4*log(e*(b*x/(d*x + c) + a/(d*x + c)
))^n) + 1/2*A*B*a*d^3*g*i^3*x^4*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 3/
4*A^2*b*c*d^2*g*i^3*x^4 + 1/4*A^2*a*d^3*g*i^3*x^4 + 2*A*B*b*c^2*d*g*i^3*x^3
*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 2*A*B*a*c*d^2*g*i^3*x^3*log(e*(b*
x/(d*x + c) + a/(d*x + c))^n) + A^2*b*c^2*d*g*i^3*x^3 + A^2*a*c*d^2*g*i^3*x
^3 + A*B*b*c^3*g*i^3*x^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 3*A*B*a*c
```

$$\begin{aligned}
& \int^2 d * g * i^3 * x^2 * \log(e * (b * x / (d * x + c) + a / (d * x + c)))^n + 1/2 * A^2 * b * c^3 * g * i^3 \\
& * x^2 + 3/2 * A^2 * a * c^2 * d * g * i^3 * x^2 + 1/30 * A * B * b * d^3 * g * i^3 * n * (12 * a^5 * \log(b * x + \\
& a) / b^5 - 12 * c^5 * \log(d * x + c) / d^5 - (3 * (b^4 * c * d^3 - a * b^3 * d^4) * x^4 - 4 * (b^4 \\
& * c^2 * d^2 - a^2 * b^2 * d^4) * x^3 + 6 * (b^4 * c^3 * d - a^3 * b * d^4) * x^2 - 12 * (b^4 * c^4 - \\
& a^4 * d^4) * x) / (b^4 * d^4)) - 1/4 * A * B * b * c * d^2 * g * i^3 * n * (6 * a^4 * \log(b * x + a) / b^4 - \\
& 6 * c^4 * \log(d * x + c) / d^4 + (2 * (b^3 * c * d^2 - a * b^2 * d^3) * x^3 - 3 * (b^3 * c^2 * d - a \\
& ^2 * b * d^3) * x^2 + 6 * (b^3 * c^3 - a^3 * d^3) * x) / (b^3 * d^3)) - 1/12 * A * B * a * d^3 * g * i^3 * \\
& n * (6 * a^4 * \log(b * x + a) / b^4 - 6 * c^4 * \log(d * x + c) / d^4 + (2 * (b^3 * c * d^2 - a * b^2 * \\
& d^3) * x^3 - 3 * (b^3 * c^2 * d - a^2 * b * d^3) * x^2 + 6 * (b^3 * c^3 - a^3 * d^3) * x) / (b^3 * d^3)) \\
& + A * B * b * c^2 * d * g * i^3 * n * (2 * a^3 * \log(b * x + a) / b^3 - 2 * c^3 * \log(d * x + c) / d^3 \\
& - ((b^2 * c * d - a * b * d^2) * x^2 - 2 * (b^2 * c^2 - a^2 * d^2) * x) / (b^2 * d^2)) + A * B * a * c * \\
& d^2 * g * i^3 * n * (2 * a^3 * \log(b * x + a) / b^3 - 2 * c^3 * \log(d * x + c) / d^3 - ((b^2 * c * d - \\
& a * b * d^2) * x^2 - 2 * (b^2 * c^2 - a^2 * d^2) * x) / (b^2 * d^2)) - A * B * b * c^3 * g * i^3 * n * (a^2 \\
& * \log(b * x + a) / b^2 - c^2 * \log(d * x + c) / d^2 + (b * c - a * d) * x / (b * d)) - 3 * A * B * a * c \\
& ^2 * d * g * i^3 * n * (a^2 * \log(b * x + a) / b^2 - c^2 * \log(d * x + c) / d^2 + (b * c - a * d) * x / (\\
& b * d)) + 2 * A * B * a * c^3 * g * i^3 * n * (a * \log(b * x + a) / b - c * \log(d * x + c) / d) + 2 * A * B * a \\
& * c^3 * g * i^3 * x * \log(e * (b * x / (d * x + c) + a / (d * x + c)))^n + A^2 * a * c^3 * g * i^3 * x - 1 \\
& / 60 * (47 * a^2 * b^2 * c^3 * d^2 * g * i^3 * n^2 - 27 * a^3 * b * c^2 * d^3 * g * i^3 * n^2 + 6 * a^4 * c * d^4 \\
& * g * i^3 * n^2 + (5 * g * i^3 * n^2 - 6 * g * i^3 * n * \log(e)) * b^4 * c^5 - (31 * g * i^3 * n^2 - 30 \\
& * g * i^3 * n * \log(e)) * a * b^3 * c^4 * d) * B^2 * \log(d * x + c) / (b^3 * d^2) + 1/10 * (b^5 * c^5 * g * \\
& i^3 * n^2 - 5 * a * b^4 * c^4 * d * g * i^3 * n^2 + 10 * a^2 * b^3 * c^3 * d^2 * g * i^3 * n^2 - 10 * a^3 * b \\
& ^2 * c^2 * d^3 * g * i^3 * n^2 + 5 * a^4 * b * c * d^4 * g * i^3 * n^2 - a^5 * d^5 * g * i^3 * n^2) * (\log(b * \\
& x + a) * \log((b * d * x + a * d) / (b * c - a * d)) + 1) + \operatorname{dilog}(-(b * d * x + a * d) / (b * c - a * d \\
&)) * B^2 / (b^4 * d^2) + 1/60 * (12 * B^2 * b^5 * d^5 * g * i^3 * x^5 * \log(e)^2 - 3 * ((2 * g * i^3 * n \\
& * \log(e) - 15 * g * i^3 * \log(e)^2) * b^5 * c * d^4 - (2 * g * i^3 * n * \log(e) + 5 * g * i^3 * \log(e) \\
& ^2) * a * b^4 * d^5) * B^2 * x^4 + 2 * ((g * i^3 * n^2 - 11 * g * i^3 * n * \log(e) + 30 * g * i^3 * \log(e) \\
& ^2) * b^5 * c^2 * d^3 - 2 * (g * i^3 * n^2 - 5 * g * i^3 * n * \log(e) - 15 * g * i^3 * \log(e)^2) * a * b \\
& ^4 * c * d^4 + (g * i^3 * n^2 + g * i^3 * n * \log(e)) * a^2 * b^3 * d^5) * B^2 * x^3 + ((8 * g * i^3 * n^2 \\
& - 27 * g * i^3 * n * \log(e) + 30 * g * i^3 * \log(e)^2) * b^5 * c^3 * d^2 - 3 * (6 * g * i^3 * n^2 - 5 \\
& * g * i^3 * n * \log(e) - 30 * g * i^3 * \log(e)^2) * a * b^4 * c^2 * d^3 + 3 * (4 * g * i^3 * n^2 + 5 * g * i \\
& ^3 * n * \log(e)) * a^2 * b^3 * c * d^4 - (2 * g * i^3 * n^2 + 3 * g * i^3 * n * \log(e)) * a^3 * b^2 * d^5) * \\
& B^2 * x^2 - 3 * (10 * a^2 * b^3 * c^3 * d^2 * g * i^3 * n^2 - 10 * a^3 * b^2 * c^2 * d^3 * g * i^3 * n^2 + \\
& 5 * a^4 * b * c * d^4 * g * i^3 * n^2 - a^5 * d^5 * g * i^3 * n^2) * B^2 * \log(b * x + a)^2 - 6 * (b^5 * c^ \\
& 5 * g * i^3 * n^2 - 5 * a * b^4 * c^4 * d * g * i^3 * n^2) * B^2 * \log(b * x + a) * \log(d * x + c) + 3 * (b \\
& ^5 * c^5 * g * i^3 * n^2 - 5 * a * b^4 * c^4 * d * g * i^3 * n^2) * B^2 * \log(d * x + c)^2 + ((11 * g * i^3 \\
& * n^2 - 6 * g * i^3 * n * \log(e)) * b^5 * c^4 * d - 2 * (14 * g * i^3 * n^2 + 15 * g * i^3 * n * \log(e) - \\
& 30 * g * i^3 * \log(e)^2) * a * b^4 * c^3 * d^2 + 12 * (2 * g * i^3 * n^2 + 5 * g * i^3 * n * \log(e)) * a^2 * \\
& b^3 * c^2 * d^3 - 2 * (4 * g * i^3 * n^2 + 15 * g * i^3 * n * \log(e)) * a^3 * b^2 * c * d^4 + (g * i^3 * n^2 \\
& + 6 * g * i^3 * n * \log(e)) * a^4 * b * d^5) * B^2 * x - (6 * a * b^4 * c^4 * d * g * i^3 * n^2 + 3 * (g * i^ \\
& 3 * n^2 - 20 * g * i^3 * n * \log(e)) * a^2 * b^3 * c^3 * d^2 - (23 * g * i^3 * n^2 - 60 * g * i^3 * n * \log \\
& (e)) * a^3 * b^2 * c^2 * d^3 + (19 * g * i^3 * n^2 - 30 * g * i^3 * n * \log(e)) * a^4 * b * c * d^4 - (5 * \\
& g * i^3 * n^2 - 6 * g * i^3 * n * \log(e)) * a^5 * d^5) * B^2 * \log(b * x + a) + 3 * (4 * B^2 * b^5 * d^5 * \\
& g * i^3 * x^5 + 20 * B^2 * a * b^4 * c^3 * d^2 * g * i^3 * x + 5 * (3 * b^5 * c * d^4 * g * i^3 + a * b^4 * d^5 \\
& * g * i^3) * B^2 * x^4 + 20 * (b^5 * c^2 * d^3 * g * i^3 + a * b^4 * c * d^4 * g * i^3) * B^2 * x^3 + 10 * (\\
& b^5 * c^3 * d^2 * g * i^3 + 3 * a * b^4 * c^2 * d^3 * g * i^3) * B^2 * x^2) * \log((b * x + a)^n)^2 + 3 *
\end{aligned}$$

```
(4*B^2*b^5*d^5*g^i^3*x^5 + 20*B^2*a*b^4*c^3*d^2*g^i^3*x + 5*(3*b^5*c*d^4*g^i^3 + a*b^4*d^5*g^i^3)*B^2*x^4 + 20*(b^5*c^2*d^3*g^i^3 + a*b^4*c*d^4*g^i^3)*B^2*x^3 + 10*(b^5*c^3*d^2*g^i^3 + 3*a*b^4*c^2*d^3*g^i^3)*B^2*x^2)*log((d*x + c)^n)^2 + (24*B^2*b^5*d^5*g^i^3*x^5*log(e) - 6*((g^i^3*n - 15*g^i^3*log(e))*b^5*c*d^4 - (g^i^3*n + 5*g^i^3*log(e))*a*b^4*d^5)*B^2*x^4 + 2*(a^2*b^3*d^5*g^i^3*n - (11*g^i^3*n - 60*g^i^3*log(e))*b^5*c^2*d^3 + 10*(g^i^3*n + 6*g^i^3*log(e))*a*b^4*c*d^4)*B^2*x^3 + 3*(5*a^2*b^3*c*d^4*g^i^3*n - a^3*b^2*d^5*g^i^3*n - (9*g^i^3*n - 20*g^i^3*log(e))*b^5*c^3*d^2 + 5*(g^i^3*n + 12*g^i^3*log(e))*a*b^4*c^2*d^3)*B^2*x^2 - 6*(b^5*c^4*d*g^i^3*n - 10*a^2*b^3*c^2*d^3*g^i^3*n + 5*a^3*b^2*c*d^4*g^i^3*n - a^4*b*d^5*g^i^3*n + 5*(g^i^3*n - 4*g^i^3*log(e))*a*b^4*c^3*d^2)*B^2*x + 6*(10*a^2*b^3*c^3*d^2*g^i^3*n - 10*a^3*b^2*c^2*d^3*g^i^3*n + 5*a^4*b*c*d^4*g^i^3*n - a^5*d^5*g^i^3*n)*B^2*log(b*x + a) + 6*(b^5*c^5*g^i^3*n - 5*a*b^4*c^4*d*g^i^3*n)*B^2*log(d*x + c))*log((b*x + a)^n) - (24*B^2*b^5*d^5*g^i^3*x^5*log(e) - 6*((g^i^3*n - 15*g^i^3*log(e))*b^5*c*d^4 - (g^i^3*n + 5*g^i^3*log(e))*a*b^4*d^5)*B^2*x^4 + 2*(a^2*b^3*d^5*g^i^3*n - (11*g^i^3*n - 60*g^i^3*log(e))*b^5*c^2*d^3 + 10*(g^i^3*n + 6*g^i^3*log(e))*a*b^4*c*d^4)*B^2*x^3 + 3*(5*a^2*b^3*c*d^4*g^i^3*n - a^3*b^2*d^5*g^i^3*n - (9*g^i^3*n - 20*g^i^3*log(e))*b^5*c^3*d^2 + 5*(g^i^3*n + 12*g^i^3*log(e))*a*b^4*c^2*d^3)*B^2*x^2 - 6*(b^5*c^4*d*g^i^3*n - 10*a^2*b^3*c^2*d^3*g^i^3*n + 5*a^3*b^2*c*d^4*g^i^3*n - a^4*b*d^5*g^i^3*n + 5*(g^i^3*n - 4*g^i^3*log(e))*a*b^4*c^3*d^2)*B^2*x + 6*(10*a^2*b^3*c^3*d^2*g^i^3*n - 10*a^3*b^2*c^2*d^3*g^i^3*n + 5*a^4*b*c*d^4*g^i^3*n - a^5*d^5*g^i^3*n)*B^2*log(b*x + a) + 6*(b^5*c^5*g^i^3*n - 5*a*b^4*c^4*d*g^i^3*n)*B^2*log(d*x + c) + 6*(4*B^2*b^5*d^5*g^i^3*x^5 + 20*B^2*a*b^4*c^3*d^2*g^i^3*x + 5*(3*b^5*c*d^4*g^i^3 + a*b^4*d^5*g^i^3)*B^2*x^4 + 20*(b^5*c^2*d^3*g^i^3 + a*b^4*c*d^4*g^i^3)*B^2*x^3 + 10*(b^5*c^3*d^2*g^i^3 + 3*a*b^4*c^2*d^3*g^i^3)*B^2*x^2)*log((b*x + a)^n))*log((d*x + c)^n))/(b^4*d^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (ag + bgx)(ci + dix)^3 \left(A + B \ln \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a*g + b*g*x)*(c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2, x)

[Out] int((a*g + b*g*x)*(c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2, x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)**3*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2,x)
```

```
[Out] Timed out
```


$$3.181 \quad \int (ci + dix)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx$$

Optimal. Leaf size=454

$$\frac{Bi^3n(bc - ad)^4 \log \left(1 - \frac{b(c+dx)}{d(a+bx)} \right) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{2b^4d} - \frac{Bi^3n(a + bx)(bc - ad)^3 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{2b^4} - Bi^3n$$

[Out] $5/12*B^2*(-a*d+b*c)^3*i^3*n^2*x/b^3+1/12*B^2*(-a*d+b*c)^2*i^3*n^2*(d*x+c)^2/b^2/d-1/2*B*(-a*d+b*c)^3*i^3*n*(b*x+a)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^4-1/4*B*(-a*d+b*c)^2*i^3*n*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^2/d-1/6*B*(-a*d+b*c)*i^3*n*(d*x+c)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b/d+1/4*i^3*(d*x+c)^4*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/d+5/12*B^2*(-a*d+b*c)^4*i^3*n^2*\ln((b*x+a)/(d*x+c))/b^4/d+11/12*B^2*(-a*d+b*c)^4*i^3*n^2*\ln(d*x+c)/b^4/d+1/2*B*(-a*d+b*c)^4*i^3*n*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))*\ln(1-b*(d*x+c)/d/(b*x+a))/b^4/d-1/2*B^2*(-a*d+b*c)^4*i^3*n^2*\text{polylog}(2,b*(d*x+c)/d/(b*x+a))/b^4/d$

Rubi [A] time = 0.66, antiderivative size = 544, normalized size of antiderivative = 1.20, number of steps used = 23, number of rules used = 13, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.371$, Rules used = {2525, 12, 2528, 2486, 31, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 43}

$$\frac{B^2i^3n^2(bc - ad)^4 \text{PolyLog} \left(2, -\frac{d(a+bx)}{bc-ad} \right)}{2b^4d} - \frac{Bi^3n(bc - ad)^4 \log(a + bx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{2b^4d} - Bi^3n(c + dx)^2(bc - ad)^2$$

Antiderivative was successfully verified.

[In] $\text{Int}[(c*i + d*i*x)^3*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2, x]$

[Out] $-(A*B*(b*c - a*d)^3*i^3*n*x)/(2*b^3) + (5*B^2*(b*c - a*d)^3*i^3*n^2*x)/(12*b^3) + (B^2*(b*c - a*d)^2*i^3*n^2*(c + d*x)^2)/(12*b^2*d) + (5*B^2*(b*c - a*d)^4*i^3*n^2*\text{Log}[a + b*x])/(12*b^4*d) + (B^2*(b*c - a*d)^4*i^3*n^2*\text{Log}[a + b*x]^2)/(4*b^4*d) - (B^2*(b*c - a*d)^3*i^3*n*(a + b*x)*\text{Log}[e*((a + b*x)/(c + d*x))^n])/(2*b^4) - (B*(b*c - a*d)^2*i^3*n*(c + d*x)^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(4*b^2*d) - (B*(b*c - a*d)*i^3*n*(c + d*x)^3*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(6*b*d) - (B*(b*c - a*d)^4*i^3*n*\text{Log}[a + b*x]*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(2*b^4*d) + (i^3*(c + d*x)^4*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2)/(4*d) + (B^2*(b*c - a*d)^4*i^3*n^2*\text{Log}[c + d*x])/(2*b^4*d) - (B^2*(b*c - a*d)^4*i^3*n^2*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)])/(2*b^4*d) - (B^2*(b*c - a*d)^4*i^3*n^2*\text{PolyLog}[2, -(d*(a + b*x))/(b*c - a*d)])/(2*b^4*d)$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 31

Int[((a_) + (b_)*(x_))⁽⁻¹⁾, x_Symbol] := Simp[Log[RemoveContent[a + b*x, x]]/b, x] /; FreeQ[{a, b}, x]

Rule 43

Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)ⁿ, x], x] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && (!IntegerQ[n] || (EqQ[c, 0] && LeQ[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])

Rule 2301

Int[((a_.) + Log[(c_.)*(x_)^(n_.)])*(b_.)/(x_), x_Symbol] := Simp[(a + b*Log[c*xⁿ])²/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.)])*(b_.))^(p_.)*((f_) + (g_.)*(x_)^(q_.)), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*xⁿ])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*xⁿ)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))])*(b_.)/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.)])*(b_.)/((f_.) + (g_.)*(x_))), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x

$\int \frac{(b e^n)^n}{g} dx - \text{Dist}[(b e^n)/g, \int \frac{\log[(e(f + g x))/(e f - d g)]}{(d + e x)}, x], x] /; \text{FreeQ}\{a, b, c, d, e, f, g, n\}, x\} \&\& \text{NeQ}[e f - d g, 0]$

Rule 2418

$\text{Int}[(a + \log[c(d + e x)^n])^p (b x)^q, x_{\text{Symbol}}] \rightarrow \text{With}\{u = \text{ExpandIntegrand}[(a + b \log[c(d + e x)^n])^p, \text{RFx}, x]\}, \text{Int}[u, x] /; \text{SumQ}[u] /; \text{FreeQ}\{a, b, c, d, e, n\}, x\} \&\& \text{RationalFunctionQ}[\text{RFx}, x] \&\& \text{IntegerQ}[p]$

Rule 2486

$\text{Int}[\log[e(f(a + b x) + c + d x)^q]^r (a + b x)^p, x_{\text{Symbol}}] \rightarrow \text{Simp}[(a + b x) \log[e(f(a + b x)^p (c + d x)^q)^r] / b, x] + \text{Dist}[(q r s (b c - a d)) / b, \int \log[e(f(a + b x)^p (c + d x)^q)^r]^{s-1} / (c + d x), x], x] /; \text{FreeQ}\{a, b, c, d, e, f, p, q, r, s\}, x\} \&\& \text{NeQ}[b c - a d, 0] \&\& \text{EqQ}[p + q, 0] \&\& \text{IGtQ}[s, 0]$

Rule 2524

$\text{Int}[(a + \log[c(RF x)^p])^n (b x)^m / (d + e x), x_{\text{Symbol}}] \rightarrow \text{Simp}[(\log[d + e x] (a + b \log[c(RF x)^p])^n) / e, x] - \text{Dist}[(b^n p) / e, \int (\log[d + e x] (a + b \log[c(RF x)^p])^{n-1}) D[\text{RFx}, x] / \text{RFx}, x], x] /; \text{FreeQ}\{a, b, c, d, e, p\}, x\} \&\& \text{RationalFunctionQ}[\text{RFx}, x] \&\& \text{IGtQ}[n, 0]$

Rule 2525

$\text{Int}[(a + \log[c(RF x)^p])^n (d + e x)^m, x_{\text{Symbol}}] \rightarrow \text{Simp}[(d + e x)^{m+1} (a + b \log[c(RF x)^p])^n / (e(m+1)), x] - \text{Dist}[(b^n p) / (e(m+1)), \int \text{SimplifyIntegrand}[(d + e x)^{m+1} (a + b \log[c(RF x)^p])^{n-1}) D[\text{RFx}, x] / \text{RFx}, x], x] /; \text{FreeQ}\{a, b, c, d, e, m, p\}, x\} \&\& \text{RationalFunctionQ}[\text{RFx}, x] \&\& \text{IGtQ}[n, 0] \&\& (\text{EqQ}[n, 1] \parallel \text{IntegerQ}[m]) \&\& \text{NeQ}[m, -1]$

Rule 2528

$\text{Int}[(a + \log[c(RF x)^p])^n (RG x)^m, x_{\text{Symbol}}] \rightarrow \text{With}\{u = \text{ExpandIntegrand}[(a + b \log[c(RF x)^p])^n, \text{RGx}, x]\}, \text{Int}[u, x] /; \text{SumQ}[u] /; \text{FreeQ}\{a, b, c, p\}, x\} \&\& \text{RationalFunctionQ}[\text{RFx}, x] \&\& \text{RationalFunctionQ}[\text{RGx}, x] \&\& \text{IGtQ}[n, 0]$

Rubi steps

$$\begin{aligned}
\int (181c + 181dx)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx &= \frac{5929741(c+dx)^4 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{4d} - \frac{(Bn) \int \frac{1073283}{\dots}}{\dots} \\
&= \frac{5929741(c+dx)^4 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{4d} - \frac{(5929741B(bc - ad)^2 n(c+dx)^2)}{4b^2d} \\
&= \frac{5929741(c+dx)^4 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{4d} - \frac{(5929741B(bc - ad)^3 n(a+bx))}{2b^4} \\
&= \frac{5929741(c+dx)^4 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{4d} - \frac{(5929741B(bc - ad)^3 n(a+bx))}{2b^4} \\
&= -\frac{5929741AB(bc - ad)^3 nx}{2b^3} - \frac{5929741B(bc - ad)^2 n(c+dx)^2}{4b^2d} \\
&= -\frac{5929741AB(bc - ad)^3 nx}{2b^3} - \frac{5929741B^2(bc - ad)^3 n(a+bx)}{2b^4} \\
&= -\frac{5929741AB(bc - ad)^3 nx}{2b^3} - \frac{5929741B^2(bc - ad)^3 n(a+bx)}{2b^4} \\
&= -\frac{5929741AB(bc - ad)^3 nx}{2b^3} + \frac{29648705B^2(bc - ad)^3 n^2 x}{12b^3} + \frac{5929741B^2(bc - ad)^3 n(a+bx)}{2b^4} \\
&= -\frac{5929741AB(bc - ad)^3 nx}{2b^3} + \frac{29648705B^2(bc - ad)^3 n^2 x}{12b^3} + \frac{5929741B^2(bc - ad)^3 n(a+bx)}{2b^4} \\
&= -\frac{5929741AB(bc - ad)^3 nx}{2b^3} + \frac{29648705B^2(bc - ad)^3 n^2 x}{12b^3} + \frac{5929741B^2(bc - ad)^3 n(a+bx)}{2b^4}
\end{aligned}$$

Mathematica [A] time = 0.32, size = 409, normalized size = 0.90

$$i^3 \left((c + dx)^4 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)^2 - \frac{Bn(bc-ad) \left(2b^3(c+dx)^3 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right) + 3b^2(c+dx)^2(bc-ad) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right) + 6(bc-ad)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right) \right)}{(3b^4)} \right)$$

Antiderivative was successfully verified.

[In] Integrate[(c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2,x]

[Out] (i^3*((c + d*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 - (B*(b*c - a*d) *n*(6*A*b*d*(b*c - a*d)^2*x - 3*B*(b*c - a*d)^2*n*(b*d*x + (b*c - a*d)*Log[a + b*x]) - B*(b*c - a*d)*n*(2*b*d*(b*c - a*d)*x + b^2*(c + d*x)^2 + 2*(b*c - a*d)^2*Log[a + b*x]) + 6*B*d*(b*c - a*d)^2*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n] + 3*b^2*(b*c - a*d)*(c + d*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 2*b^3*(c + d*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 6*(b*c - a*d)^3*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 6*B*(b*c - a*d)^3*n*Log[c + d*x] - 3*B*(b*c - a*d)^3*n*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-b*c + a*d)])))/(3*b^4))/(4*d)

fricas [F] time = 0.69, size = 0, normalized size = 0.00

$$\text{integral} \left(A^2 d^3 i^3 x^3 + 3 A^2 c d^2 i^3 x^2 + 3 A^2 c^2 d i^3 x + A^2 c^3 i^3 + (B^2 d^3 i^3 x^3 + 3 B^2 c d^2 i^3 x^2 + 3 B^2 c^2 d i^3 x + B^2 c^3 i^3) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, algorithm="fricas")

[Out] integral(A^2*d^3*i^3*x^3 + 3*A^2*c*d^2*i^3*x^2 + 3*A^2*c^2*d*i^3*x + A^2*c^3*i^3 + (B^2*d^3*i^3*x^3 + 3*B^2*c*d^2*i^3*x^2 + 3*B^2*c^2*d*i^3*x + B^2*c^3*i^3)*log(e*((b*x + a)/(d*x + c))^n)^2 + 2*(A*B*d^3*i^3*x^3 + 3*A*B*c*d^2*i^3*x^2 + 3*A*B*c^2*d*i^3*x + A*B*c^3*i^3)*log(e*((b*x + a)/(d*x + c))^n), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, algorithm="giac")

[Out] Timed out

maple [F] time = 0.30, size = 0, normalized size = 0.00

$$\int (dix + ci)^3 \left(B \ln \left(e \left(\frac{bx + a}{dx + c} \right)^n \right) + A \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)

[Out] int((d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)

maxima [B] time = 4.98, size = 2129, normalized size = 4.69

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, algorithm="maxima")

[Out]
$$\begin{aligned} & 1/2*A*B*d^3*i^3*x^4*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/4*A^2*d^3*i^3*x^4 \\ & + 2*A*B*c*d^2*i^3*x^3*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A^2*c*d^2*i^3*x^3 \\ & + 3*A*B*c^2*d*i^3*x^2*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 3/2*A^2*c^2*d*i^3*x^2 \\ & - 1/12*A*B*d^3*i^3*n*(6*a^4*\log(b*x + a)/b^4 - 6*c^4*\log(d*x + c)/d^4 \\ & + (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3) \\ & + A*B*c*d^2*i^3*n*(2*a^3*\log(b*x + a)/b^3 - 2*c^3*\log(d*x + c)/d^3 \\ & - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2) - 3*A*B*c^2*d*i^3*n*(a^2*\log(b*x + a)/b^2 \\ & - c^2*\log(d*x + c)/d^2 + (b*c - a*d)*x/(b*d)) + 2*A*B*c^3*i^3*n*(a*\log(b*x + a)/b \\ & - c*\log(d*x + c)/d) + 2*A*B*c^3*i^3*x*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) \\ & + A^2*c^3*i^3*x - 1/12*(26*a*b^2*c^3*d*i^3*n^2 - 21*a^2*b*c^2*d^2*i^3*n^2 + 6*a^3*c*d^3*i^3*n^2 \\ & - (11*i^3*n^2 - 6*i^3*n*\log(e))*b^3*c^4)*B^2*\log(d*x + c)/(b^3*d) - 1/2*(b^4*c^4*i^3*n^2 \\ & - 4*a*b^3*c^3*d*i^3*n^2 + 6*a^2*b^2*c^2*d^2*i^3*n^2 - 4*a^3*b*c*d^3*i^3*n^2 + a^4*d^4*i^3*n^2) \\ & *(\log(b*x + a) * \log((b*d*x + a*d)/(b*c - a*d) + 1) + \operatorname{dilog}(-(b*d*x + a*d)/(b*c - a*d))) * B^2 / (b^4*d) \\ & + 1/12*(3*B^2*b^4*d^4*i^3*x^4*\log(e)^2 + 6*B^2*b^4*c^4*i^3*n^2*\log(b*x + a) * \log(d*x + c) \\ & - 3*B^2*b^4*c^4*i^3*n^2*\log(d*x + c)^2 + 2*(a*b^3*d^4*i^3*n*\log(e) - (i^3*n*\log(e) - 6*i^3*\log(e)^2) \\ & *b^4*c*d^3)*B^2*x^3 + ((i^3*n^2 - 9*i^3*n*\log(e) + 18*i^3*\log(e)^2)*b^4*c^2*d^2 - 2*(i^3*n^2 - 6*i^3*n*\log(e)) \\ & *a*b^3*c*d^3 + (i^3*n^2 - 3*i^3*n*\log(e))*a^2*b^2*d^4)*B^2*x^2 - 3*(4*a*b^3*c^3*d*i^3*n^2 \\ & - 6*a^2*b^2*c^2*d^2*i^3*n^2 + 4*a^3*b*c*d^3*i^3*n^2 - a^4*d^4*i^3*n^2)*B^2*\log(b*x + a)^2 \\ & + ((7*i^3*n^2 - 18*i^3*n*\log(e) + 12*i^3*\log(e)^2)*b^4*c^3*d - (19*i^3*n^2 - 36*i^3*n*\log(e)) \\ & *a*b^3*c^2*d^2 + (17*i^3*n^2 - 24*i^3*n*\log(e))*a^2*b^2*c*d^3 - (5*i^3*n^2 - 6*i^3*n*\log(e))*a^3 \end{aligned}$$

$$\begin{aligned}
& b*d^4)*B^2*x - (6*(3*i^3*n^2 - 4*i^3*n*log(e))*a*b^3*c^3*d - 9*(5*i^3*n^2 - \\
& 4*i^3*n*log(e))*a^2*b^2*c^2*d^2 + 2*(19*i^3*n^2 - 12*i^3*n*log(e))*a^3*b*c \\
& *d^3 - (11*i^3*n^2 - 6*i^3*n*log(e))*a^4*d^4)*B^2*log(b*x + a) + 3*(B^2*b^4 \\
& *d^4*i^3*x^4 + 4*B^2*b^4*c*d^3*i^3*x^3 + 6*B^2*b^4*c^2*d^2*i^3*x^2 + 4*B^2* \\
& b^4*c^3*d*i^3*x)*log((b*x + a)^n)^2 + 3*(B^2*b^4*d^4*i^3*x^4 + 4*B^2*b^4*c \\
& d^3*i^3*x^3 + 6*B^2*b^4*c^2*d^2*i^3*x^2 + 4*B^2*b^4*c^3*d*i^3*x)*log((d*x + \\
& c)^n)^2 + (6*B^2*b^4*d^4*i^3*x^4*log(e) - 6*B^2*b^4*c^4*i^3*n*log(d*x + c) \\
& + 2*(a*b^3*d^4*i^3*n - (i^3*n - 12*i^3*log(e))*b^4*c*d^3)*B^2*x^3 + 3*(4*a \\
& *b^3*c*d^3*i^3*n - a^2*b^2*d^4*i^3*n - 3*(i^3*n - 4*i^3*log(e))*b^4*c^2*d^2 \\
&)*B^2*x^2 + 6*(6*a*b^3*c^2*d^2*i^3*n - 4*a^2*b^2*c*d^3*i^3*n + a^3*b*d^4*i^ \\
& 3*n - (3*i^3*n - 4*i^3*log(e))*b^4*c^3*d)*B^2*x + 6*(4*a*b^3*c^3*d*i^3*n - \\
& 6*a^2*b^2*c^2*d^2*i^3*n + 4*a^3*b*c*d^3*i^3*n - a^4*d^4*i^3*n)*B^2*log(b*x \\
& + a))*log((b*x + a)^n) - (6*B^2*b^4*d^4*i^3*x^4*log(e) - 6*B^2*b^4*c^4*i^3* \\
& n*log(d*x + c) + 2*(a*b^3*d^4*i^3*n - (i^3*n - 12*i^3*log(e))*b^4*c*d^3)*B^ \\
& 2*x^3 + 3*(4*a*b^3*c*d^3*i^3*n - a^2*b^2*d^4*i^3*n - 3*(i^3*n - 4*i^3*log(e) \\
&))*b^4*c^2*d^2)*B^2*x^2 + 6*(6*a*b^3*c^2*d^2*i^3*n - 4*a^2*b^2*c*d^3*i^3*n \\
& + a^3*b*d^4*i^3*n - (3*i^3*n - 4*i^3*log(e))*b^4*c^3*d)*B^2*x + 6*(4*a*b^3* \\
& c^3*d*i^3*n - 6*a^2*b^2*c^2*d^2*i^3*n + 4*a^3*b*c*d^3*i^3*n - a^4*d^4*i^3*n \\
&)*B^2*log(b*x + a) + 6*(B^2*b^4*d^4*i^3*x^4 + 4*B^2*b^4*c*d^3*i^3*x^3 + 6*B \\
& ^2*b^4*c^2*d^2*i^3*x^2 + 4*B^2*b^4*c^3*d*i^3*x)*log((b*x + a)^n))*log((d*x \\
& + c)^n))/(b^4*d)
\end{aligned}$$

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (ci + dix)^3 \left(A + B \ln \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2,x)

[Out] int((c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2, x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2,x)

[Out] Timed out

$$3.182 \quad \int \frac{(ci+dix)^3 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{ag+bgx} dx$$

Optimal. Leaf size=762

$$\frac{2Bi^3n(bc-ad)^3Li_2\left(\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^4g} + \frac{di^3(a+bx)(bc-ad)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{b^4g} - \frac{5Bdi^3n(a+bx)(bc-ad)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^4g}$$

[Out] $\frac{1}{3}B^2d(-ad+bc)^2i^3n^2x/b^3/g - \frac{5}{3}B^2d(-ad+bc)^2i^3n(bx+a)(A+B\ln(e((bx+a)/(dx+c))^n))/b^4/g - \frac{1}{3}B^2(-ad+bc)i^3n(dx+c)^2(A+B\ln(e((bx+a)/(dx+c))^n))/b^2/g + d(-ad+bc)^2i^3(bx+a)(A+B\ln(e((bx+a)/(dx+c))^n))^2/b^4/g + \frac{1}{2}(-ad+bc)i^3(dx+c)^2(A+B\ln(e((bx+a)/(dx+c))^n))^2/b^2/g + \frac{1}{3}i^3(dx+c)^3(A+B\ln(e((bx+a)/(dx+c))^n))^2/b/g + 2B^2(-ad+bc)^3i^3n(A+B\ln(e((bx+a)/(dx+c))^n))*\ln((-ad+bc)/b/(dx+c))/b^4/g + \frac{1}{3}B^2(-ad+bc)^3i^3n^2\ln((bx+a)/(dx+c))/b^4/g + 2B^2(-ad+bc)^3i^3n^2\ln(dx+c)/b^4/g + \frac{5}{3}B^2(-ad+bc)^3i^3n(A+B\ln(e((bx+a)/(dx+c))^n))*\ln(1-b(dx+c)/d/(bx+a))/b^4/g - (-ad+bc)^3i^3(A+B\ln(e((bx+a)/(dx+c))^n))^2\ln(1-b(dx+c)/d/(bx+a))/b^4/g + 2B^2(-ad+bc)^3i^3n^2\text{polylog}(2,d(bx+a)/b/(dx+c))/b^4/g - \frac{5}{3}B^2(-ad+bc)^3i^3n^2\text{polylog}(2,b(dx+c)/d/(bx+a))/b^4/g + 2B^2(-ad+bc)^3i^3n(A+B\ln(e((bx+a)/(dx+c))^n))*\text{polylog}(2,b(dx+c)/d/(bx+a))/b^4/g + 2B^2(-ad+bc)^3i^3n^2\text{polylog}(3,b(dx+c)/d/(bx+a))/b^4/g$

Rubi [B] time = 5.62, antiderivative size = 1995, normalized size of antiderivative = 2.62, number of steps used = 101, number of rules used = 28, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}} = 0.622$, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2500, 2440, 2434, 2433, 2375, 2317, 2374, 6589, 2499, 2302, 30, 2396, 2525, 2486, 31, 43}

result too large to display

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b*g*x), x]

[Out] $(-5A^2Bd(b^2c - a^2d)^2i^3n^2x)/(3b^3g) + (B^2d(b^2c - a^2d)^2i^3n^2x)/(3b^3g) + (B^2(b^2c - a^2d)^3i^3n^2\text{Log}[a + b*x])/(3b^4g) - (A^2B^2d(b^2c - a^2d)^2i^3n^2\text{Log}[a + b*x]^2)/(b^4g) + (5B^2(b^2c - a^2d)^3i^3n^2\text{Log}[a + b*x]^2)/(6b^4g) - (A^2B(b^2c - a^2d)^3i^3n\text{Log}[g*(a + b*x)]^2)/(b^4g) + (B^2(b^2c - a^2d)^3i^3n^2\text{Log}[g*(a + b*x)]^3)/(3b^4g) - (B^2(b^2c - a^2d)^3i^3n^2\text{Log}[g*(a + b*x)]^2\text{Log}[-c - d*x])/(b^4g) + (2B^2(b^2c - a^2d)^3i^3n\text{Log}[g*(a + b*x)]*\text{Log}[(a + b*x)^n]*\text{Log}[-c - d*x])/(b^4g)$

$$\begin{aligned}
& - (B^2*(b*c - a*d)^3*i^3*Log[(a + b*x)^n]^2*Log[-c - d*x])/(b^4*g) - (5*B^2 \\
& *d*(b*c - a*d)^2*i^3*n*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n])/(3*b^4*g) \\
& - (B*(b*c - a*d)*i^3*n*(c + d*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/ \\
& (3*b^2*g) + (2*a*B*d*(b*c - a*d)^2*i^3*n*Log[a + b*x]*(A + B*Log[e*((a + b* \\
& x)/(c + d*x))^n]))/(b^4*g) - (5*B*(b*c - a*d)^3*i^3*n*Log[a + b*x]*(A + B*L \\
& og[e*((a + b*x)/(c + d*x))^n]))/(3*b^4*g) + (d*(b*c - a*d)^2*i^3*x*(A + B*L \\
& og[e*((a + b*x)/(c + d*x))^n]^2)/(b^3*g) + ((b*c - a*d)*i^3*(c + d*x)^2*(A \\
& + B*Log[e*((a + b*x)/(c + d*x))^n]^2)/(2*b^2*g) + (i^3*(c + d*x)^3*(A + B \\
& *Log[e*((a + b*x)/(c + d*x))^n]^2)/(3*b*g) + (5*B^2*(b*c - a*d)^3*i^3*n^2* \\
& Log[c + d*x])/(3*b^4*g) + (2*B^2*c*(b*c - a*d)^2*i^3*n^2*Log[-((d*(a + b*x) \\
&)/(b*c - a*d))] * Log[c + d*x])/(b^3*g) - (2*B*c*(b*c - a*d)^2*i^3*n*(A + B*L \\
& og[e*((a + b*x)/(c + d*x))^n] * Log[c + d*x])/(b^3*g) - (B^2*c*(b*c - a*d)^2 \\
& *i^3*n^2*Log[c + d*x]^2)/(b^3*g) + (2*a*B^2*d*(b*c - a*d)^2*i^3*n^2*Log[a + \\
& b*x] * Log[(b*(c + d*x))/(b*c - a*d])/(b^4*g) - (5*B^2*(b*c - a*d)^3*i^3*n^ \\
& 2*Log[a + b*x] * Log[(b*(c + d*x))/(b*c - a*d])/(3*b^4*g) + (B^2*(b*c - a*d) \\
& ^3*i^3*n^2*Log[g*(a + b*x)]^2 * Log[(b*(c + d*x))/(b*c - a*d])/(b^4*g) + (B^ \\
& 2*(b*c - a*d)^3*i^3*Log[(a + b*x)^n]^2 * Log[(b*(c + d*x))/(b*c - a*d])/(b^4 \\
& *g) + (B^2*(b*c - a*d)^3*i^3*Log[-((d*(a + b*x))/(b*c - a*d))] * Log[(c + d*x) \\
&]^(-n))^2)/(b^4*g) - (B^2*(b*c - a*d)^3*i^3*Log[g*(a + b*x)] * Log[(c + d*x)^ \\
& (-n)]^2)/(b^4*g) + ((b*c - a*d)^3*i^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n] \\
&)^2 * Log[a*g + b*g*x])/(b^4*g) + (2*A*B*(b*c - a*d)^3*i^3*n*Log[(b*(c + d*x) \\
&)/(b*c - a*d)] * Log[a*g + b*g*x])/(b^4*g) - (2*B^2*(b*c - a*d)^3*i^3*n*Log[(\\
& b*(c + d*x))/(b*c - a*d)] * (Log[(a + b*x)^n] - Log[e*((a + b*x)/(c + d*x))^n \\
&] + Log[(c + d*x)^(-n)]) * Log[a*g + b*g*x])/(b^4*g) - (B^2*(b*c - a*d)^3*i^3 \\
& *n*Log[e*((a + b*x)/(c + d*x))^n] * Log[a*g + b*g*x]^2)/(b^4*g) - (B^2*(b*c - \\
& a*d)^3*i^3*n^2*Log[(b*(c + d*x))/(b*c - a*d)] * Log[a*g + b*g*x]^2)/(b^4*g) \\
& + (2*A*B*(b*c - a*d)^3*i^3*n*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(b^4 \\
& *g) + (2*a*B^2*d*(b*c - a*d)^2*i^3*n^2*PolyLog[2, -((d*(a + b*x))/(b*c - a* \\
& d))])/(b^4*g) - (5*B^2*(b*c - a*d)^3*i^3*n^2*PolyLog[2, -((d*(a + b*x))/(b* \\
& c - a*d))])/(3*b^4*g) + (2*B^2*(b*c - a*d)^3*i^3*n*Log[(a + b*x)^n] * PolyLog \\
& [2, -((d*(a + b*x))/(b*c - a*d))])/(b^4*g) - (2*B^2*(b*c - a*d)^3*i^3*n*(Lo \\
& g[(a + b*x)^n] - Log[e*((a + b*x)/(c + d*x))^n] + Log[(c + d*x)^(-n)]) * Poly \\
& Log[2, -((d*(a + b*x))/(b*c - a*d))])/(b^4*g) + (2*B^2*c*(b*c - a*d)^2*i^3* \\
& n^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d])/(b^3*g) - (2*B^2*(b*c - a*d)^3*i \\
& ^3*n*Log[(c + d*x)^(-n)] * PolyLog[2, (b*(c + d*x))/(b*c - a*d])/(b^4*g) - (\\
& 2*B^2*(b*c - a*d)^3*i^3*n^2*PolyLog[3, -((d*(a + b*x))/(b*c - a*d))])/(b^4* \\
& g) - (2*B^2*(b*c - a*d)^3*i^3*n^2*PolyLog[3, (b*(c + d*x))/(b*c - a*d])/(b \\
& ^4*g)
\end{aligned}$$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 30

Int[(x_)^(m_), x_Symbol] := Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && NeQ[m, -1]

Rule 31

Int[((a_) + (b_)*(x_))^(n_), x_Symbol] := Simp[Log[RemoveContent[a + b*x, x]]/b, x] /; FreeQ[{a, b}, x]

Rule 43

Int[((a_) + (b_)*(x_))^(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && (!IntegerQ[n] || (EqQ[c, 0] && LeQ[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])

Rule 2301

Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2302

Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)^(p_)/(x_), x_Symbol] := Dist[1/(b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p}, x]

Rule 2317

Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)^(p_)/((d_) + (e_)*(x_)), x_Symbol] := Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e, Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]

Rule 2374

Int[(Log[(d_)*((e_) + (f_)*(x_)^(m_))])*((a_) + Log[(c_)*(x_)^(n_)])*(b_)^(p_)/(x_), x_Symbol] := -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0] && EqQ[d*e, 1]

Rule 2375

Int[(Log[(d_)*((e_) + (f_)*(x_)^(m_))^(r_)]*((a_) + Log[(c_)*(x_)^(n_)])*(b_)^(p_)/(x_), x_Symbol] := Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[

$c*x^n)^{(p+1)}/(b*n*(p+1)), x] - \text{Dist}[(f*m*r)/(b*n*(p+1)), \text{Int}[(x^{(m-1)}*(a + b*\text{Log}[c*x^n])^{(p+1)})/(e + f*x^m), x], x] /; \text{FreeQ}\{a, b, c, d, e, f, r, m, n\}, x] \ \&\& \ \text{IGtQ}[p, 0] \ \&\& \ \text{NeQ}[d*e, 1]$

Rule 2390

$\text{Int}[(a + \text{Log}[c*(d + (e*x)^n)]*(b))^{(p)}*((f) + (g*(x))^q), x_Symbol] \rightarrow \text{Dist}[1/e, \text{Subst}[\text{Int}[(f*x)/d]^q*(a + b*\text{Log}[c*x^n])^p, x], x, d + e*x], x] /; \text{FreeQ}\{a, b, c, d, e, f, g, n, p, q\}, x] \ \&\& \ \text{EqQ}[e*f - d*g, 0]$

Rule 2391

$\text{Int}[\text{Log}[c*(d + (e*x)^n)]/(x), x_Symbol] \rightarrow -\text{Simp}[\text{PolyLog}[2, -(c*e*x^n)]/n, x] /; \text{FreeQ}\{c, d, e, n\}, x] \ \&\& \ \text{EqQ}[c*d, 1]$

Rule 2393

$\text{Int}[(a + \text{Log}[c*(d + (e*x))]*(b))/((f) + (g*(x))), x_Symbol] \rightarrow \text{Dist}[1/g, \text{Subst}[\text{Int}[(a + b*\text{Log}[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; \text{FreeQ}\{a, b, c, d, e, f, g\}, x] \ \&\& \ \text{NeQ}[e*f - d*g, 0] \ \&\& \ \text{EqQ}[g + c*(e*f - d*g), 0]$

Rule 2394

$\text{Int}[(a + \text{Log}[c*(d + (e*x)^n)]*(b))/((f) + (g*(x))), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[(e*(f + g*x))/(e*f - d*g)]*(a + b*\text{Log}[c*(d + e*x)^n]))/g, x] - \text{Dist}[(b*e*n)/g, \text{Int}[\text{Log}[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; \text{FreeQ}\{a, b, c, d, e, f, g, n\}, x] \ \&\& \ \text{NeQ}[e*f - d*g, 0]$

Rule 2396

$\text{Int}[(a + \text{Log}[c*(d + (e*x)^n)]*(b))^{(p)}/((f) + (g*(x))), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[(e*(f + g*x))/(e*f - d*g)]*(a + b*\text{Log}[c*(d + e*x)^n])^{(p)})/g, x] - \text{Dist}[(b*e*n*p)/g, \text{Int}[(\text{Log}[(e*(f + g*x))/(e*f - d*g)]*(a + b*\text{Log}[c*(d + e*x)^n])^{(p-1)})/(d + e*x), x], x] /; \text{FreeQ}\{a, b, c, d, e, f, g, n, p\}, x] \ \&\& \ \text{NeQ}[e*f - d*g, 0] \ \&\& \ \text{IGtQ}[p, 1]$

Rule 2418

$\text{Int}[(a + \text{Log}[c*(d + (e*x)^n)]*(b))^{(p)}(\text{RFx}), x_Symbol] \rightarrow \text{With}\{u = \text{ExpandIntegrand}[(a + b*\text{Log}[c*(d + e*x)^n])^p, \text{RFx}, x]\}, \text{Int}[u, x] /; \text{SumQ}[u] /; \text{FreeQ}\{a, b, c, d, e, n\}, x] \ \&\& \ \text{RationalFunctionQ}[\text{RFx}, x] \ \&\& \ \text{IntegerQ}[p]$

Rule 2433

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] := Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(e*i - d*j)/e + (j*x)/e]^m)], x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]

Rule 2434

Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] := Simp[Log[x]*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Log[x]*(a + b*Log[c*(d + e*x)^n])]/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x]*(f + g*Log[h*(i + j*x)^m])]/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]

Rule 2440

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] := Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f + g*Log[h*(-((j*k - i*l)/l) + (j*x)/l]^m)], x], x, k + l*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]

Rule 2486

Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)]^(r_.)]^(s_.), x_Symbol] := Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]

Rule 2499

Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)]^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.) + (k_.)*(x_)), x_Symbol] := Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dist[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x), x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r}, x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))/((j_.) + (k
_.)*(x_)), x_Symbol] := Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2523

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] := Simp[x*(a +
b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*
RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, p}, x] && Rat
ionalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl  
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]  
]
```

Rubi steps

$$\begin{aligned}
\int \frac{(182c + 182dx)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{ag + bgx} dx &= \int \left(\frac{6028568d(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^3g} + \frac{33124d}{b^3g} \right) dx \\
&= \frac{(6028568(bc - ad)^3) \int \frac{\left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{ag+bgx} dx}{b^3} + \frac{(182d) \int (182c + 182dx)^3 dx}{b^3g} \\
&= \frac{6028568d(bc - ad)^2 x \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^3g} + \frac{3014284(bc - ad)^3}{b^3g} \\
&= \frac{6028568d(bc - ad)^2 x \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^3g} + \frac{3014284(bc - ad)^3}{b^3g} \\
&= \frac{6028568d(bc - ad)^2 x \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^3g} + \frac{3014284(bc - ad)^3}{b^3g} \\
&= \frac{6028568d(bc - ad)^2 x \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^3g} + \frac{3014284(bc - ad)^3}{b^3g} \\
&= -\frac{30142840ABd(bc - ad)^2 nx}{3b^3g} - \frac{6028568B(bc - ad)n(c + dx)}{3b^2g} \\
&= -\frac{30142840ABd(bc - ad)^2 nx}{3b^3g} - \frac{30142840B^2d(bc - ad)^2 n(a + dx)}{3b^4g} \\
&= -\frac{30142840ABd(bc - ad)^2 nx}{3b^3g} - \frac{30142840B^2d(bc - ad)^2 n(a + dx)}{3b^4g} \\
&= -\frac{30142840ABd(bc - ad)^2 nx}{3b^3g} + \frac{6028568B^2d(bc - ad)^2 n^2 x}{3b^3g} + \\
&= -\frac{30142840ABd(bc - ad)^2 nx}{3b^3g} + \frac{6028568B^2d(bc - ad)^2 n^2 x}{3b^3g} +
\end{aligned}$$

Mathematica [B] time = 5.20, size = 2941, normalized size = 3.86

Result too large to show

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b*g*x), x]

[Out] $(i^3*(6*b*d*(3*b^2*c^2 - 3*a*b*c*d + a^2*d^2)*x*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n] - B*n*\text{Log}[(a + b*x)/(c + d*x)])^2 + 3*b^2*d^2*(3*b*c - a*d)*x^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n] - B*n*\text{Log}[(a + b*x)/(c + d*x)])^2 + 2*b^3*d^3*x^3*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n] - B*n*\text{Log}[(a + b*x)/(c + d*x)])^2 + 6*(b*c - a*d)^3*\text{Log}[a + b*x]*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n] - B*n*\text{Log}[(a + b*x)/(c + d*x)])^2 - 18*b^2*B*c^2*n*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n] - B*n*\text{Log}[(a + b*x)/(c + d*x)])*(a*d*\text{Log}[a/b + x]^2 - 2*a*d*\text{Log}[a/b + x]*(1 + \text{Log}[a + b*x]) + 2*(-(b*c) + a*d + \text{Log}[c/d + x]*(b*c + a*d*\text{Log}[a + b*x] - a*d*\text{Log}[(d*(a + b*x))/(-(b*c) + a*d)])) + (-(b*d*x) + a*d*\text{Log}[a + b*x])* \text{Log}[(a + b*x)/(c + d*x)] - 2*a*d*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]) - 2*B*n*(-A - B*\text{Log}[e*((a + b*x)/(c + d*x))^n] + B*n*\text{Log}[(a + b*x)/(c + d*x)])*(6*a^2*b*c*d^2 - 6*a^3*d^3 + 2*b^3*c^2*d*x + 3*a*b^2*c*d^2*x - 5*a^2*b*d^3*x - b^3*c*d^2*x^2 + a*b^2*d^3*x^2 - 3*a^3*d^3*\text{Log}[a/b + x]^2 - 6*a^2*b*c*d^2*\text{Log}[c/d + x] + 5*a^3*d^3*\text{Log}[a + b*x] - 6*a^3*d^3*\text{Log}[c/d + x]* \text{Log}[a + b*x] + 6*a^3*d^3*\text{Log}[a/b + x]*(1 + \text{Log}[a + b*x]) + 6*a^3*d^3*\text{Log}[c/d + x]* \text{Log}[(d*(a + b*x))/(-(b*c) + a*d)] + 6*a^2*b*d^3*x*\text{Log}[(a + b*x)/(c + d*x)] - 3*a*b^2*d^3*x^2*\text{Log}[(a + b*x)/(c + d*x)] + 2*b^3*d^3*x^3*\text{Log}[(a + b*x)/(c + d*x)] - 6*a^3*d^3*\text{Log}[a + b*x]* \text{Log}[(a + b*x)/(c + d*x)] - 2*b^3*c^3*\text{Log}[c + d*x] - 3*a*b^2*c^2*d*\text{Log}[c + d*x] + 6*a^3*d^3*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]) + 6*b^3*B*c^3*n*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n] - B*n*\text{Log}[(a + b*x)/(c + d*x)])*(\text{Log}[a/b + x]^2 - 2*\text{Log}[a + b*x]*(\text{Log}[a/b + x] - \text{Log}[c/d + x] - \text{Log}[(a + b*x)/(c + d*x)]) - 2*(\text{Log}[c/d + x]* \text{Log}[(d*(a + b*x))/(-(b*c) + a*d)] + \text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])) + 9*b*B*c*n*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n] - B*n*\text{Log}[(a + b*x)/(c + d*x)])*(-4*a*d^2*(a + b*x)*(-1 + \text{Log}[a/b + x]) + 2*a^2*d^2*\text{Log}[a/b + x]^2 + 4*a*b*d*(c + d*x)*(-1 + \text{Log}[c/d + x]) + d^2*(b*x*(2*a - b*x) + 2*b^2*x^2*\text{Log}[a/b + x] - 2*a^2*\text{Log}[a + b*x]) - 2*d^2*(b*x*(-2*a + b*x) + 2*a^2*\text{Log}[a + b*x]))*(\text{Log}[a/b + x] - \text{Log}[c/d + x] - \text{Log}[(a + b*x)/(c + d*x)]) + b^2*(d*x*(-2*c + d*x) - 2*d^2*x^2*\text{Log}[c/d + x] + 2*c^2*\text{Log}[c + d*x]) - 4*a^2*d^2*(\text{Log}[c/d + x]* \text{Log}[(d*(a + b*x))/(-(b*c) + a*d)] + \text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])) + 6*b^2*B^2*c^2*n^2*(\text{Log}[(a + b*x)/(c + d*x)]*(-(a*d*\text{Log}[(a + b*x)/(c + d*x)]^2) + 6*(b*c - a*d)* \text{Log}[(b*c - a*d)/(b*c + b*d*x)] + 3*d*\text{Log}[(a + b*x)/(c + d*x)]*(a + b*x + a*\text{Log}[(b*c - a*d)/(b*c + b*d*x)])) + 6*(b*c - a*d + a*d*\text{Log}[(a + b*x)/(c + d*x)])*\text{PolyLog}[2, (d*(a + b*x))/(b*(c + d*x))] - 6*a*d*\text{PolyLog}[3, (d*(a + b*x))/(b*(c + d*x))] - 3*b*B^2*c*n^2*(6*b^2*c^2*\text{Log}[(b*c - a*d)/(c + d*x)] - 12*a*b*c*d*\text{Log}[(b*c - a*d)/(c + d*x)] + 6*a$

$$\begin{aligned}
&^2*d^2*Log[(b*c - a*d)/(c + d*x)] + 6*a*b*c*d*Log[(a + b*x)/(c + d*x)] - 6* \\
&a^2*d^2*Log[(a + b*x)/(c + d*x)] + 6*b^2*c*d*x*Log[(a + b*x)/(c + d*x)] - 6 \\
&*a*b*d^2*x*Log[(a + b*x)/(c + d*x)] + 9*a^2*d^2*Log[(a + b*x)/(c + d*x)]^2 \\
&+ 6*a*b*d^2*x*Log[(a + b*x)/(c + d*x)]^2 - 3*b^2*d^2*x^2*Log[(a + b*x)/(c + \\
&d*x)]^2 - 2*a^2*d^2*Log[(a + b*x)/(c + d*x)]^3 + 6*b^2*c^2*Log[(a + b*x)/(c \\
&+ d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] + 12*a*b*c*d*Log[(a + b*x)/(c + d* \\
&x)]*Log[(b*c - a*d)/(b*c + b*d*x)] - 18*a^2*d^2*Log[(a + b*x)/(c + d*x)]*Lo \\
&g[(b*c - a*d)/(b*c + b*d*x)] + 6*a^2*d^2*Log[(a + b*x)/(c + d*x)]^2*Log[(b* \\
&c - a*d)/(b*c + b*d*x)] + 6*(b^2*c^2 + 2*a*b*c*d - 3*a^2*d^2 + 2*a^2*d^2*Lo \\
&g[(a + b*x)/(c + d*x)])*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))] - 12*a^2*d^ \\
&2*PolyLog[3, (d*(a + b*x))/(b*(c + d*x))] + B^2*n^2*(2*b^3*c^3 - 4*a*b^2*c \\
&^2*d + 2*a^2*b*c*d^2 + 2*b^3*c^2*d*x - 4*a*b^2*c*d^2*x + 2*a^2*b*d^3*x + 6* \\
&b^3*c^3*Log[(b*c - a*d)/(c + d*x)] - 18*a^2*b*c*d^2*Log[(b*c - a*d)/(c + d* \\
&x)] + 12*a^3*d^3*Log[(b*c - a*d)/(c + d*x)] + 4*a*b^2*c^2*d*Log[(a + b*x)/(c \\
&+ d*x)] + 8*a^2*b*c*d^2*Log[(a + b*x)/(c + d*x)] - 12*a^3*d^3*Log[(a + b* \\
&x)/(c + d*x)] + 4*b^3*c^2*d*x*Log[(a + b*x)/(c + d*x)] + 6*a*b^2*c*d^2*x*Lo \\
&g[(a + b*x)/(c + d*x)] - 10*a^2*b*d^3*x*Log[(a + b*x)/(c + d*x)] - 2*b^3*c* \\
&d^2*x^2*Log[(a + b*x)/(c + d*x)] + 2*a*b^2*d^3*x^2*Log[(a + b*x)/(c + d*x)] \\
&+ 11*a^3*d^3*Log[(a + b*x)/(c + d*x)]^2 + 6*a^2*b*d^3*x*Log[(a + b*x)/(c + \\
&d*x)]^2 - 3*a*b^2*d^3*x^2*Log[(a + b*x)/(c + d*x)]^2 + 2*b^3*d^3*x^3*Log[(\\
&a + b*x)/(c + d*x)]^2 - 2*a^3*d^3*Log[(a + b*x)/(c + d*x)]^3 + 4*b^3*c^3*Lo \\
&g[(a + b*x)/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] + 6*a*b^2*c^2*d*Log[(\\
&a + b*x)/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] + 12*a^2*b*c*d^2*Log[(a \\
&+ b*x)/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] - 22*a^3*d^3*Log[(a + b*x) \\
&/ (c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] + 6*a^3*d^3*Log[(a + b*x)/(c + d \\
&*x)]^2*Log[(b*c - a*d)/(b*c + b*d*x)] + 2*(2*b^3*c^3 + 3*a*b^2*c^2*d + 6*a^ \\
&2*b*c*d^2 - 11*a^3*d^3 + 6*a^3*d^3*Log[(a + b*x)/(c + d*x)])*PolyLog[2, (d* \\
&(a + b*x))/(b*(c + d*x))] - 12*a^3*d^3*PolyLog[3, (d*(a + b*x))/(b*(c + d*x \\
&))] - 6*b^3*B^2*c^3*n^2*(Log[(-b*c) + a*d]/(d*(a + b*x)))*Log[(a + b*x)/(c \\
&+ d*x)]^2 - 2*Log[(a + b*x)/(c + d*x)]*PolyLog[2, (b*(c + d*x))/(d*(a + b \\
&*x))] - 2*PolyLog[3, (b*(c + d*x))/(d*(a + b*x))])/(6*b^4*g)
\end{aligned}$$

fricas [F] time = 0.74, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{A^2 d^3 i^3 x^3 + 3 A^2 c d^2 i^3 x^2 + 3 A^2 c^2 d i^3 x + A^2 c^3 i^3 + (B^2 d^3 i^3 x^3 + 3 B^2 c d^2 i^3 x^2 + 3 B^2 c^2 d i^3 x + B^2 c^3 i^3) \log(bgx + ag)}{bgx + ag} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g),x, a lgorithm="fricas")

[Out] integral((A^2*d^3*i^3*x^3 + 3*A^2*c*d^2*i^3*x^2 + 3*A^2*c^2*d*i^3*x + A^2*c

$$\begin{aligned} &^3i^3 + (B^2d^3i^3x^3 + 3B^2cd^2i^3x^2 + 3B^2c^2di^3x + B^2c \\ &^3i^3)\log(e((bx+a)/(dx+c))^n)^2 + 2*(A*B*d^3i^3x^3 + 3*A*B*c*d^2 \\ &i^3x^2 + 3*A*B*c^2*di^3x + A*B*c^3i^3)\log(e((bx+a)/(dx+c))^n) \\ &/ (b*g*x + a*g), x \end{aligned}$$

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g),x, a
lgorithm="giac")

[Out] Timed out

maple [F] time = 0.45, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci)^3 \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)^2}{bgx + ag} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*i*x+c*i)^3*(B*ln(e((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g),x)

[Out] int((d*i*x+c*i)^3*(B*ln(e((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g),x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g),x, a
lgorithm="maxima")

[Out] $3A^2c^2d^3i^3(x/(b*g) - a*\log(b*x + a)/(b^2*g)) - 1/6A^2d^3i^3(6a^3$
 $*\log(b*x + a)/(b^4*g) - (2*b^2*x^3 - 3*a*b*x^2 + 6*a^2*x)/(b^3*g)) + 3/2A^$
 $2*c*d^2i^3(2*a^2*\log(b*x + a)/(b^3*g) + (b*x^2 - 2*a*x)/(b^2*g)) + A^2*c^$
 $3*i^3*\log(b*g*x + a*g)/(b*g) + 1/6*(2*B^2*b^3*d^3i^3*x^3 + 3*(3*b^3*c*d^2*$
 $i^3 - a*b^2*d^3i^3)*B^2*x^2 + 6*(3*b^3*c^2*d^2i^3 - 3*a*b^2*c*d^2i^3 + a^2$
 $*b*d^3i^3)*B^2*x + 6*(b^3*c^3i^3 - 3*a*b^2*c^2*d^2i^3 + 3*a^2*b*c*d^2i^3$
 $- a^3*d^3i^3)*B^2*\log(b*x + a)*\log((d*x + c))^2/(b^4*g) - \text{integrate}(-1/$
 $3*(3*B^2*b^4*c^4*i^3*\log(e)^2 + 6*A*B*b^4*c^4*i^3*\log(e) + 3*(B^2*b^4*d^4*i$
 $^3*\log(e)^2 + 2*A*B*b^4*d^4*i^3*\log(e))*x^4 + 12*(B^2*b^4*c*d^3i^3*\log(e)^$
 $2 + 2*A*B*b^4*c*d^3i^3*\log(e))*x^3 + 18*(B^2*b^4*c^2*d^2i^3*\log(e)^2 + 2*$

```

A*B*b^4*c^2*d^2*i^3*log(e))*x^2 + 3*(B^2*b^4*d^4*i^3*x^4 + 4*B^2*b^4*c*d^3*
i^3*x^3 + 6*B^2*b^4*c^2*d^2*i^3*x^2 + 4*B^2*b^4*c^3*d*i^3*x + B^2*b^4*c^4*i
^3)*log((b*x + a)^n)^2 + 12*(B^2*b^4*c^3*d*i^3*log(e)^2 + 2*A*B*b^4*c^3*d*i
^3*log(e))*x + 6*(B^2*b^4*c^4*i^3*log(e) + A*B*b^4*c^4*i^3 + (B^2*b^4*d^4*i
^3*log(e) + A*B*b^4*d^4*i^3))*x^4 + 4*(B^2*b^4*c*d^3*i^3*log(e) + A*B*b^4*c*
d^3*i^3)*x^3 + 6*(B^2*b^4*c^2*d^2*i^3*log(e) + A*B*b^4*c^2*d^2*i^3))*x^2 + 4
*(B^2*b^4*c^3*d*i^3*log(e) + A*B*b^4*c^3*d*i^3)*x*log((b*x + a)^n) - (6*B^
2*b^4*c^4*i^3*log(e) + 6*A*B*b^4*c^4*i^3 + 2*(3*A*B*b^4*d^4*i^3 + (i^3*n +
3*i^3*log(e))*B^2*b^4*d^4))*x^4 + (24*A*B*b^4*c*d^3*i^3 - (a*b^3*d^4*i^3*n -
3*(3*i^3*n + 8*i^3*log(e))*b^4*c*d^3)*B^2)*x^3 + 3*(12*A*B*b^4*c^2*d^2*i^3
- (3*a*b^3*c*d^3*i^3*n - a^2*b^2*d^4*i^3*n - 6*(i^3*n + 2*i^3*log(e))*b^4*
c^2*d^2)*B^2)*x^2 + 6*(4*A*B*b^4*c^3*d*i^3 + (3*a*b^3*c^2*d^2*i^3*n - 3*a^2
*b^2*c*d^3*i^3*n + a^3*b*d^4*i^3*n + 4*b^4*c^3*d*i^3*log(e))*B^2)*x + 6*((b
^4*c^3*d*i^3*n - 3*a*b^3*c^2*d^2*i^3*n + 3*a^2*b^2*c*d^3*i^3*n - a^3*b*d^4*
i^3*n)*B^2*x + (a*b^3*c^3*d*i^3*n - 3*a^2*b^2*c^2*d^2*i^3*n + 3*a^3*b*c*d^3
*i^3*n - a^4*d^4*i^3*n)*B^2)*log(b*x + a) + 6*(B^2*b^4*d^4*i^3*x^4 + 4*B^2*
b^4*c*d^3*i^3*x^3 + 6*B^2*b^4*c^2*d^2*i^3*x^2 + 4*B^2*b^4*c^3*d*i^3*x + B^2
*b^4*c^4*i^3)*log((b*x + a)^n))*log((d*x + c)^n))/(b^5*d*g*x^2 + a*b^4*c*g
+ (b^5*c*g + a*b^4*d*g)*x), x)

```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ci + dix)^3 \left(A + B \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{ag + bgx} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x),x)
```

```
[Out] int(((c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(b*g*x+a*g),x)
```

```
[Out] Timed out
```

$$3.183 \quad \int \frac{(ci+dix)^3 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag+bgx)^2} dx$$

Optimal. Leaf size=739

$$\frac{2d^2i^3(a+bx)(bc-ad) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)^2}{b^4g^2} - \frac{Bd^2i^3n(a+bx)(bc-ad) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{b^4g^2} + \dots$$

```
[Out] -2*B^2*(-a*d+b*c)^2*i^3*n^2*(d*x+c)/b^3/g^2/(b*x+a)-B*d^2*(-a*d+b*c)*i^3*n*(b*x+a)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b^4/g^2-2*B*(-a*d+b*c)^2*i^3*n*(d*x+c)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b^3/g^2/(b*x+a)+2*d^2*(-a*d+b*c)*i^3*(b*x+a)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/b^4/g^2-(-a*d+b*c)^2*i^3*(d*x+c)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/b^3/g^2/(b*x+a)+1/2*d*i^3*(d*x+c)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/b^2/g^2+4*B*d*(-a*d+b*c)^2*i^3*n*(A+B*ln(e*((b*x+a)/(d*x+c))^n))*ln((-a*d+b*c)/b/(d*x+c))/b^4/g^2+B^2*d*(-a*d+b*c)^2*i^3*n^2*ln(d*x+c)/b^4/g^2+B*d*(-a*d+b*c)^2*i^3*n*(A+B*ln(e*((b*x+a)/(d*x+c))^n))*ln(1-b*(d*x+c)/d/(b*x+a))/b^4/g^2-3*d*(-a*d+b*c)^2*i^3*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2*ln(1-b*(d*x+c)/d/(b*x+a))/b^4/g^2+4*B^2*d*(-a*d+b*c)^2*i^3*n^2*polylog(2,d*(b*x+a)/b/(d*x+c))/b^4/g^2-B^2*d*(-a*d+b*c)^2*i^3*n^2*polylog(2,b*(d*x+c)/d/(b*x+a))/b^4/g^2+6*B*d*(-a*d+b*c)^2*i^3*n*(A+B*ln(e*((b*x+a)/(d*x+c))^n))*polylog(2,b*(d*x+c)/d/(b*x+a))/b^4/g^2+6*B^2*d*(-a*d+b*c)^2*i^3*n^2*polylog(3,b*(d*x+c)/d/(b*x+a))/b^4/g^2
```

Rubi [B] time = 4.74, antiderivative size = 1875, normalized size of antiderivative = 2.54, number of steps used = 83, number of rules used = 23, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}} = 0.511$, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 2486, 31, 44, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b*g*x)^2,x]
```

```
[Out] -((A*B*d^2*(b*c - a*d)*i^3*n*x)/(b^3*g^2)) - (2*B^2*(b*c - a*d)^3*i^3*n^2)/(b^4*g^2*(a + b*x)) - (2*B^2*d*(b*c - a*d)^2*i^3*n^2*Log[a + b*x])/(b^4*g^2) - (3*A*B*d*(b*c - a*d)^2*i^3*n*Log[a + b*x]^2)/(b^4*g^2) + (a^2*B^2*d^3*i^3*n^2*Log[a + b*x]^2)/(2*b^4*g^2) - (a*B^2*d^2*(3*b*c - 2*a*d)*i^3*n^2*Log[a + b*x]^2)/(b^4*g^2) + (B^2*d*(b*c - a*d)^2*i^3*n^2*Log[a + b*x]^2)/(b^4*g^2) - (B^2*d^2*(b*c - a*d)*i^3*n*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n])/(b^4*g^2) - (3*B^2*d*(b*c - a*d)^2*i^3*Log[-((b*c - a*d)/(d*(a + b*x))])*L
```

$$\begin{aligned} & \log[e*((a + b*x)/(c + d*x))^n]^2)/(b^4*g^2) - (3*B^2*d*(b*c - a*d)^2*i^3*Log \\ & [a + b*x]*Log[e*((a + b*x)/(c + d*x))^n]^2)/(b^4*g^2) - (2*B*(b*c - a*d)^3* \\ & i^3*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(b^4*g^2*(a + b*x)) - (a^2*B* \\ & d^3*i^3*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(b^4*g^2) + \\ & (2*a*B*d^2*(3*b*c - 2*a*d)*i^3*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + \\ & d*x))^n]))/(b^4*g^2) - (2*B*d*(b*c - a*d)^2*i^3*n*Log[a + b*x]*(A + B*Log[e \\ & *((a + b*x)/(c + d*x))^n]))/(b^4*g^2) + (d^2*(3*b*c - 2*a*d)*i^3*x*(A + B*L \\ & og[e*((a + b*x)/(c + d*x))^n]^2)/(b^3*g^2) + (d^3*i^3*x^2*(A + B*Log[e*((a \\ & + b*x)/(c + d*x))^n]^2)/(2*b^2*g^2) - ((b*c - a*d)^3*i^3*(A + B*Log[e*((a \\ & + b*x)/(c + d*x))^n]^2)/(b^4*g^2*(a + b*x)) + (3*d*(b*c - a*d)^2*i^3*Log[\\ & a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]^2)/(b^4*g^2) + (3*B^2*d*(b* \\ & c - a*d)^2*i^3*n^2*Log[c + d*x])/(b^4*g^2) - (B^2*c^2*d*i^3*n^2*Log[-((d*(a \\ & + b*x))/(b*c - a*d))]*Log[c + d*x])/(b^2*g^2) + (2*B^2*c*d*(3*b*c - 2*a*d) \\ & *i^3*n^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(b^3*g^2) - (2*B^2 \\ & *d*(b*c - a*d)^2*i^3*n^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(b \\ & ^4*g^2) + (B*c^2*d*i^3*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x \\ &])/(b^2*g^2) - (2*B*c*d*(3*b*c - 2*a*d)*i^3*n*(A + B*Log[e*((a + b*x)/(c + \\ & d*x))^n])*Log[c + d*x])/(b^3*g^2) + (2*B*d*(b*c - a*d)^2*i^3*n*(A + B*Log[e \\ & *((a + b*x)/(c + d*x))^n])*Log[c + d*x])/(b^4*g^2) + (B^2*c^2*d*i^3*n^2*Log \\ & [c + d*x]^2)/(2*b^2*g^2) - (B^2*c*d*(3*b*c - 2*a*d)*i^3*n^2*Log[c + d*x]^2) \\ & / (b^3*g^2) + (B^2*d*(b*c - a*d)^2*i^3*n^2*Log[c + d*x]^2)/(b^4*g^2) + (6*A* \\ & B*d*(b*c - a*d)^2*i^3*n*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)]/(b^4*g \\ & ^2) - (a^2*B^2*d^3*i^3*n^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)]/(b^ \\ & 4*g^2) + (2*a*B^2*d^2*(3*b*c - 2*a*d)*i^3*n^2*Log[a + b*x]*Log[(b*(c + d*x) \\ &)/(b*c - a*d)]/(b^4*g^2) - (2*B^2*d*(b*c - a*d)^2*i^3*n^2*Log[a + b*x]*Log \\ & [(b*(c + d*x))/(b*c - a*d)]/(b^4*g^2) + (6*A*B*d*(b*c - a*d)^2*i^3*n*PolyL \\ & og[2, -((d*(a + b*x))/(b*c - a*d))]/(b^4*g^2) - (a^2*B^2*d^3*i^3*n^2*PolyL \\ & og[2, -((d*(a + b*x))/(b*c - a*d))]/(b^4*g^2) + (2*a*B^2*d^2*(3*b*c - 2*a* \\ & d)*i^3*n^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))]/(b^4*g^2) - (2*B^2*d*(\\ & b*c - a*d)^2*i^3*n^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))]/(b^4*g^2) - \\ & (B^2*c^2*d*i^3*n^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]/(b^2*g^2) + (2*B^ \\ & 2*c*d*(3*b*c - 2*a*d)*i^3*n^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]/(b^3*g \\ & ^2) - (2*B^2*d*(b*c - a*d)^2*i^3*n^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)] \\ & / (b^4*g^2) + (6*B^2*d*(b*c - a*d)^2*i^3*n*Log[e*((a + b*x)/(c + d*x))^n]*Po \\ & lyLog[2, 1 + (b*c - a*d)/(d*(a + b*x))]/(b^4*g^2) + (6*B^2*d*(b*c - a*d)^2 \\ & *i^3*n^2*PolyLog[3, 1 + (b*c - a*d)/(d*(a + b*x))]/(b^4*g^2) \end{aligned}$$

Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^-1, x_Symbol] := Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] := Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
x_Symbol] := Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]/(x_), x_Symbol] := -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
```

$(e*f - d*g), 0]$

Rule 2394

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2411

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int[(g*x/e)^q*(e*h - d*i)/e + (i*x)/e]^r*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]

Rule 2418

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]

Rule 2486

Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]

Rule 2488

Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] :> -Simp[(Log[-(b*c - a*d)/(d*(a + b*x))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/h, x] + Dist[(p*r*s*(b*c - a*d))/h, Int[(Log[-(b*c - a*d)/(d*(a + b*x))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1)/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c, d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ[b*g - a*h, 0] && IGtQ[s, 0]

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*(a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)]^(r_.)]^(s_.)*(u_), x_Symbol] := With[{g = Simplify[((v - 1)*(c + d*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/(b*c - a*d), x] + Dist[h*p*r*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1))/(a + b*x)*(c + d*x), x], x] /; FreeQ[{g, h}, x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*(a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)]^(r_.)]^(s_.)*Log[(i_.)*((j_.)*(g_.) + (h_.)*(x_))^(t_.)]^(u_.)]*(v_), x_Symbol] := With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g + h*x)^t]^u)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s + 1)/(p*r*(s + 1)*(b*c - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s + 1)/(g + h*x), x], x] /; FreeQ[k, x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2523

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] := Simp[x*(a + b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
```



```
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] := With[{w = DerivativeDivides[v, u*v, x]}, Simp[w*PolyLog[n + 1, v], x] /; !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] := With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; SimplifyIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] := With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]]
```

Rubi steps

$$\begin{aligned}
\int \frac{(183c + 183dx)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag + bgx)^2} dx &= \int \left(\frac{6128487d^2(3bc - 2ad) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^3g^2} + \frac{6128487d^3}{b^3g^2} \right) dx \\
&= \frac{(6128487d^3) \int x \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx}{b^2g^2} + \frac{6128487d^3 \int dx}{b^3g^2} \\
&= \frac{6128487d^2(3bc - 2ad)x \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^3g^2} + \frac{6128487d^3x}{b^3g^2} \\
&= \frac{6128487d^2(3bc - 2ad)x \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^3g^2} + \frac{6128487d^3x}{b^3g^2} \\
&= \frac{6128487d^2(3bc - 2ad)x \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^3g^2} + \frac{6128487d^3x}{b^3g^2} \\
&= \frac{6128487d^2(3bc - 2ad)x \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^3g^2} + \frac{6128487d^3x}{b^3g^2} \\
&= -\frac{6128487ABd^2(bc - ad)nx}{b^3g^2} - \frac{12256974B(bc - ad)^3n \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^4g^2(a + bx)} \\
&= -\frac{6128487ABd^2(bc - ad)nx}{b^3g^2} - \frac{6128487B^2d^2(bc - ad)n(a + bx)}{b^4g^2} \\
&= -\frac{6128487ABd^2(bc - ad)nx}{b^3g^2} - \frac{6128487B^2d^2(bc - ad)n(a + bx)}{b^4g^2} \\
&= -\frac{6128487ABd^2(bc - ad)nx}{b^3g^2} - \frac{12256974B^2(bc - ad)^3n^2}{b^4g^2(a + bx)} - \frac{12256974B^2(bc - ad)^3n^2}{b^4g^2(a + bx)} \\
&= -\frac{6128487ABd^2(bc - ad)nx}{b^3g^2} - \frac{12256974B^2(bc - ad)^3n^2}{b^4g^2(a + bx)} - \frac{12256974B^2(bc - ad)^3n^2}{b^4g^2(a + bx)}
\end{aligned}$$

$$6128487ABd^2(bc - ad)nx \quad 12256974B^2(bc - ad)^3n^2 \quad 12256974B^2(bc - ad)^3n^2$$

Mathematica [B] time = 14.83, size = 4942, normalized size = 6.69

Result too large to show

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b*g*x)^2,x]

[Out] $(d^2(3bc - 2ad)i^3x(A + B(\log[e((a + b*x)/(c + d*x))^n] - n\log[(a + b*x)/(c + d*x)]))^2/(b^3g^2) + (d^3i^3x^2(A + B(\log[e((a + b*x)/(c + d*x))^n] - n\log[(a + b*x)/(c + d*x)]))^2/(2b^2g^2) + (3d(bc - ad)^2i^3\log[a + b*x](A + B(\log[e((a + b*x)/(c + d*x))^n] - n\log[(a + b*x)/(c + d*x)]))^2/(b^4g^2) + (-A^2b^3c^3i^3 + 3aA^2b^2c^2di^3 - 3a^2A^2b^3c^3i^3 + a^3A^2d^3i^3 - 2Ab^3B^3c^3i^3(\log[e((a + b*x)/(c + d*x))^n] - n\log[(a + b*x)/(c + d*x)]) + 6aAb^2B^3c^2di^3(\log[e((a + b*x)/(c + d*x))^n] - n\log[(a + b*x)/(c + d*x)]) - 6a^2AB^3c^2d^2i^3(\log[e((a + b*x)/(c + d*x))^n] - n\log[(a + b*x)/(c + d*x)]) + 2a^3AB^3d^3i^3(\log[e((a + b*x)/(c + d*x))^n] - n\log[(a + b*x)/(c + d*x)])) - b^3B^2c^3i^3(\log[e((a + b*x)/(c + d*x))^n] - n\log[(a + b*x)/(c + d*x)])^2 + 3aAb^2B^2c^2di^3(\log[e((a + b*x)/(c + d*x))^n] - n\log[(a + b*x)/(c + d*x)])^2 - 3a^2bB^2c^2d^2i^3(\log[e((a + b*x)/(c + d*x))^n] - n\log[(a + b*x)/(c + d*x)])^2 + a^3B^2d^3i^3(\log[e((a + b*x)/(c + d*x))^n] - n\log[(a + b*x)/(c + d*x)])^2)/(b^4g^2(a + b*x)) + (2B^3c^3i^3n(A + B(\log[e((a + b*x)/(c + d*x))^n] - n\log[(a + b*x)/(c + d*x)])))*(-((a/b + x)(\log[a/b + x] + \log[a/b + x]^2))/((a + b*x)^2\log[a/b + x]) - ((b(c/d + x)\log[c/d + x])/((-a + (b*c)/d)^2(1 - (b(c/d + x))/(-a + (b*c)/d))) + \log[1 - (b(c/d + x))/(-a + (b*c)/d)]/(-a + (b*c)/d)/b - (-\log[a/b + x] + \log[c/d + x] + \log[a/(c + d*x) + (b*x)/(c + d*x)]/(b(a + b*x))))/g^2 + (2B^3d^3i^3n(A + B(\log[e((a + b*x)/(c + d*x))^n] - n\log[(a + b*x)/(c + d*x)])))*((-2a(a/b + x)(-1 + \log[a/b + x]))/b^3 + (3a^2\log[a/b + x]^2)/(2b^4) + (a^3(1 + \log[a/b + x]))/(b^4(a + b*x)) + (2a(c/d + x)(-1 + \log[c/d + x]))/b^3 + ((ax)/(2b) - x^2/4 + (x^2\log[a/b + x])/2 - (a^2\log[a + b*x])/(2b^2))/b^2 - ((cx)/(2d) - x^2/4 + (x^2\log[c/d + x])/2 - (c^2\log[c + d*x])/(2d^2))/b^2 + (a^3(-(\log[c/d + x]/(b(a + b*x)))) + (d(\log[a + b*x]/(b*c - a*d) - \log[c + d*x]/(b*c - a*d)))/b)/b^3 + ((-4a*b*x + b^2*x^2 + (2a^3)/(a + b*x) + 6a^2\log[a + b*x])*(-\log[a/b + x] + \log[c/d + x] + \log[a/(c + d*x) + (b*x)/(c + d*x)]))/(2b^4) - (3a^2(\log[c/d + x]\log[(a + b*x)/(a - (b*c)/d)])/b + \text{PolyLog}[2, (b*d(c/d + x))/(b*c - a*d)]/b)/b^3)/g^2 + (6B^3c^2d^2i^3n(A + B(\log[e((a + b*x)/(c + d*x))^n] - n\log[(a + b*x)/(c + d*x)])))*((a/b + x)(-1 + \log[a/b + x]))/b^2 - (a\log[a/b + x]^2)/b^3 - (a^2(1 + \log[a/b + x]))/(b^3(a + b*x)) - ((c/d + x)(-1 + \log[c/d + x]))/b^2 - (a^2(-(\log[c/d + x]/(b(a + b*x)))) + (d(\log[a + b*x]/(b*c - a*d) - \log[c + d*x]/(b*c - a*d)))/b)/b^2 + ((b*x - a^2)/(a + b*x) - 2a\log[a + b*x])*(-\log[a/b + x] + \log[c/d + x] + \log[a/(c + d*x) + (b*x)/(c + d*x)]))$

$$\begin{aligned}
& + d*x) + (b*x)/(c + d*x)))/b^3 + (2*a*((\text{Log}[c/d + x]*\text{Log}[(a + b*x)/(a - (b*c)/d)]))/b + \text{PolyLog}[2, (b*d*(c/d + x))/(b*c - a*d)]/b)/b^2)/g^2 + (6*B*c^2*d*i^3*n*(A + B*(\text{Log}[e*((a + b*x)/(c + d*x))^n] - n*\text{Log}[(a + b*x)/(c + d*x)]))*(\text{Log}[a/b + x]^2/(2*b^2) + (a*(1 + \text{Log}[a/b + x]))/(b^2*(a + b*x)) + (a*(-\text{Log}[c/d + x]/(b*(a + b*x))) + (d*(\text{Log}[a + b*x]/(b*c - a*d) - \text{Log}[c + d*x]/(b*c - a*d)))/b))/b + ((a/(a + b*x) + \text{Log}[a + b*x])*(-\text{Log}[a/b + x] + \text{Log}[c/d + x] + \text{Log}[a/(c + d*x) + (b*x)/(c + d*x)]))/b^2 - ((\text{Log}[c/d + x]*\text{Log}[(a + b*x)/(a - (b*c)/d)])/b + \text{PolyLog}[2, (b*d*(c/d + x))/(b*c - a*d)]/b)/b)/g^2 + (B^2*c^3*i^3*n^2*(-2*b*c + 2*a*d - 2*d*(a + b*x)*\text{Log}[a + b*x] - 2*(b*c - a*d)*\text{Log}[(a + b*x)/(c + d*x)] - 2*d*(a + b*x)*\text{Log}[a + b*x]*\text{Log}[(a + b*x)/(c + d*x)] - (b*c - a*d)*\text{Log}[(a + b*x)/(c + d*x)]^2 + 2*d*(a + b*x)*\text{Log}[c + d*x] - 2*d*(a + b*x)*\text{Log}[(a + b*x)/(c + d*x)]*\text{Log}[(b*c - a*d)/(b*c + b*d*x)] + d*(a + b*x)*(\text{Log}[a + b*x]*(\text{Log}[a + b*x] - 2*\text{Log}[(b*(c + d*x))/(b*c - a*d)]) - 2*\text{PolyLog}[2, (d*(a + b*x))/(-b*c + a*d)])) + d*(a + b*x)*(\text{Log}[(b*c - a*d)/(b*c + b*d*x)]*(2*\text{Log}[(d*(a + b*x))/(-b*c + a*d)] + \text{Log}[(b*c - a*d)/(b*c + b*d*x)])) - 2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])))/(b*(b*c - a*d)*g^2*(a + b*x) + (B^2*d^3*i^3*n^2*((-2*b^2*c^2*(b*c - a*d)*\text{Log}[(b*c - a*d)/(c + d*x)])/d^2 + 2*a^2*(-b*c + a*d)*\text{Log}[(b*c - a*d)/(c + d*x)] - (4*a*b*c*(-b*c + a*d)*\text{Log}[(b*c - a*d)/(c + d*x)])/d + (b^3*c^3*\text{Log}[(a + b*x)/(c + d*x)]^2)/d^2 - (a*b^2*c^2*\text{Log}[(a + b*x)/(c + d*x)]^2)/d - ((b*c - a*d)^2*(b*c + 5*a*d)*\text{Log}[(a + b*x)/(c + d*x)]^2)/d^2 + (b*c - a*d)*(a + b*x)^2*\text{Log}[(a + b*x)/(c + d*x)]^2 + 2*a^2*b*c*\text{Log}[(a + b*x)/(c + d*x)]^3 - 2*a^3*d*\text{Log}[(a + b*x)/(c + d*x)]^3 + (2*(-b*c) + a*d)*(a + b*x)*\text{Log}[(a + b*x)/(c + d*x)]*(b*c - a*d + 3*a*d*\text{Log}[(a + b*x)/(c + d*x)]))/d + (2*a^3*b*(c + d*x)*(2 + 2*\text{Log}[(a + b*x)/(c + d*x)] + \text{Log}[(a + b*x)/(c + d*x)]^2))/(a + b*x) - 9*a^2*b*c*(\text{Log}[(a + b*x)/(c + d*x)]*(\text{Log}[(a + b*x)/(c + d*x)] - 2*\text{Log}[(b*c - a*d)/(b*c + b*d*x)])) - 2*\text{PolyLog}[2, (d*(a + b*x))/(b*(c + d*x))]) + (4*a*b^2*c^2*(\text{Log}[(a + b*x)/(c + d*x)]*(\text{Log}[(a + b*x)/(c + d*x)] - 2*\text{Log}[(b*c - a*d)/(b*c + b*d*x)])) - 2*\text{PolyLog}[2, (d*(a + b*x))/(b*(c + d*x))])/d + 5*a^3*d*(\text{Log}[(a + b*x)/(c + d*x)]*(\text{Log}[(a + b*x)/(c + d*x)] - 2*\text{Log}[(b*c - a*d)/(b*c + b*d*x)])) - 2*\text{PolyLog}[2, (d*(a + b*x))/(b*(c + d*x))]) - (b^2*c^2*(b*c - a*d)*(\text{Log}[(a + b*x)/(c + d*x)]*(2*\text{Log}[-(b*c) + a*d]/(d*(a + b*x)))) + \text{Log}[(a + b*x)/(c + d*x)] - 2*\text{PolyLog}[2, (b*(c + d*x))/(d*(a + b*x))])/d^2 + 2*a^2*(-b*c + a*d)*(\text{Log}[(a + b*x)/(c + d*x)]^2*(3*\text{Log}[-(b*c) + a*d]/(d*(a + b*x)) + \text{Log}[(a + b*x)/(c + d*x)])) - 6*\text{Log}[(a + b*x)/(c + d*x)]*\text{PolyLog}[2, (b*(c + d*x))/(d*(a + b*x))] - 6*\text{PolyLog}[3, (b*(c + d*x))/(d*(a + b*x))])/((2*b^4*(b*c - a*d)*g^2) + (B^2*c^2*d*i^3*n^2*(6*b*c - 6*a*d - (6*b^2*c*x)/(a + b*x) + (6*a*b*d*x)/(a + b*x) + 6*a*d*\text{Log}[a/b + x] + 3*b*c*\text{Log}[a/b + x]^2 - 3*a*d*\text{Log}[a/b + x]^2 - 6*b*c*\text{Log}[c/d + x] + 6*b*c*\text{Log}[a + b*x] - 6*a*d*\text{Log}[a + b*x] - 6*b*c*\text{Log}[a/b + x]*\text{Log}[a + b*x] + 6*a*d*\text{Log}[a/b + x]*\text{Log}[a + b*x] + 6*b*c*\text{Log}[c/d + x]*\text{Log}[a + b*x] - 6*a*d*\text{Log}[c/d + x]*\text{Log}[a + b*x] - 6*b*c*\text{Log}[c/d + x]*\text{Log}[(d*(a + b*x))/(-b*c + a*d)] + 6*a*d*\text{Log}[c/d + x]*\text{Log}[(d*(a + b*x))/(-b*c + a*d)] - (6*b*(b*c - a*d)*x*\text{Log}[(a + b*x)/(c + d*x)]/(a + b*x) + 6*b*c*\text{Log}[a + b*x]*\text{Log}[(a + b*x)/(c + d*x)] - 6*a*d*\text{Log}[a + b*x]*\text{Log}[(a + b*x)/(c + d*x)] + 3*a*d*\text{Log}[(a + b*x)/(c + d
\end{aligned}$$

```

*x)]^2 + 3*b*d*x*Log[(a + b*x)/(c + d*x)]^2 - (3*b^2*x*(c + d*x)*Log[(a + b
*x)/(c + d*x)]^2)/(a + b*x) - 3*b*c*Log[(-(b*c) + a*d)/(d*(a + b*x))]*Log[(
a + b*x)/(c + d*x)]^2 - a*d*Log[(a + b*x)/(c + d*x)]^3 + 6*b*c*Log[(a + b*x
)/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] - 6*a*d*Log[(a + b*x)/(c + d*x)
]*Log[(b*c - a*d)/(b*c + b*d*x)] + 3*a*d*Log[(a + b*x)/(c + d*x)]^2*Log[(b*c
- a*d)/(b*c + b*d*x)] + 6*(b*c - a*d + a*d*Log[(a + b*x)/(c + d*x)])*Poly
Log[2, (d*(a + b*x))/(b*(c + d*x))] - 6*(b*c - a*d)*PolyLog[2, (b*(c + d*x)
)/(b*c - a*d)] + 6*b*c*Log[(a + b*x)/(c + d*x)]*PolyLog[2, (b*(c + d*x))/(d
*(a + b*x))] - 6*a*d*PolyLog[3, (d*(a + b*x))/(b*(c + d*x))] + 6*b*c*PolyLo
g[3, (b*(c + d*x))/(d*(a + b*x)))]/(b^2*(b*c - a*d)*g^2) - (B^2*c*d*i^3*n^
2*(6*a^2*b*c*d + 6*a^2*b*d^2*x + 6*a^2*b*c*d*Log[(a + b*x)/(c + d*x)] + 6*a
^2*b*d^2*x*Log[(a + b*x)/(c + d*x)] + 12*a^2*b*c*d*Log[(-(b*c) + a*d)/(d*(a
+ b*x))]*Log[(a + b*x)/(c + d*x)] + 12*a*b^2*c*d*x*Log[(-(b*c) + a*d)/(d*(
a + b*x))]*Log[(a + b*x)/(c + d*x)] + 6*a^2*b*c*d*Log[(a + b*x)/(c + d*x)]^
2 + 3*a^3*d^2*Log[(a + b*x)/(c + d*x)]^2 + 9*a^2*b*d^2*x*Log[(a + b*x)/(c +
d*x)]^2 - 3*b^3*c*d*x^2*Log[(a + b*x)/(c + d*x)]^2 + 3*a*b^2*d^2*x^2*Log[(
a + b*x)/(c + d*x)]^2 - 6*a^2*b*c*d*Log[(-(b*c) + a*d)/(d*(a + b*x))]*Log[(
a + b*x)/(c + d*x)]^2 - 6*a*b^2*c*d*x*Log[(-(b*c) + a*d)/(d*(a + b*x))]*Log
[(a + b*x)/(c + d*x)]^2 - 2*a^3*d^2*Log[(a + b*x)/(c + d*x)]^3 - 2*a^2*b*d^
2*x*Log[(a + b*x)/(c + d*x)]^3 - 6*a*b^2*c^2*Log[(a + b*x)/(c + d*x)]*Log[(
b*c - a*d)/(b*c + b*d*x)] - 6*a^3*d^2*Log[(a + b*x)/(c + d*x)]*Log[(b*c - a
*d)/(b*c + b*d*x)] - 6*b^3*c^2*x*Log[(a + b*x)/(c + d*x)]*Log[(b*c - a*d)/(
b*c + b*d*x)] - 6*a^2*b*d^2*x*Log[(a + b*x)/(c + d*x)]*Log[(b*c - a*d)/(b*c
+ b*d*x)] + 6*a^3*d^2*Log[(a + b*x)/(c + d*x)]^2*Log[(b*c - a*d)/(b*c + b*
d*x)] + 6*a^2*b*d^2*x*Log[(a + b*x)/(c + d*x)]^2*Log[(b*c - a*d)/(b*c + b*d
*x)] + 6*(a + b*x)*(-(b^2*c^2) - a^2*d^2 + 2*a^2*d^2*Log[(a + b*x)/(c + d*x
)])*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))] + 12*a*b*c*d*(a + b*x)*(-1 + Lo
g[(a + b*x)/(c + d*x)])*PolyLog[2, (b*(c + d*x))/(d*(a + b*x))] - 12*a^3*d^
2*PolyLog[3, (d*(a + b*x))/(b*(c + d*x))] - 12*a^2*b*d^2*x*PolyLog[3, (d*(a
+ b*x))/(b*(c + d*x))] + 12*a^2*b*c*d*PolyLog[3, (b*(c + d*x))/(d*(a + b*x
))] + 12*a*b^2*c*d*x*PolyLog[3, (b*(c + d*x))/(d*(a + b*x)))]/(b^3*(b*c -
a*d)*g^2*(a + b*x))

```

fricas [F] time = 0.83, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{A^2 d^3 i^3 x^3 + 3 A^2 c d^2 i^3 x^2 + 3 A^2 c^2 d i^3 x + A^2 c^3 i^3 + (B^2 d^3 i^3 x^3 + 3 B^2 c d^2 i^3 x^2 + 3 B^2 c^2 d i^3 x + B^2 c^3 i^3) \log}{b^2 g^2 x^2 + 2 a b g^2 x + a^2} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

```

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^2,x,
algorithm="fricas")

```

```
[Out] integral((A^2*d^3*i^3*x^3 + 3*A^2*c*d^2*i^3*x^2 + 3*A^2*c^2*d*i^3*x + A^2*c^3*i^3 + (B^2*d^3*i^3*x^3 + 3*B^2*c*d^2*i^3*x^2 + 3*B^2*c^2*d*i^3*x + B^2*c^3*i^3)*log(e*((b*x + a)/(d*x + c))^n))^2 + 2*(A*B*d^3*i^3*x^3 + 3*A*B*c*d^2*i^3*x^2 + 3*A*B*c^2*d*i^3*x + A*B*c^3*i^3)*log(e*((b*x + a)/(d*x + c))^n))/(b^2*g^2*x^2 + 2*a*b*g^2*x + a^2*g^2), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^2,x, algorithm="giac")
```

[Out] Timed out

maple [F] time = 0.45, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci)^3 \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)^2}{(bgx + ag)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^2,x)
```

```
[Out] int((d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^2,x, algorithm="maxima")
```

```
[Out] -2*A*B*c^3*i^3*n*(1/(b^2*g^2*x + a*b*g^2) + d*log(b*x + a)/((b^2*c - a*b*d)*g^2) - d*log(d*x + c)/((b^2*c - a*b*d)*g^2)) - 3*A^2*(a^2/(b^4*g^2*x + a*b^3*g^2) - x/(b^2*g^2) + 2*a*log(b*x + a)/(b^3*g^2))*c*d^2*i^3 + 1/2*(2*a^3/(b^5*g^2*x + a*b^4*g^2) + 6*a^2*log(b*x + a)/(b^4*g^2) + (b*x^2 - 4*a*x)/(b^3*g^2))*A^2*d^3*i^3 + 3*A^2*c^2*d*i^3*(a/(b^3*g^2*x + a*b^2*g^2) + log(b*x + a)/(b^2*g^2)) - 2*A*B*c^3*i^3*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^2*g^2*x + a*b*g^2) - A^2*c^3*i^3/(b^2*g^2*x + a*b*g^2) + 1/2*(B^2*b^3*d^3*i^3*x^3 + 3*(2*b^3*c*d^2*i^3 - a*b^2*d^3*i^3)*B^2*x^2 + 2*(3*a*b^2*c*d^2*i^3
```

```

- 2*a^2*b*d^3*i^3)*B^2*x - 2*(b^3*c^3*i^3 - 3*a*b^2*c^2*d*i^3 + 3*a^2*b*c*
d^2*i^3 - a^3*d^3*i^3)*B^2 + 6*((b^3*c^2*d*i^3 - 2*a*b^2*c*d^2*i^3 + a^2*b*
d^3*i^3)*B^2*x + (a*b^2*c^2*d*i^3 - 2*a^2*b*c*d^2*i^3 + a^3*d^3*i^3)*B^2)*l
og(b*x + a))*log((d*x + c)^n)^2/(b^5*g^2*x + a*b^4*g^2) - integrate(-(B^2*b
^4*c^4*i^3*log(e)^2 + (B^2*b^4*d^4*i^3*log(e)^2 + 2*A*B*b^4*d^4*i^3*log(e))
*x^4 + 4*(B^2*b^4*c*d^3*i^3*log(e)^2 + 2*A*B*b^4*c*d^3*i^3*log(e))*x^3 + 6*
(B^2*b^4*c^2*d^2*i^3*log(e)^2 + 2*A*B*b^4*c^2*d^2*i^3*log(e))*x^2 + (B^2*b
^4*d^4*i^3*x^4 + 4*B^2*b^4*c*d^3*i^3*x^3 + 6*B^2*b^4*c^2*d^2*i^3*x^2 + 4*B^2
*b^4*c^3*d*i^3*x + B^2*b^4*c^4*i^3)*log((b*x + a)^n)^2 + 2*(2*B^2*b^4*c^3*d
i^3*log(e)^2 + 3*A*B*b^4*c^3*d*i^3*log(e))*x + 2*(B^2*b^4*c^4*i^3*log(e) +
(B^2*b^4*d^4*i^3*log(e) + A*B*b^4*d^4*i^3)*x^4 + 4*(B^2*b^4*c*d^3*i^3*log(
e) + A*B*b^4*c*d^3*i^3)*x^3 + 6*(B^2*b^4*c^2*d^2*i^3*log(e) + A*B*b^4*c^2*d
^2*i^3)*x^2 + (4*B^2*b^4*c^3*d*i^3*log(e) + 3*A*B*b^4*c^3*d*i^3)*x)*log((b*
x + a)^n) - ((2*A*B*b^4*d^4*i^3 + (i^3*n + 2*i^3*log(e))*B^2*b^4*d^4)*x^4 +
2*(4*A*B*b^4*c*d^3*i^3 - (a*b^3*d^4*i^3*n - (3*i^3*n + 4*i^3*log(e))*b^4*c
*d^3)*B^2)*x^3 - 2*(a*b^3*c^3*d*i^3*n - 3*a^2*b^2*c^2*d^2*i^3*n + 3*a^3*b*c
*d^3*i^3*n - a^4*d^4*i^3*n - b^4*c^4*i^3*log(e))*B^2 + (12*A*B*b^4*c^2*d^2*
i^3 + (12*a*b^3*c*d^3*i^3*n - 7*a^2*b^2*d^4*i^3*n + 12*b^4*c^2*d^2*i^3*log(
e))*B^2)*x^2 + 2*(3*A*B*b^4*c^3*d*i^3 + (3*a*b^3*c^2*d^2*i^3*n - a^3*b*d^4*
i^3*n - (i^3*n - 4*i^3*log(e))*b^4*c^3*d)*B^2)*x + 6*((b^4*c^2*d^2*i^3*n -
2*a*b^3*c*d^3*i^3*n + a^2*b^2*d^4*i^3*n)*B^2*x^2 + 2*(a*b^3*c^2*d^2*i^3*n -
2*a^2*b^2*c*d^3*i^3*n + a^3*b*d^4*i^3*n)*B^2*x + (a^2*b^2*c^2*d^2*i^3*n -
2*a^3*b*c*d^3*i^3*n + a^4*d^4*i^3*n)*B^2)*log(b*x + a) + 2*(B^2*b^4*d^4*i^3
*x^4 + 4*B^2*b^4*c*d^3*i^3*x^3 + 6*B^2*b^4*c^2*d^2*i^3*x^2 + 4*B^2*b^4*c^3*
d*i^3*x + B^2*b^4*c^4*i^3)*log((b*x + a)^n))*log((d*x + c)^n)/(b^6*d*g^2*x
^3 + a^2*b^4*c*g^2 + (b^6*c*g^2 + 2*a*b^5*d*g^2)*x^2 + (2*a*b^5*c*g^2 + a^2
*b^4*d*g^2)*x), x)

```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ci + dix)^3 \left(A + B \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag + bgx)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x)^2,x)
```

```
[Out] int(((c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x)^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(b*g*x+a*g)**2, x)
```

```
[Out] Timed out
```


$$3.184 \quad \int \frac{(ci+dix)^3 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag+bgx)^3} dx$$

Optimal. Leaf size=644

$$\frac{d^3 i^3 (a+bx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)^2}{b^4 g^3} + \frac{6Bd^2 i^3 n(bc-ad) \text{Li}_2 \left(\frac{b(c+dx)}{d(a+bx)} \right) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{b^4 g^3} + \frac{2Bd^2 i^3 n(bc-ad)}{b^4 g^3}$$

[Out] $-4*B^2*d*(-a*d+b*c)*i^3*n^2*(d*x+c)/b^3/g^3/(b*x+a)-1/4*B^2*(-a*d+b*c)*i^3*n^2*(d*x+c)^2/b^2/g^3/(b*x+a)^2-4*B*d*(-a*d+b*c)*i^3*n*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^3/g^3/(b*x+a)-1/2*B*(-a*d+b*c)*i^3*n*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^2/g^3/(b*x+a)^2+d^3*i^3*(b*x+a)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/b^4/g^3-2*d*(-a*d+b*c)*i^3*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/b^3/g^3/(b*x+a)-1/2*(-a*d+b*c)*i^3*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/b^2/g^3/(b*x+a)^2+2*B*d^2*(-a*d+b*c)*i^3*n*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))*\ln((-a*d+b*c)/b/(d*x+c))/b^4/g^3-3*d^2*(-a*d+b*c)*i^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2*\ln(1-b*(d*x+c)/d/(b*x+a))/b^4/g^3+2*B^2*d^2*(-a*d+b*c)*i^3*n^2*\text{polylog}(2,d*(b*x+a)/b/(d*x+c))/b^4/g^3+6*B*d^2*(-a*d+b*c)*i^3*n*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))*\text{polylog}(2,b*(d*x+c)/d/(b*x+a))/b^4/g^3+6*B^2*d^2*(-a*d+b*c)*i^3*n^2*\text{polylog}(3,b*(d*x+c)/d/(b*x+a))/b^4/g^3$

Rubi [B] time = 4.81, antiderivative size = 1512, normalized size of antiderivative = 2.35, number of steps used = 88, number of rules used = 21, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}} = 0.467$, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 44, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610}

result too large to display

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b*g*x)^3,x]

[Out] $-(B^2*(b*c - a*d)^3*i^3*n^2)/(4*b^4*g^3*(a + b*x)^2) - (9*B^2*d*(b*c - a*d)^2*i^3*n^2)/(2*b^4*g^3*(a + b*x)) - (9*B^2*d^2*(b*c - a*d)*i^3*n^2*\text{Log}[a + b*x])/(2*b^4*g^3) - (3*A*B*d^2*(b*c - a*d)*i^3*n*\text{Log}[a + b*x]^2)/(b^4*g^3) - (a*B^2*d^3*i^3*n^2*\text{Log}[a + b*x]^2)/(b^4*g^3) + (5*B^2*d^2*(b*c - a*d)*i^3*n^2*\text{Log}[a + b*x]^2)/(2*b^4*g^3) - (3*B^2*d^2*(b*c - a*d)*i^3*\text{Log}[-((b*c - a*d)/(d*(a + b*x)))]*\text{Log}[e*((a + b*x)/(c + d*x))^n]^2)/(b^4*g^3) - (3*B^2*d^2*(b*c - a*d)*i^3*\text{Log}[a + b*x]*\text{Log}[e*((a + b*x)/(c + d*x))^n]^2)/(b^4*g^3) - (B*(b*c - a*d)^3*i^3*n*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(2*b^4*g^3*(a + b*x)^2) - (5*B*d*(b*c - a*d)^2*i^3*n*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(2*b^4*g^3*(a + b*x)^2)$

$$\begin{aligned} & x))^{n})) / (b^4 g^3 (a + b x)) + (2 a B d^3 i^3 n \operatorname{Log}[a + b x] (A + B \operatorname{Log}[e((a + b x) / (c + d x))^n])) / (b^4 g^3) - (5 B d^2 (b c - a d) i^3 n \operatorname{Log}[a + b x] (A + B \operatorname{Log}[e((a + b x) / (c + d x))^n])) / (b^4 g^3) + (d^3 i^3 x (A + B \operatorname{Log}[e((a + b x) / (c + d x))^n])^2) / (b^3 g^3) - ((b c - a d)^3 i^3 (A + B \operatorname{Log}[e((a + b x) / (c + d x))^n])^2) / (2 b^4 g^3 (a + b x)^2) - (3 d (b c - a d)^2 i^3 (A + B \operatorname{Log}[e((a + b x) / (c + d x))^n])^2) / (b^4 g^3 (a + b x)) + (3 d^2 (b c - a d) i^3 \operatorname{Log}[a + b x] (A + B \operatorname{Log}[e((a + b x) / (c + d x))^n])^2) / (b^4 g^3) + (9 B^2 d^2 (b c - a d) i^3 n^2 \operatorname{Log}[c + d x]) / (2 b^4 g^3) + (2 B^2 c d^2 i^3 n^2 \operatorname{Log}[-((d (a + b x)) / (b c - a d))] \operatorname{Log}[c + d x]) / (b^3 g^3) - (5 B^2 d^2 (b c - a d) i^3 n^2 \operatorname{Log}[-((d (a + b x)) / (b c - a d))] \operatorname{Log}[c + d x]) / (b^4 g^3) - (2 B c d^2 i^3 n (A + B \operatorname{Log}[e((a + b x) / (c + d x))^n]) \operatorname{Log}[c + d x]) / (b^3 g^3) + (5 B d^2 (b c - a d) i^3 n (A + B \operatorname{Log}[e((a + b x) / (c + d x))^n]) \operatorname{Log}[c + d x]) / (b^4 g^3) - (B^2 c d^2 i^3 n^2 \operatorname{Log}[c + d x]^2) / (b^3 g^3) + (5 B^2 d^2 (b c - a d) i^3 n^2 \operatorname{Log}[c + d x]^2) / (2 b^4 g^3) + (6 A B d^2 (b c - a d) i^3 n \operatorname{Log}[a + b x] \operatorname{Log}[(b (c + d x)) / (b c - a d)]) / (b^4 g^3) + (2 a B^2 d^3 i^3 n^2 \operatorname{Log}[a + b x] \operatorname{Log}[(b (c + d x)) / (b c - a d)]) / (b^4 g^3) - (5 B^2 d^2 (b c - a d) i^3 n^2 \operatorname{Log}[a + b x] \operatorname{Log}[(b (c + d x)) / (b c - a d)]) / (b^4 g^3) + (6 A B d^2 (b c - a d) i^3 n \operatorname{PolyLog}[2, -((d (a + b x)) / (b c - a d))]) / (b^4 g^3) + (2 a B^2 d^3 i^3 n^2 \operatorname{PolyLog}[2, -((d (a + b x)) / (b c - a d))]) / (b^4 g^3) - (5 B^2 d^2 (b c - a d) i^3 n^2 \operatorname{PolyLog}[2, -((d (a + b x)) / (b c - a d))]) / (b^4 g^3) + (2 B^2 c d^2 i^3 n^2 \operatorname{PolyLog}[2, (b (c + d x)) / (b c - a d)]) / (b^3 g^3) - (5 B^2 d^2 (b c - a d) i^3 n^2 \operatorname{PolyLog}[2, (b (c + d x)) / (b c - a d)]) / (b^4 g^3) + (6 B^2 d^2 (b c - a d) i^3 n \operatorname{Log}[e((a + b x) / (c + d x))^n] \operatorname{PolyLog}[2, 1 + (b c - a d) / (d (a + b x))]) / (b^4 g^3) + (6 B^2 d^2 (b c - a d) i^3 n^2 \operatorname{PolyLog}[3, 1 + (b c - a d) / (d (a + b x))]) / (b^4 g^3) \end{aligned}$$

Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol]
:> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
  Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b,
  c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
  x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
  (a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
  GtQ[p, 0]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_.)
  *(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p,
  x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
  qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2,
  -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
  Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
  ], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
  (e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
  )), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)
  ]^n))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
  ], x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_.)
  *(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
  [((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
  *x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
```

*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]

Rule 2418

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]

Rule 2488

Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)]^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] := -Simp[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/h, x] + Dist[(p*r*s*(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c, d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ[b*g - a*h, 0] && IGtQ[s, 0]

Rule 2506

Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)]^(r_.)]^(s_.)*(u_), x_Symbol] := With[{g = Simplify[(v - 1)*(c + d*x)/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/(b*c - a*d), x] + Dist[h*p*r*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]

Rule 2507

Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)]^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_Symbol] := With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g + h*x)^t]^u)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^(s + 1))/(p*r*(s + 1)*(b*c - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && NeQ[s, -1]

Rule 2523

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] := Simp[x*(a + b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, p}, x] && Rat

ionalFunctionQ[RFx, x] && IGtQ[n, 0]

Rule 2524

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]

Rule 2525

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]

Rule 2528

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]

Rule 6610

Int[(u_)*PolyLog[n_, v_], x_Symbol] := With[{w = DerivativeDivides[v, u*v, x]}, Simp[w*PolyLog[n + 1, v], x] /; !FalseQ[w]] /; FreeQ[n, x]

Rule 6688

Int[u_, x_Symbol] := With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; SimplifyIntegrandQ[v, u, x]]

Rule 6742

Int[u_, x_Symbol] := With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]]

Rubi steps

$$\begin{aligned}
\int \frac{(184c + 184dx)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag + bgx)^3} dx &= \int \left(\frac{6229504d^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^3g^3} + \frac{6229504(bc - ad)^3}{b^3g^3} \right) dx \\
&= \frac{(6229504d^3) \int \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx}{b^3g^3} + \frac{(18688512d^2(bc - ad)^3)}{b^3g^3} x \\
&= \frac{6229504d^3x \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^3g^3} - \frac{3114752(bc - ad)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^4g^3(a + bx)} \\
&= \frac{6229504d^3x \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^3g^3} - \frac{3114752(bc - ad)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^4g^3(a + bx)} \\
&= \frac{6229504d^3x \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^3g^3} - \frac{3114752(bc - ad)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^4g^3(a + bx)} \\
&= \frac{6229504d^3x \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^3g^3} - \frac{3114752(bc - ad)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^4g^3(a + bx)} \\
&= -\frac{3114752B(bc - ad)^3n \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{b^4g^3(a + bx)^2} - \frac{31147520B^2(bc - ad)^3}{b^4g^3(a + bx)^2} \\
&= -\frac{18688512B^2d^2(bc - ad) \log(a + bx) \log^2 \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^4g^3} - \frac{31147520B^2d^2(bc - ad)}{b^4g^3} \\
&= -\frac{18688512B^2d^2(bc - ad) \log \left(-\frac{bc-ad}{d(a+bx)} \right) \log^2 \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^4g^3} - \frac{186885120B^2d^2(bc - ad)}{b^4g^3} \\
&= -\frac{1557376B^2(bc - ad)^3n^2}{b^4g^3(a + bx)^2} - \frac{28032768B^2d(bc - ad)^2n^2}{b^4g^3(a + bx)} - \frac{280327680B^2d^2(bc - ad)}{b^4g^3} \\
&= -\frac{1557376B^2(bc - ad)^3n^2}{b^4g^3(a + bx)^2} - \frac{28032768B^2d(bc - ad)^2n^2}{b^4g^3(a + bx)} - \frac{280327680B^2d^2(bc - ad)}{b^4g^3}
\end{aligned}$$

$$\frac{1557376B^2(bc - ad)^3n^2}{b^4g^3(a + bx)^2} - \frac{28032768B^2d(bc - ad)^2n^2}{b^4g^3(a + bx)} - \frac{280327680B^2d^2(bc - ad)}{b^4g^3}$$

Mathematica [B] time = 25.24, size = 6221, normalized size = 9.66

Result too large to show

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b*g*x)^3,x]

[Out] Result too large to show

fricas [F] time = 0.75, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{A^2 d^3 i^3 x^3 + 3 A^2 c d^2 i^3 x^2 + 3 A^2 c^2 d i^3 x + A^2 c^3 i^3 + (B^2 d^3 i^3 x^3 + 3 B^2 c d^2 i^3 x^2 + 3 B^2 c^2 d i^3 x + B^2 c^3 i^3) \log}{b^3 g^3 x^3 + 3 a b^2 g^3 x^2 + 3 a^2 b g^3}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^3,x, algorithm="fricas")

[Out] integral((A^2*d^3*i^3*x^3 + 3*A^2*c*d^2*i^3*x^2 + 3*A^2*c^2*d*i^3*x + A^2*c^3*i^3 + (B^2*d^3*i^3*x^3 + 3*B^2*c*d^2*i^3*x^2 + 3*B^2*c^2*d*i^3*x + B^2*c^3*i^3)*log(e*((b*x + a)/(d*x + c))^n)^2 + 2*(A*B*d^3*i^3*x^3 + 3*A*B*c*d^2*i^3*x^2 + 3*A*B*c^2*d*i^3*x + A*B*c^3*i^3)*log(e*((b*x + a)/(d*x + c))^n))/(b^3*g^3*x^3 + 3*a*b^2*g^3*x^2 + 3*a^2*b*g^3*x + a^3*g^3), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^3,x, algorithm="giac")

[Out] Timed out

maple [F] time = 0.45, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci)^3 \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)^2}{(bgx + ag)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{int}((d*i*x+c*i)^3*(B*\ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^3,x)$

[Out] $\text{int}((d*i*x+c*i)^3*(B*\ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^3,x)$

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{integrate}((d*i*x+c*i)^3*(A+B*\log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^3,x,$
algorithm="maxima")

[Out]
$$\begin{aligned} & -3/2*A*B*c^2*d*i^3*n*((3*a*b*c - a^2*d + 2*(2*b^2*c - a*b*d)*x)/((b^5*c - a \\ & *b^4*d)*g^3*x^2 + 2*(a*b^4*c - a^2*b^3*d)*g^3*x + (a^2*b^3*c - a^3*b^2*d)*g \\ & ^3) + 2*(2*b*c*d - a*d^2)*\log(b*x + a)/((b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^ \\ & 2)*g^3) - 2*(2*b*c*d - a*d^2)*\log(d*x + c)/((b^4*c^2 - 2*a*b^3*c*d + a^2*b^ \\ & 2*d^2)*g^3)) + 1/2*A*B*c^3*i^3*n*((2*b*d*x - b*c + 3*a*d)/((b^4*c - a*b^3*d \\ &)*g^3*x^2 + 2*(a*b^3*c - a^2*b^2*d)*g^3*x + (a^2*b^2*c - a^3*b*d)*g^3) + 2* \\ & d^2*\log(b*x + a)/((b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*g^3) - 2*d^2*\log(d*x \\ & + c)/((b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*g^3)) - 1/2*A^2*d^3*i^3*((6*a^2*b \\ & *x + 5*a^3)/(b^6*g^3*x^2 + 2*a*b^5*g^3*x + a^2*b^4*g^3) - 2*x/(b^3*g^3) + 6 \\ & *a*\log(b*x + a)/(b^4*g^3)) + 3/2*A^2*c*d^2*i^3*((4*a*b*x + 3*a^2)/(b^5*g^3* \\ & x^2 + 2*a*b^4*g^3*x + a^2*b^3*g^3) + 2*\log(b*x + a)/(b^3*g^3)) - 3*(2*b*x + \\ & a)*A*B*c^2*d*i^3*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^4*g^3*x^2 + 2*a \\ & *b^3*g^3*x + a^2*b^2*g^3) - 3/2*(2*b*x + a)*A^2*c^2*d*i^3/(b^4*g^3*x^2 + 2* \\ & a*b^3*g^3*x + a^2*b^2*g^3) - A*B*c^3*i^3*\log(e*(b*x/(d*x + c) + a/(d*x + c) \\ &)^n)/(b^3*g^3*x^2 + 2*a*b^2*g^3*x + a^2*b*g^3) - 1/2*A^2*c^3*i^3/(b^3*g^3*x \\ & ^2 + 2*a*b^2*g^3*x + a^2*b*g^3) + 1/2*(2*B^2*b^3*d^3*i^3*x^3 + 4*B^2*a*b^2* \\ & d^3*i^3*x^2 - 2*(3*b^3*c^2*d*i^3 - 6*a*b^2*c*d^2*i^3 + 2*a^2*b*d^3*i^3)*B^2 \\ & *x - (b^3*c^3*i^3 + 3*a*b^2*c^2*d*i^3 - 9*a^2*b*c*d^2*i^3 + 5*a^3*d^3*i^3)* \\ & B^2 + 6*((b^3*c*d^2*i^3 - a*b^2*d^3*i^3)*B^2*x^2 + 2*(a*b^2*c*d^2*i^3 - a^2 \\ & *b*d^3*i^3)*B^2*x + (a^2*b*c*d^2*i^3 - a^3*d^3*i^3)*B^2)*\log(b*x + a))*\log(\\ & (d*x + c)^n)^2/(b^6*g^3*x^2 + 2*a*b^5*g^3*x + a^2*b^4*g^3) - \text{integrate}(-(4* \\ & B^2*b^4*c^3*d*i^3*x*\log(e)^2 + B^2*b^4*c^4*i^3*\log(e)^2 + (B^2*b^4*d^4*i^3* \\ & \log(e)^2 + 2*A*B*b^4*d^4*i^3*\log(e))*x^4 + 4*(B^2*b^4*c*d^3*i^3*\log(e)^2 + \\ & 2*A*B*b^4*c*d^3*i^3*\log(e))*x^3 + 6*(B^2*b^4*c^2*d^2*i^3*\log(e)^2 + A*B*b^4 \\ & *c^2*d^2*i^3*\log(e))*x^2 + (B^2*b^4*d^4*i^3*x^4 + 4*B^2*b^4*c*d^3*i^3*x^3 + \\ & 6*B^2*b^4*c^2*d^2*i^3*x^2 + 4*B^2*b^4*c^3*d*i^3*x + B^2*b^4*c^4*i^3)*\log((\\ & b*x + a)^n)^2 + 2*(4*B^2*b^4*c^3*d*i^3*x*\log(e) + B^2*b^4*c^4*i^3*\log(e) + \\ & (B^2*b^4*d^4*i^3*\log(e) + A*B*b^4*d^4*i^3)*x^4 + 4*(B^2*b^4*c*d^3*i^3*\log(e) \\ &) + A*B*b^4*c*d^3*i^3)*x^3 + 3*(2*B^2*b^4*c^2*d^2*i^3*\log(e) + A*B*b^4*c^2* \\ & d^2*i^3)*x^2)*\log((b*x + a)^n) - (2*(A*B*b^4*d^4*i^3 + (i^3*n + i^3*\log(e)) \\ & *B^2*b^4*d^4)*x^4 - (9*a*b^3*c^2*d^2*i^3*n - 21*a^2*b^2*c*d^3*i^3*n + 9*a^3 \end{aligned}$$


```
*b*d^4*i^3*n + (i^3*n - 8*i^3*log(e))*b^4*c^3*d)*B^2*x + 2*(4*A*B*b^4*c*d^3
*i^3 + (3*a*b^3*d^4*i^3*n + 4*b^4*c*d^3*i^3*log(e))*B^2)*x^3 - (a*b^3*c^3*d
*i^3*n + 3*a^2*b^2*c^2*d^2*i^3*n - 9*a^3*b*c*d^3*i^3*n + 5*a^4*d^4*i^3*n -
2*b^4*c^4*i^3*log(e))*B^2 + 6*(A*B*b^4*c^2*d^2*i^3 + (2*a*b^3*c*d^3*i^3*n -
(i^3*n - 2*i^3*log(e))*b^4*c^2*d^2)*B^2)*x^2 + 6*((b^4*c*d^3*i^3*n - a*b^3
*d^4*i^3*n)*B^2*x^3 + 3*(a*b^3*c*d^3*i^3*n - a^2*b^2*d^4*i^3*n)*B^2*x^2 + 3
*(a^2*b^2*c*d^3*i^3*n - a^3*b*d^4*i^3*n)*B^2*x + (a^3*b*c*d^3*i^3*n - a^4*d
^4*i^3*n)*B^2)*log(b*x + a) + 2*(B^2*b^4*d^4*i^3*x^4 + 4*B^2*b^4*c*d^3*i^3*
x^3 + 6*B^2*b^4*c^2*d^2*i^3*x^2 + 4*B^2*b^4*c^3*d*i^3*x + B^2*b^4*c^4*i^3)*
log((b*x + a)^n))*log((d*x + c)^n)/(b^7*d*g^3*x^4 + a^3*b^4*c*g^3 + (b^7*c
*g^3 + 3*a*b^6*d*g^3)*x^3 + 3*(a*b^6*c*g^3 + a^2*b^5*d*g^3)*x^2 + (3*a^2*b^
5*c*g^3 + a^3*b^4*d*g^3)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ci + dix)^3 \left(A + B \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag + bgx)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x
)^3,x)
```

```
[Out] int(((c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x
)^3, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(b*g*x+a*g)
**3,x)
```

```
[Out] Timed out
```

$$3.185 \quad \int \frac{(ci+dix)^3 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag+bgx)^4} dx$$

Optimal. Leaf size=561

$$\frac{2Bd^3i^3nLi_2\left(\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^4g^4} - \frac{d^3i^3\log\left(1-\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{b^4g^4} - \frac{d^2i^3(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^3g^4}$$

[Out] $-2*B^2*d^2*i^3*n^2*(d*x+c)/b^3/g^4/(b*x+a)-1/4*B^2*d*i^3*n^2*(d*x+c)^2/b^2/g^4/(b*x+a)^2-2/27*B^2*i^3*n^2*(d*x+c)^3/b/g^4/(b*x+a)^3-2*B*d^2*i^3*n*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^3/g^4/(b*x+a)-1/2*B*d*i^3*n*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b^2/g^4/(b*x+a)^2-2/9*B*i^3*n*(d*x+c)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/b/g^4/(b*x+a)^3-d^2*i^3*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/b^3/g^4/(b*x+a)-1/2*d*i^3*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/b^2/g^4/(b*x+a)^2-1/3*i^3*(d*x+c)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/b/g^4/(b*x+a)^3-d^3*i^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2*\ln(1-b*(d*x+c)/d/(b*x+a))/b^4/g^4+2*B*d^3*i^3*n*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))*polylog(2,b*(d*x+c)/d/(b*x+a))/b^4/g^4+2*B^2*d^3*i^3*n^2*polylog(3,b*(d*x+c)/d/(b*x+a))/b^4/g^4$

Rubi [B] time = 5.09, antiderivative size = 1170, normalized size of antiderivative = 2.09, number of steps used = 100, number of rules used = 20, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}} = 0.444$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610}

$$\frac{11B^2d^3n^2\log^2(a+bx)i^3}{6b^4g^4} - \frac{ABd^3n\log^2(a+bx)i^3}{b^4g^4} - \frac{B^2d^3\log\left(-\frac{bc-ad}{d(a+bx)}\right)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)i^3}{b^4g^4} - \frac{B^2d^3\log(a+bx)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)i^3}{b^4g^4}$$

Antiderivative was successfully verified.

[In] Int[((c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b*g*x)^4,x]

[Out] $(-2*B^2*(b*c - a*d)^3*i^3*n^2)/(27*b^4*g^4*(a + b*x)^3) - (17*B^2*d*(b*c - a*d)^2*i^3*n^2)/(36*b^4*g^4*(a + b*x)^2) - (49*B^2*d^2*(b*c - a*d)*i^3*n^2)/(18*b^4*g^4*(a + b*x)) - (49*B^2*d^3*i^3*n^2*\text{Log}[a + b*x])/(18*b^4*g^4) - (A*B*d^3*i^3*n*\text{Log}[a + b*x]^2)/(b^4*g^4) + (11*B^2*d^3*i^3*n^2*\text{Log}[a + b*x]^2)/(6*b^4*g^4) - (B^2*d^3*i^3*\text{Log}[-((b*c - a*d)/(d*(a + b*x))])* \text{Log}[e*((a + b*x)/(c + d*x))^n]^2)/(b^4*g^4) - (B^2*d^3*i^3*\text{Log}[a + b*x]* \text{Log}[e*((a + b*x)/(c + d*x))^n]^2)/(b^4*g^4) - (2*B*(b*c - a*d)^3*i^3*n*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2)/(b^4*g^4)$

$$\begin{aligned}
& + b*x)/(c + d*x))^n)))/(9*b^4*g^4*(a + b*x)^3) - (7*B*d*(b*c - a*d)^2*i^3*n \\
& *(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(6*b^4*g^4*(a + b*x)^2) - (11*B*d^ \\
& 2*(b*c - a*d)*i^3*n*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(3*b^4*g^4*(a + \\
& b*x)) - (11*B*d^3*i^3*n*\text{Log}[a + b*x]*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n] \\
&))/(3*b^4*g^4) - ((b*c - a*d)^3*i^3*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^ \\
& 2)/(3*b^4*g^4*(a + b*x)^3) - (3*d*(b*c - a*d)^2*i^3*(A + B*\text{Log}[e*((a + b*x) \\
& / (c + d*x))^n])^2)/(2*b^4*g^4*(a + b*x)^2) - (3*d^2*(b*c - a*d)*i^3*(A + B* \\
& \text{Log}[e*((a + b*x)/(c + d*x))^n])^2)/(b^4*g^4*(a + b*x)) + (d^3*i^3*\text{Log}[a + b \\
& *x]*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2)/(b^4*g^4) + (49*B^2*d^3*i^3*n \\
& ^2*\text{Log}[c + d*x])/(18*b^4*g^4) - (11*B^2*d^3*i^3*n^2*\text{Log}[-(d*(a + b*x))/(b*c \\
& - a*d)])*\text{Log}[c + d*x])/(3*b^4*g^4) + (11*B*d^3*i^3*n*(A + B*\text{Log}[e*((a + b \\
& *x)/(c + d*x))^n])*\text{Log}[c + d*x])/(3*b^4*g^4) + (11*B^2*d^3*i^3*n^2*\text{Log}[c + \\
& d*x]^2)/(6*b^4*g^4) + (2*A*B*d^3*i^3*n*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c \\
& - a*d)])/(b^4*g^4) - (11*B^2*d^3*i^3*n^2*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c \\
& - a*d)])/(3*b^4*g^4) + (2*A*B*d^3*i^3*n*\text{PolyLog}[2, -(d*(a + b*x))/(b*c - \\
& a*d)])/(b^4*g^4) - (11*B^2*d^3*i^3*n^2*\text{PolyLog}[2, -(d*(a + b*x))/(b*c - \\
& a*d)])/(3*b^4*g^4) - (11*B^2*d^3*i^3*n^2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a \\
& *d)])/(3*b^4*g^4) + (2*B^2*d^3*i^3*n*\text{Log}[e*((a + b*x)/(c + d*x))^n]*\text{PolyLog} \\
& [2, 1 + (b*c - a*d)/(d*(a + b*x))])/(b^4*g^4) + (2*B^2*d^3*i^3*n^2*\text{PolyLog}[\\
& 3, 1 + (b*c - a*d)/(d*(a + b*x))])/(b^4*g^4)
\end{aligned}$$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 44

Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])

Rule 2301

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2317

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol] := Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e, Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
  x_Symbol] := Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x
), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_)^(q_.)*((h_.) + (i_.)*(x_)^(r_.), x_Symbol] := Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
```

Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]

Rule 2488

Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] := -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q]^r]^s - 1)/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]

Rule 2506

Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))
^(q_.)]^(r_.)]^(s_.)*(u_), x_Symbol] := With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1)/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x] /; FreeQ[{a, b, c, d, e, f,
p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]

Rule 2507

Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] := With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
h*x)^t]^u)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s + 1)/(p*r*(s + 1)*(b*c
- a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q]^r]^s + 1)/(g + h*x), x], x] /; FreeQ[k, x] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
EqQ[p + q, 0] && NeQ[s, -1]

Rule 2524

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]

Rule 2525

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))

```
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunci
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /; !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\begin{aligned}
\int \frac{(185c + 185dx)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag + bgx)^4} dx &= \int \left(\frac{6331625(bc - ad)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^3 g^4 (a + bx)^4} + \frac{18994875d^2 (bc - ad)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^3 g^4 (a + bx)^4} \right) dx \\
&= \frac{(6331625d^3) \int \frac{\left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{a+bx} dx}{b^3 g^4} + \frac{(18994875d^2 (bc - ad)^3) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{b^3 g^4 (a + bx)^4} \\
&= -\frac{6331625(bc - ad)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{3b^4 g^4 (a + bx)^3} - \frac{18994875d^2 (bc - ad)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{3b^4 g^4 (a + bx)^3} \\
&= -\frac{6331625(bc - ad)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{3b^4 g^4 (a + bx)^3} - \frac{18994875d^2 (bc - ad)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{3b^4 g^4 (a + bx)^3} \\
&= -\frac{6331625(bc - ad)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{3b^4 g^4 (a + bx)^3} - \frac{18994875d^2 (bc - ad)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{3b^4 g^4 (a + bx)^3} \\
&= -\frac{6331625(bc - ad)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{3b^4 g^4 (a + bx)^3} - \frac{18994875d^2 (bc - ad)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{3b^4 g^4 (a + bx)^3} \\
&= -\frac{12663250B(bc - ad)^3 n \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{9b^4 g^4 (a + bx)^3} - \frac{44321375d^2 (bc - ad)^3 n \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{9b^4 g^4 (a + bx)^3} \\
&= -\frac{6331625B^2 d^3 \log(a + bx) \log^2 \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^4 g^4} - \frac{12663250B^2 d^3 \log(a + bx) \log^2 \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^4 g^4} \\
&= -\frac{6331625B^2 d^3 \log \left(-\frac{bc-ad}{d(a+bx)} \right) \log^2 \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^4 g^4} - \frac{6331625B^2 d^3 \log \left(-\frac{bc-ad}{d(a+bx)} \right) \log^2 \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{b^4 g^4} \\
&= -\frac{12663250B^2 (bc - ad)^3 n^2}{27b^4 g^4 (a + bx)^3} - \frac{107637625B^2 d (bc - ad)^2 n^2}{36b^4 g^4 (a + bx)^2} - \frac{3632751250B^2 d^2 (bc - ad) n^2}{36b^4 g^4 (a + bx)^2} - \frac{3632751250B^2 d^2 (bc - ad) n^2}{36b^4 g^4 (a + bx)^2} \\
&= -\frac{12663250B^2 (bc - ad)^3 n^2}{27b^4 g^4 (a + bx)^3} - \frac{107637625B^2 d (bc - ad)^2 n^2}{36b^4 g^4 (a + bx)^2} - \frac{3632751250B^2 d^2 (bc - ad) n^2}{36b^4 g^4 (a + bx)^2} - \frac{3632751250B^2 d^2 (bc - ad) n^2}{36b^4 g^4 (a + bx)^2} \\
&= -\frac{12663250B^2 (bc - ad)^3 n^2}{27b^4 g^4 (a + bx)^3} - \frac{107637625B^2 d (bc - ad)^2 n^2}{36b^4 g^4 (a + bx)^2} - \frac{3632751250B^2 d^2 (bc - ad) n^2}{36b^4 g^4 (a + bx)^2} - \frac{3632751250B^2 d^2 (bc - ad) n^2}{36b^4 g^4 (a + bx)^2}
\end{aligned}$$

$$12663250B^2 (bc - ad)^3 n^2 \quad 107637625B^2 d (bc - ad)^2 n^2 \quad 3632751250B^2 d^2 (bc - ad) n^2 \quad 3632751250B^2 d^2 (bc - ad) n^2$$

Mathematica [B] time = 8.17, size = 8775, normalized size = 15.64

Result too large to show

Antiderivative was successfully verified.

[In] Integrate[((c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b*g*x)^4,x]

[Out] Result too large to show

fricas [F] time = 0.92, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{A^2 d^3 i^3 x^3 + 3 A^2 c d^2 i^3 x^2 + 3 A^2 c^2 d i^3 x + A^2 c^3 i^3 + (B^2 d^3 i^3 x^3 + 3 B^2 c d^2 i^3 x^2 + 3 B^2 c^2 d i^3 x + B^2 c^3 i^3) \log \left(\frac{a + b x}{c + d x} \right)^n}{b^4 g^4 x^4 + 4 a b^3 g^4 x^3 + 6 a^2 b^2 g^4 x^2 + 4 a^3 b g^4 x + a^4 g^4}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^4,x, algorithm="fricas")

[Out] integral((A^2*d^3*i^3*x^3 + 3*A^2*c*d^2*i^3*x^2 + 3*A^2*c^2*d*i^3*x + A^2*c^3*i^3 + (B^2*d^3*i^3*x^3 + 3*B^2*c*d^2*i^3*x^2 + 3*B^2*c^2*d*i^3*x + B^2*c^3*i^3)*log(e*((b*x + a)/(d*x + c))^n))^2 + 2*(A*B*d^3*i^3*x^3 + 3*A*B*c*d^2*i^3*x^2 + 3*A*B*c^2*d*i^3*x + A*B*c^3*i^3)*log(e*((b*x + a)/(d*x + c))^n))/(b^4*g^4*x^4 + 4*a*b^3*g^4*x^3 + 6*a^2*b^2*g^4*x^2 + 4*a^3*b*g^4*x + a^4*g^4), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^4,x, algorithm="giac")

[Out] Timed out

maple [F] time = 0.45, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci)^3 \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)^2}{(bgx + ag)^4} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{int}((d*i*x+c*i)^3*(B*\ln(e*((b*x+a)/(d*x+c)))^n)+A)^2/(b*g*x+a*g)^4,x)$

[Out] $\text{int}((d*i*x+c*i)^3*(B*\ln(e*((b*x+a)/(d*x+c)))^n)+A)^2/(b*g*x+a*g)^4,x)$

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{integrate}((d*i*x+c*i)^3*(A+B*\log(e*((b*x+a)/(d*x+c)))^n))^2/(b*g*x+a*g)^4,x,$
algorithm="maxima")

[Out]
$$-1/3*A*B*c*d^2*i^3*n*((11*a^2*b^2*c^2 - 7*a^3*b*c*d + 2*a^4*d^2 + 6*(3*b^4*c^2 - 3*a*b^3*c*d + a^2*b^2*d^2)*x^2 + 3*(9*a*b^3*c^2 - 7*a^2*b^2*c*d + 2*a^3*b*d^2)*x)/((b^8*c^2 - 2*a*b^7*c*d + a^2*b^6*d^2)*g^4*x^3 + 3*(a*b^7*c^2 - 2*a^2*b^6*c*d + a^3*b^5*d^2)*g^4*x^2 + 3*(a^2*b^6*c^2 - 2*a^3*b^5*c*d + a^4*b^4*d^2)*g^4*x + (a^3*b^5*c^2 - 2*a^4*b^4*c*d + a^5*b^3*d^2)*g^4) + 6*(3*b^2*c^2*d - 3*a*b*c*d^2 + a^2*d^3)*\log(b*x + a)/((b^6*c^3 - 3*a*b^5*c^2*d + 3*a^2*b^4*c*d^2 - a^3*b^3*d^3)*g^4) - 6*(3*b^2*c^2*d - 3*a*b*c*d^2 + a^2*d^3)*\log(d*x + c)/((b^6*c^3 - 3*a*b^5*c^2*d + 3*a^2*b^4*c*d^2 - a^3*b^3*d^3)*g^4) - 1/9*A*B*c^3*i^3*n*((6*b^2*d^2*x^2 + 2*b^2*c^2 - 7*a*b*c*d + 11*a^2*d^2 - 3*(b^2*c*d - 5*a*b*d^2)*x)/((b^6*c^2 - 2*a*b^5*c*d + a^2*b^4*d^2)*g^4*x^3 + 3*(a*b^5*c^2 - 2*a^2*b^4*c*d + a^3*b^3*d^2)*g^4*x^2 + 3*(a^2*b^4*c^2 - 2*a^3*b^3*c*d + a^4*b^2*d^2)*g^4*x + (a^3*b^3*c^2 - 2*a^4*b^2*c*d + a^5*b*d^2)*g^4) + 6*d^3*\log(b*x + a)/((b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^3)*g^4) - 6*d^3*\log(d*x + c)/((b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^3)*g^4) - 1/6*A*B*c^2*d*i^3*n*((5*a*b^2*c^2 - 22*a^2*b*c*d + 5*a^3*d^2 - 6*(3*b^3*c*d - a*b^2*d^2)*x^2 + 3*(3*b^3*c^2 - 16*a*b^2*c*d + 5*a^2*b*d^2)*x)/((b^7*c^2 - 2*a*b^6*c*d + a^2*b^5*d^2)*g^4*x^3 + 3*(a*b^6*c^2 - 2*a^2*b^5*c*d + a^3*b^4*d^2)*g^4*x^2 + 3*(a^2*b^5*c^2 - 2*a^3*b^4*c*d + a^4*b^3*d^2)*g^4*x + (a^3*b^4*c^2 - 2*a^4*b^3*c*d + a^5*b^2*d^2)*g^4) - 6*(3*b*c*d^2 - a*d^3)*\log(b*x + a)/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*g^4) + 6*(3*b*c*d^2 - a*d^3)*\log(d*x + c)/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*g^4) + 1/6*A^2*d^3*i^3*((18*a*b^2*x^2 + 27*a^2*b*x + 11*a^3)/(b^7*g^4*x^3 + 3*a*b^6*g^4*x^2 + 3*a^2*b^5*g^4*x + a^3*b^4*g^4) + 6*\log(b*x + a)/(b^4*g^4)) - (3*b*x + a)*A*B*c^2*d*i^3*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^5*g^4*x^3 + 3*a*b^4*g^4*x^2 + 3*a^2*b^3*g^4*x + a^3*b^2*g^4) - 2*(3*b^2*x^2 + 3*a*b*x + a^2)*A*B*c^2*d^2*i^3*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^6*g^4*x^3 + 3*a*b^5*g^4*x^2 + 3*a^2*b^4*g^4*x + a^3*b^3*g^4) - 1/2*(3*b*x + a)*A^2*c^2*d^2*i^3/(b^5*g^4*x^3 + 3*a*b^4*g^4*x^2 + 3*a^2*b^3*g^4*x + a^3*b^2*g^4) - (3*b^2*x^2 + 3*a*b*x + a^2)*A^2*c*d^2*i^3/(b^6*g^4*x^3 + 3*a*b^5*g^4*x^2 + 3*a^2*b^4*g^4*x + a^3*b^3*g^4) - 2/3*A*B*c^3*i^3*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^7*g^4*x^3 + 3*a*b^6*g^4*x^2 + 3*a^2*b^5*g^4*x + a^3*b^4*g^4)$$

```

4*g^4*x^3 + 3*a*b^3*g^4*x^2 + 3*a^2*b^2*g^4*x + a^3*b*g^4) - 1/3*A^2*c^3*i^
3/(b^4*g^4*x^3 + 3*a*b^3*g^4*x^2 + 3*a^2*b^2*g^4*x + a^3*b*g^4) - 1/6*(18*(
b^3*c*d^2*i^3 - a*b^2*d^3*i^3)*B^2*x^2 + 9*(b^3*c^2*d*i^3 + 2*a*b^2*c*d^2*i
^3 - 3*a^2*b*d^3*i^3)*B^2*x + (2*b^3*c^3*i^3 + 3*a*b^2*c^2*d*i^3 + 6*a^2*b*
c*d^2*i^3 - 11*a^3*d^3*i^3)*B^2 - 6*(B^2*b^3*d^3*i^3*x^3 + 3*B^2*a*b^2*d^3*
i^3*x^2 + 3*B^2*a^2*b*d^3*i^3*x + B^2*a^3*d^3*i^3)*log(b*x + a))*log((d*x +
c)^n)^2/(b^7*g^4*x^3 + 3*a*b^6*g^4*x^2 + 3*a^2*b^5*g^4*x + a^3*b^4*g^4) -
integrate(-1/3*(18*B^2*b^4*c^2*d^2*i^3*x^2*log(e)^2 + 12*B^2*b^4*c^3*d*i^3*
x*log(e)^2 + 3*B^2*b^4*c^4*i^3*log(e)^2 + 3*(B^2*b^4*d^4*i^3*log(e)^2 + 2*A
*B*b^4*d^4*i^3*log(e))*x^4 + 6*(2*B^2*b^4*c*d^3*i^3*log(e)^2 + A*B*b^4*c*d^
3*i^3*log(e))*x^3 + 3*(B^2*b^4*d^4*i^3*x^4 + 4*B^2*b^4*c*d^3*i^3*x^3 + 6*B^
2*b^4*c^2*d^2*i^3*x^2 + 4*B^2*b^4*c^3*d*i^3*x + B^2*b^4*c^4*i^3)*log((b*x +
a)^n)^2 + 6*(6*B^2*b^4*c^2*d^2*i^3*x^2*log(e) + 4*B^2*b^4*c^3*d*i^3*x*log(
e) + B^2*b^4*c^4*i^3*log(e) + (B^2*b^4*d^4*i^3*log(e) + A*B*b^4*d^4*i^3)*x^
4 + (4*B^2*b^4*c*d^3*i^3*log(e) + A*B*b^4*c*d^3*i^3)*x^3)*log((b*x + a)^n)
+ (9*(4*a*b^3*c*d^3*i^3*n - 5*a^2*b^2*d^4*i^3*n + (i^3*n - 4*i^3*log(e))*b^
4*c^2*d^2)*B^2*x^2 - 6*(B^2*b^4*d^4*i^3*log(e) + A*B*b^4*d^4*i^3)*x^4 + 2*(
6*a*b^3*c^2*d^2*i^3*n + 12*a^2*b^2*c*d^3*i^3*n - 19*a^3*b*d^4*i^3*n + (i^3*
n - 12*i^3*log(e))*b^4*c^3*d)*B^2*x - 6*(A*B*b^4*c*d^3*i^3 + (3*a*b^3*d^4*i
^3*n - (3*i^3*n - 4*i^3*log(e))*b^4*c*d^3)*B^2)*x^3 + (2*a*b^3*c^3*d*i^3*n
+ 3*a^2*b^2*c^2*d^2*i^3*n + 6*a^3*b*c*d^3*i^3*n - 11*a^4*d^4*i^3*n - 6*b^4*
c^4*i^3*log(e))*B^2 - 6*(B^2*b^4*d^4*i^3*n*x^4 + 4*B^2*a*b^3*d^4*i^3*n*x^3
+ 6*B^2*a^2*b^2*d^4*i^3*n*x^2 + 4*B^2*a^3*b*d^4*i^3*n*x + B^2*a^4*d^4*i^3*n)
)*log(b*x + a) - 6*(B^2*b^4*d^4*i^3*x^4 + 4*B^2*b^4*c*d^3*i^3*x^3 + 6*B^2*b
^4*c^2*d^2*i^3*x^2 + 4*B^2*b^4*c^3*d*i^3*x + B^2*b^4*c^4*i^3)*log((b*x + a)
^n))*log((d*x + c)^n)/(b^8*d*g^4*x^5 + a^4*b^4*c*g^4 + (b^8*c*g^4 + 4*a*b^
7*d*g^4)*x^4 + 2*(2*a*b^7*c*g^4 + 3*a^2*b^6*d*g^4)*x^3 + 2*(3*a^2*b^6*c*g^4
+ 2*a^3*b^5*d*g^4)*x^2 + (4*a^3*b^5*c*g^4 + a^4*b^4*d*g^4)*x), x)

```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ci + dix)^3 \left(A + B \ln \left(e^{\left(\frac{a+bx}{c+dx} \right)^n} \right) \right)^2}{(ag + bgx)^4} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x)^4,x)
```

```
[Out] int(((c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x)^4, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(b*g*x+a*g)**4, x)
```

```
[Out] Timed out
```

$$3.186 \quad \int \frac{(ag+bgx)^3 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{ci+dx} dx$$

Optimal. Leaf size=768

$$\frac{b^3 g^3 (c+dx)^3 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)^2}{3d^4 i} - \frac{3b^2 g^3 (c+dx)^2 (bc-ad) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)^2}{2d^4 i} - \frac{b^2 B g^3 n (c+dx)^2 (bc-ad)}{2d^4 i}$$

[Out] $\frac{1}{3} b^3 B^2 (-a*d+b*c)^2 g^3 n^2 x/d^3/i + 7/3 B (-a*d+b*c)^2 g^3 n (b*x+a) * (A+B*\ln(e*((b*x+a)/(d*x+c))^n))/d^3/i - 1/3 b^2 B (-a*d+b*c) g^3 n (d*x+c)^2 (A+B*\ln(e*((b*x+a)/(d*x+c))^n))/d^4/i + 3*(-a*d+b*c)^2 g^3 (b*x+a) * (A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/d^3/i - 3/2 b^2 (-a*d+b*c) g^3 (d*x+c)^2 (A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/d^4/i + 1/3 b^3 g^3 (d*x+c)^3 (A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/d^4/i + 6 B (-a*d+b*c)^3 g^3 n (A+B*\ln(e*((b*x+a)/(d*x+c))^n)) * \ln((-a*d+b*c)/b/(d*x+c))/d^4/i + (-a*d+b*c)^3 g^3 (A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2 * \ln((-a*d+b*c)/b/(d*x+c))/d^4/i + 1/3 B^2 (-a*d+b*c)^3 g^3 n^2 * \ln(d*x+c)/d^4/i - 7/3 B (-a*d+b*c)^3 g^3 n (A+B*\ln(e*((b*x+a)/(d*x+c))^n)) * \ln(1-b*(d*x+c)/d/(b*x+a))/d^4/i + 6 B^2 (-a*d+b*c)^3 g^3 n^2 * \text{polylog}(2, d*(b*x+a)/b/(d*x+c))/d^4/i + 2 B (-a*d+b*c)^3 g^3 n (A+B*\ln(e*((b*x+a)/(d*x+c))^n)) * \text{polylog}(2, d*(b*x+a)/b/(d*x+c))/d^4/i + 7/3 B^2 (-a*d+b*c)^3 g^3 n^2 * \text{polylog}(2, b*(d*x+c)/d/(b*x+a))/d^4/i - 2 B^2 (-a*d+b*c)^3 g^3 n^2 * \text{polylog}(3, d*(b*x+a)/b/(d*x+c))/d^4/i$

Rubi [B] time = 5.59, antiderivative size = 1952, normalized size of antiderivative = 2.54, number of steps used = 101, number of rules used = 28, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}} = 0.622$, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 2486, 31, 43, 6688, 6742, 2499, 2396, 2433, 2374, 6589, 2302, 30, 2500, 2375, 2317, 2440, 2434}

result too large to display

Antiderivative was successfully verified.

[In] Int[((a*g + b*g*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(c*i + d*i*x), x]

[Out] $\frac{5*A*b*B*(b*c - a*d)^2 g^3 n x}{(3*d^3*i)} + \frac{(b*B^2*(b*c - a*d)^2 g^3 n^2 x)}{(3*d^3*i)} - \frac{(a*B^2*(b*c - a*d)^2 g^3 n^2 * \text{Log}[a + b*x]^2)}{(d^3*i)} + \frac{5*B^2*(b*c - a*d)^2 g^3 n (a + b*x) * \text{Log}[e*((a + b*x)/(c + d*x))^n]}{(3*d^3*i)} - \frac{(B*(b*c - a*d) g^3 n (a + b*x)^2 (A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])}{(3*d^2*i)} + \frac{(2*a*B*(b*c - a*d)^2 g^3 n * \text{Log}[a + b*x] * (A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])}{(d^3*i)} + \frac{(b*(b*c - a*d)^2 g^3 x * (A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2)}{(d^3*i)} - \frac{((b*c - a*d) g^3 (a + b*x)^2 (A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2)}{(2*d^2*i)} + \frac{(g^3 (a + b*x)^3 (A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2)}{(2*d^2*i)}$

$$\begin{aligned}
& + d*x))^n])^2)/(3*d^i) - (2*B^2*(b*c - a*d)^3*g^3*n^2*Log[c + d*x])/(d^4*i) \\
& + (2*b*B^2*c*(b*c - a*d)^2*g^3*n^2*Log[-((d*(a + b*x))/(b*c - a*d))] * Log[\\
& c + d*x])/(d^4*i) + (5*B^2*(b*c - a*d)^3*g^3*n^2*Log[-((d*(a + b*x))/(b*c - \\
& a*d))] * Log[c + d*x])/(3*d^4*i) - (2*b*B*c*(b*c - a*d)^2*g^3*n*(A + B*Log[e \\
& *((a + b*x)/(c + d*x))^n]) * Log[c + d*x])/(d^4*i) - (5*B*(b*c - a*d)^3*g^3*n \\
& *(A + B*Log[e*((a + b*x)/(c + d*x))^n]) * Log[c + d*x])/(3*d^4*i) - (b*B^2*c* \\
& (b*c - a*d)^2*g^3*n^2*Log[c + d*x]^2)/(d^4*i) - (5*B^2*(b*c - a*d)^3*g^3*n^ \\
& 2*Log[c + d*x]^2)/(6*d^4*i) + (2*a*B^2*(b*c - a*d)^2*g^3*n^2*Log[a + b*x]*L \\
& og[(b*(c + d*x))/(b*c - a*d])/(d^3*i) - (B^2*(b*c - a*d)^3*g^3*Log[(a + b* \\
& x)^n]^2*Log[(b*(c + d*x))/(b*c - a*d])/(d^4*i) + (B^2*(b*c - a*d)^3*g^3*Lo \\
& g[(a + b*x)^n]^2*Log[i*(c + d*x)])/(d^4*i) - (A*B*(b*c - a*d)^3*g^3*n*Log[i \\
& *(c + d*x)]^2)/(d^4*i) + (B^2*(b*c - a*d)^3*g^3*n^2*Log[a + b*x]*Log[i*(c + \\
& d*x)]^2)/(d^4*i) - (B^2*(b*c - a*d)^3*g^3*n^2*Log[-((d*(a + b*x))/(b*c - a \\
& *d))] * Log[i*(c + d*x)]^2)/(d^4*i) - (B^2*(b*c - a*d)^3*g^3*n^2*Log[i*(c + d \\
& *x)]^3)/(3*d^4*i) + (2*B^2*(b*c - a*d)^3*g^3*n*Log[a + b*x]*Log[i*(c + d*x) \\
&] * Log[(c + d*x)^(-n)])/(d^4*i) + (B^2*(b*c - a*d)^3*g^3*Log[a + b*x]*Log[(c \\
& + d*x)^(-n)]^2)/(d^4*i) - (B^2*(b*c - a*d)^3*g^3*Log[-((d*(a + b*x))/(b*c \\
& - a*d))] * Log[(c + d*x)^(-n)]^2)/(d^4*i) + (2*A*B*(b*c - a*d)^3*g^3*n*Log[-(\\
& (d*(a + b*x))/(b*c - a*d))] * Log[c*i + d*i*x])/(d^4*i) - ((b*c - a*d)^3*g^3* \\
& (A + B*Log[e*((a + b*x)/(c + d*x))^n])^2*Log[c*i + d*i*x])/(d^4*i) - (2*B^2 \\
& *(b*c - a*d)^3*g^3*n*Log[-((d*(a + b*x))/(b*c - a*d))] * (Log[(a + b*x)^n] - \\
& Log[e*((a + b*x)/(c + d*x))^n] + Log[(c + d*x)^(-n)]) * Log[c*i + d*i*x])/(d^ \\
& 4*i) + (B^2*(b*c - a*d)^3*g^3*n^2*Log[-((d*(a + b*x))/(b*c - a*d))] * Log[c*i \\
& + d*i*x]^2)/(d^4*i) - (B^2*(b*c - a*d)^3*g^3*n*Log[e*((a + b*x)/(c + d*x)) \\
& ^n] * Log[c*i + d*i*x]^2)/(d^4*i) + (2*a*B^2*(b*c - a*d)^2*g^3*n^2*PolyLog[2, \\
& -((d*(a + b*x))/(b*c - a*d))]/(d^3*i) - (2*B^2*(b*c - a*d)^3*g^3*n*Log[(a \\
& + b*x)^n] * PolyLog[2, -((d*(a + b*x))/(b*c - a*d))]/(d^4*i) + (2*A*B*(b*c \\
& - a*d)^3*g^3*n*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]/(d^4*i) + (2*b*B^2*c* \\
& (b*c - a*d)^2*g^3*n^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]/(d^4*i) + (5*B \\
& ^2*(b*c - a*d)^3*g^3*n^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]/(3*d^4*i) + \\
& (2*B^2*(b*c - a*d)^3*g^3*n*Log[(c + d*x)^(-n)] * PolyLog[2, (b*(c + d*x))/(b \\
& *c - a*d)]/(d^4*i) - (2*B^2*(b*c - a*d)^3*g^3*n*(Log[(a + b*x)^n] - Log[e* \\
& ((a + b*x)/(c + d*x))^n] + Log[(c + d*x)^(-n)]) * PolyLog[2, (b*(c + d*x))/(b \\
& *c - a*d)]/(d^4*i) + (2*B^2*(b*c - a*d)^3*g^3*n^2*PolyLog[3, -((d*(a + b*x) \\
&))/(b*c - a*d)]/(d^4*i) + (2*B^2*(b*c - a*d)^3*g^3*n^2*PolyLog[3, (b*(c + \\
& d*x))/(b*c - a*d)]/(d^4*i)
\end{aligned}$$

Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 30

```
Int[(x_)^(m_), x_Symbol] := Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 31

Int[((a_) + (b_)*(x_))⁽⁻¹⁾, x_Symbol] := Simp[Log[RemoveContent[a + b*x, x]]/b, x] /; FreeQ[{a, b}, x]

Rule 43

Int[((a_) + (b_)*(x_))^(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)ⁿ, x], x] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && (!IntegerQ[n] || (EqQ[c, 0] && LeQ[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])

Rule 2301

Int[((a_) + Log[(c_)*(x_)^(n_)]*(b_))/(x_), x_Symbol] := Simp[(a + b*Log[c*xⁿ])²/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2302

Int[((a_) + Log[(c_)*(x_)^(n_)]*(b_))^(p_)/(x_), x_Symbol] := Dist[1/(b*n), Subst[Int[x^p, x], x, a + b*Log[c*xⁿ]], x] /; FreeQ[{a, b, c, n, p}, x]

Rule 2317

Int[((a_) + Log[(c_)*(x_)^(n_)]*(b_))^(p_)/((d_) + (e_)*(x_)), x_Symbol] := Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*xⁿ])^p]/e, x] - Dist[(b*n*p)/e, Int[(Log[1 + (e*x)/d]*(a + b*Log[c*xⁿ])^(p - 1)]/x, x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]

Rule 2374

Int[(Log[(d_)*((e_) + (f_)*(x_))^(m_)])*((a_) + Log[(c_)*(x_))^(n_)]*(b_))^(p_)/(x_), x_Symbol] := -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*xⁿ])^p]/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*xⁿ])^(p - 1)]/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0] && EqQ[d*e, 1]

Rule 2375

Int[(Log[(d_)*((e_) + (f_)*(x_))^(m_)])^(r_)*((a_) + Log[(c_)*(x_))^(n_)]*(b_))^(p_)/(x_), x_Symbol] := Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[c*xⁿ])^(p + 1)]/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m - 1)*(a + b*Log[c*xⁿ])^(p + 1)]/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,

$e, f, r, m, n\}, x] \&\& \text{IGtQ}[p, 0] \&\& \text{NeQ}[d*e, 1]$

Rule 2390

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_.) + (e_.)*(x_.))^{(n_.)}]*(b_.))^{(p_.)}*((f_.) + (g_.)*(x_.))^{(q_.)}, x_Symbol] \rightarrow \text{Dist}[1/e, \text{Subst}[\text{Int}[(f*x)/d]^{q*}(a + b*\text{Log}[c*x^n])^p, x], x, d + e*x], x] /; \text{FreeQ}\{a, b, c, d, e, f, g, n, p, q\}, x] \&\& \text{EqQ}[e*f - d*g, 0]$

Rule 2391

$\text{Int}[\text{Log}[(c_.)*((d_.) + (e_.)*(x_.))^{(n_.)}]/(x_), x_Symbol] \rightarrow -\text{Simp}[\text{PolyLog}[2, -(c*e*x^n)]/n, x] /; \text{FreeQ}\{c, d, e, n\}, x] \&\& \text{EqQ}[c*d, 1]$

Rule 2393

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_.) + (e_.)*(x_.))]*(b_.)]/((f_.) + (g_.)*(x_.)), x_Symbol] \rightarrow \text{Dist}[1/g, \text{Subst}[\text{Int}[(a + b*\text{Log}[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; \text{FreeQ}\{a, b, c, d, e, f, g\}, x] \&\& \text{NeQ}[e*f - d*g, 0] \&\& \text{EqQ}[g + c*(e*f - d*g), 0]$

Rule 2394

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_.) + (e_.)*(x_.))^{(n_.)}]*(b_.)]/((f_.) + (g_.)*(x_.)), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[(e*(f + g*x))/(e*f - d*g)]*(a + b*\text{Log}[c*(d + e*x)^n]))/g, x] - \text{Dist}[(b*e*n)/g, \text{Int}[\text{Log}[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; \text{FreeQ}\{a, b, c, d, e, f, g, n\}, x] \&\& \text{NeQ}[e*f - d*g, 0]$

Rule 2396

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_.) + (e_.)*(x_.))^{(n_.)}]*(b_.))^{(p_.)}/((f_.) + (g_.)*(x_.)), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[(e*(f + g*x))/(e*f - d*g)]*(a + b*\text{Log}[c*(d + e*x)^n])^p)/g, x] - \text{Dist}[(b*e*n*p)/g, \text{Int}[(\text{Log}[(e*(f + g*x))/(e*f - d*g)]*(a + b*\text{Log}[c*(d + e*x)^n])^{(p-1)})/(d + e*x), x], x] /; \text{FreeQ}\{a, b, c, d, e, f, g, n, p\}, x] \&\& \text{NeQ}[e*f - d*g, 0] \&\& \text{IGtQ}[p, 1]$

Rule 2418

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_.) + (e_.)*(x_.))^{(n_.)}]*(b_.))^{(p_.)}*(\text{RFX}_), x_Symbol] \rightarrow \text{With}\{u = \text{ExpandIntegrand}[(a + b*\text{Log}[c*(d + e*x)^n])^p, \text{RFX}, x]\}, \text{Int}[u, x] /; \text{SumQ}[u] /; \text{FreeQ}\{a, b, c, d, e, n\}, x] \&\& \text{RationalFunctionQ}[\text{RFX}, x] \&\& \text{IntegerQ}[p]$

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*x)/d]^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e]^m), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*1, 0]
```

Rule 2434

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*(i_.) + (j_.)*(x_))^(m_.)]*(g_.))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n])]/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m])]/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*(i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] :>
Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*1)/l) + (e*x)/l)^n])*(f +
g*Log[h*(-((j*k - i*1)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q]^r]^s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)
^(r_.)]*(s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/(j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q]^r]/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)
```



```

)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] := Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n])]/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n])]/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]

```

Rule 2523

```

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] := Simp[x*(a +
b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*
RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, p}, x] && Rat
ionalFunctionQ[RFx, x] && IGtQ[n, 0]

```

Rule 2524

```

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]

```

Rule 2525

```

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]

```

Rule 2528

```

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunci
onQ[RGx, x] && IGtQ[n, 0]

```

Rule 6589

```

Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]

```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl  
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]  
]
```

Rubi steps

$$\begin{aligned}
\int \frac{(ag + bgx)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{186c + 186dx} dx &= \int \left[\frac{b(bc - ad)^2 g^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{186d^3} + \frac{(-bc + ad)^3 g^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{d^3 (186c)} \right. \\
&= \frac{(bg) \int (ag + bgx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx}{186d} - \frac{(b(bc - ad)g^2)}{186d} \\
&= \frac{b(bc - ad)^2 g^3 x \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{186d^3} - \frac{(bc - ad)g^3 (a + bx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{37d^3} \\
&= \frac{b(bc - ad)^2 g^3 x \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{186d^3} - \frac{(bc - ad)g^3 (a + bx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{37d^3} \\
&= \frac{b(bc - ad)^2 g^3 x \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{186d^3} - \frac{(bc - ad)g^3 (a + bx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{37d^3} \\
&= \frac{b(bc - ad)^2 g^3 x \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{186d^3} - \frac{(bc - ad)g^3 (a + bx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{37d^3} \\
&= \frac{5AbB(bc - ad)^2 g^3 nx}{558d^3} - \frac{B(bc - ad)g^3 n(a + bx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{558d^2} \\
&= \frac{5AbB(bc - ad)^2 g^3 nx}{558d^3} + \frac{5B^2(bc - ad)^2 g^3 n(a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{558d^3} \\
&= \frac{5AbB(bc - ad)^2 g^3 nx}{558d^3} + \frac{5B^2(bc - ad)^2 g^3 n(a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{558d^3} \\
&= \frac{5AbB(bc - ad)^2 g^3 nx}{558d^3} + \frac{bB^2(bc - ad)^2 g^3 n^2 x}{558d^3} + \frac{5B^2(bc - ad)^2 g^3 n}{558d^3} \\
&= \frac{5AbB(bc - ad)^2 g^3 nx}{558d^3} + \frac{bB^2(bc - ad)^2 g^3 n^2 x}{558d^3} - \frac{aB^2(bc - ad)^2 g^3 n^2}{186d^3}
\end{aligned}$$

Mathematica [B] time = 4.33, size = 3265, normalized size = 4.25

Result too large to show

Antiderivative was successfully verified.

[In] Integrate[((a*g + b*g*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(c*i + d*i*x), x]

[Out] $(g^3*(6*b*d*(b^2*c^2 - 3*a*b*c*d + 3*a^2*d^2)*x*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n] - B*n*\text{Log}[(a + b*x)/(c + d*x)])^2 - 3*b^2*d^2*(b*c - 3*a*d)*x^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n] - B*n*\text{Log}[(a + b*x)/(c + d*x)])^2 + 2*b^3*d^3*x^3*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n] - B*n*\text{Log}[(a + b*x)/(c + d*x)])^2 - 6*(b*c - a*d)^3*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n] - B*n*\text{Log}[(a + b*x)/(c + d*x)])^2*\text{Log}[c + d*x] + 18*a*B*d*n*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n] - B*n*\text{Log}[(a + b*x)/(c + d*x)])*(-2*b^2*c^2 + 2*a*b*c*d - b^2*c*d*x + a*b*d^2*x + 2*b^2*c^2*\text{Log}[c/d + x] - b^2*c^2*\text{Log}[c/d + x]^2 - a^2*d^2*\text{Log}[a + b*x] - 2*b^2*c*d*x*\text{Log}[(a + b*x)/(c + d*x)] + b^2*d^2*x^2*\text{Log}[(a + b*x)/(c + d*x)] + b^2*c^2*\text{Log}[c + d*x] + 2*b^2*c^2*\text{Log}[c/d + x]*\text{Log}[c + d*x] + 2*b^2*c^2*\text{Log}[(a + b*x)/(c + d*x)]*\text{Log}[c + d*x] - 2*b*c*\text{Log}[a/b + x]*(a*d + b*c*\text{Log}[c + d*x] - b*c*\text{Log}[(b*(c + d*x))/(b*c - a*d)]) + 2*b^2*c^2*\text{PolyLog}[2, (d*(a + b*x))/(-b*c + a*d)] - 2*B*n*(-A - B*\text{Log}[e*((a + b*x)/(c + d*x))^n] + B*n*\text{Log}[(a + b*x)/(c + d*x)])*(6*b^3*c^3 - 6*a*b^2*c^2*d + 5*b^3*c^2*d*x - 3*a*b^2*c*d^2*x - 2*a^2*b*d^3*x - b^3*c*d^2*x^2 + a*b^2*d^3*x^2 - 6*b^3*c^3*\text{Log}[c/d + x] + 3*b^3*c^3*\text{Log}[c/d + x]^2 + 3*a^2*b*c*d^2*\text{Log}[a + b*x] + 2*a^3*d^3*\text{Log}[a + b*x] + 6*b^3*c^2*d*x*\text{Log}[(a + b*x)/(c + d*x)] - 3*b^3*c*d^2*x^2*\text{Log}[(a + b*x)/(c + d*x)] + 2*b^3*d^3*x^3*\text{Log}[(a + b*x)/(c + d*x)] - 5*b^3*c^3*\text{Log}[c + d*x] - 6*b^3*c^3*\text{Log}[c/d + x]*\text{Log}[c + d*x] - 6*b^3*c^3*\text{Log}[(a + b*x)/(c + d*x)]*\text{Log}[c + d*x] + 6*b^2*c^2*\text{Log}[a/b + x]*(a*d + b*c*\text{Log}[c + d*x] - b*c*\text{Log}[(b*(c + d*x))/(b*c - a*d)]) - 6*b^3*c^3*\text{PolyLog}[2, (d*(a + b*x))/(-b*c + a*d)] - 6*a^3*B*d^3*n*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n] - B*n*\text{Log}[(a + b*x)/(c + d*x)])*(\text{Log}[c/d + x]^2 + 2*(\text{Log}[a/b + x] - \text{Log}[c/d + x] - \text{Log}[(a + b*x)/(c + d*x)])*\text{Log}[c + d*x] - 2*(\text{Log}[a/b + x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)] + \text{PolyLog}[2, (d*(a + b*x))/(-b*c + a*d)])) - 18*a^2*B*d^2*n*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n] - B*n*\text{Log}[(a + b*x)/(c + d*x)])*(-2*d*(a + b*x)*(-1 + \text{Log}[a/b + x]) + 2*b*(c + d*x)*(-1 + \text{Log}[c/d + x]) - b*c*\text{Log}[c/d + x]^2 + 2*b*(\text{Log}[a/b + x] - \text{Log}[c/d + x] - \text{Log}[(a + b*x)/(c + d*x)])*(d*x - c*\text{Log}[c + d*x]) + 2*b*c*(\text{Log}[a/b + x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)] + \text{PolyLog}[2, (d*(a + b*x))/(-b*c + a*d)])) + 18*a^2*B^2*d^2*n^2*(d*(a + b*x)*\text{Log}[(a + b*x)/(c + d*x)]^2 + b*c*\text{Log}[(a + b*x)/(c + d*x)]^2*\text{Log}[(b*c - a*d)/(b*c + b*d*x)] - (b*c - a*d)*(\text{Log}[(b*c - a*d)/(b*c + b*d*x)]*(2*\text{Log}[(d*(a + b*x))/(-b*c + a*d)] - 2*\text{Log}[(a + b*x)/(c + d*x)] + \text{Log}[(b*c - a*d)/(b*c + b*d*x)]) - 2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)] + 2*b*c*(\text{Log}[(a + b*x)/(c + d*x)]*\text{PolyLog}[2, (d*(a + b*x))/(b*(c + d*x))]) - \text{PolyLog}[3, (d*(a + b*x))/(b*(c + d*x))]) + 9*a*B^2*d*n^2*(2$

$$\begin{aligned}
& *d*(-(b*c) + a*d)*(a + b*x)*\text{Log}[(a + b*x)/(c + d*x)] - 2*a^2*d^2*\text{Log}[a + b*x] \\
& *\text{Log}[(a + b*x)/(c + d*x)] + b^2*d^2*x^2*\text{Log}[(a + b*x)/(c + d*x)]^2 - 2*b*c*d*(a + b*x)*\text{Log}[(a + b*x)/(c + d*x)]^2 + 2*(b*c - a*d)^2*\text{Log}[c + d*x] - 2 \\
& *b^2*c^2*\text{Log}[(a + b*x)/(c + d*x)]*\text{Log}[(b*c - a*d)/(b*c + b*d*x)] - 2*b^2*c^2 \\
& *2*\text{Log}[(a + b*x)/(c + d*x)]^2*\text{Log}[(b*c - a*d)/(b*c + b*d*x)] + a^2*d^2*(\text{Log}[a + b*x] \\
& *(\text{Log}[a + b*x] - 2*\text{Log}[(b*(c + d*x))/(b*c - a*d)])) - 2*\text{PolyLog}[2, (d*(a + b*x))/(- \\
& (b*c) + a*d)] + b^2*c^2*(\text{Log}[(b*c - a*d)/(b*c + b*d*x)]*(2*\text{Log}[(d*(a + b*x))/(- \\
& (b*c) + a*d)] + \text{Log}[(b*c - a*d)/(b*c + b*d*x)]) - 2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a \\
& *d)]) - 4*b^2*c^2*(\text{Log}[(a + b*x)/(c + d*x)]*\text{PolyLog}[2, (d*(a + b*x))/(b*(c + d*x))] \\
& - \text{PolyLog}[3, (d*(a + b*x))/(b*(c + d*x))]) - 6*a^3*B^2*d^3*n^2*(\text{Log}[(a + b*x)/(c + d*x)]^2 \\
& *\text{Log}[(b*c - a*d)/(b*c + b*d*x)] + 2*\text{Log}[(a + b*x)/(c + d*x)]*\text{PolyLog}[2, (d*(a + b*x))/(b*(c + d*x))] \\
& - 2*\text{PolyLog}[3, (d*(a + b*x))/(b*(c + d*x))]) + B^2*n^2*(2*b^3*c^2*d*x - 4*a*b^2*c*d^2*x + 2*a^2*b*d^3*x \\
& + 2*a^2*b*c*d^2*\text{Log}[a + b*x] - 2*a^3*d^3*\text{Log}[a + b*x] - 3*a^2*b*c*d^2*\text{Log}[a + b*x]^2 \\
& - 2*a^3*d^3*\text{Log}[a + b*x]^2 + 10*a*b^2*c^2*d*\text{Log}[(a + b*x)/(c + d*x)] - 6*a^2*b*c*d^2*\text{Log}[(a + b*x)/(c + d*x)] \\
& - 4*a^3*d^3*\text{Log}[(a + b*x)/(c + d*x)] + 10*b^3*c^2*d*x*\text{Log}[(a + b*x)/(c + d*x)] - 6*a*b^2*c*d^2*x*\text{Log} \\
& [(a + b*x)/(c + d*x)] - 4*a^2*b*d^3*x*\text{Log}[(a + b*x)/(c + d*x)] - 2*b^3*c*d^2*x^2*\text{Log}[(a + b*x)/(c + d*x)] \\
& + 2*a*b^2*d^3*x^2*\text{Log}[(a + b*x)/(c + d*x)] + 6*a^2*b*c*d^2*\text{Log}[a + b*x]*\text{Log}[(a + b*x)/(c + d*x)] \\
& + 4*a^3*d^3*\text{Log}[a + b*x]*\text{Log}[(a + b*x)/(c + d*x)] + 6*a*b^2*c^2*d*\text{Log}[(a + b*x)/(c + d*x)]^2 + 6 \\
& *b^3*c^2*d*x*\text{Log}[(a + b*x)/(c + d*x)]^2 - 3*b^3*c*d^2*x^2*\text{Log}[(a + b*x)/(c + d*x)]^2 + 2*b^3*d^3*x^3*\text{Log} \\
& [(a + b*x)/(c + d*x)]^2 - 12*b^3*c^3*\text{Log}[c + d*x] + 18*a*b^2*c^2*d*\text{Log}[c + d*x] - 2*a^2*b*c*d^2*\text{Log}[c + d*x] \\
& - 4*a^3*d^3*\text{Log}[c + d*x] + 6*a^2*b*c*d^2*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)] + 4 \\
& *a^3*d^3*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)] - 22*b^3*c^3*\text{Log}[(d*(a + b*x))/(- \\
& (b*c) + a*d)]*\text{Log}[(b*c - a*d)/(b*c + b*d*x)] + 12*a*b^2*c^2*d*\text{Log}[(d*(a + b*x))/(- \\
& (b*c) + a*d)]*\text{Log}[(b*c - a*d)/(b*c + b*d*x)] + 22*b^3*c^3*\text{Log}[(a + b*x)/(c + d*x)]*\text{Log} \\
& [(b*c - a*d)/(b*c + b*d*x)] - 12*a*b^2*c^2*d*\text{Log}[(a + b*x)/(c + d*x)]*\text{Log}[(b*c - a*d)/(b*c + b*d*x)] \\
& + 6*b^3*c^3*\text{Log}[(a + b*x)/(c + d*x)]^2*\text{Log}[(b*c - a*d)/(b*c + b*d*x)] - 11*b^3*c^3*\text{Log}[(b*c - a \\
& *d)/(b*c + b*d*x)]^2 + 6*a*b^2*c^2*d*\text{Log}[(b*c - a*d)/(b*c + b*d*x)]^2 + 2*a^2*d^2*(3*b*c + 2*a*d) \\
& *\text{PolyLog}[2, (d*(a + b*x))/(- (b*c) + a*d)] + 12*b^3*c^3*\text{Log}[(a + b*x)/(c + d*x)]*\text{PolyLog}[2, (d*(a + b*x))/ \\
& (b*(c + d*x))] + 22*b^3*c^3*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)] - 12*a*b^2*c^2*d*\text{PolyLog}[2, (b*(c + d*x))/ \\
& (b*c - a*d)] - 12*b^3*c^3*\text{PolyLog}[3, (d*(a + b*x))/(b*(c + d*x))]) \\
&))/(6*d^4*i)
\end{aligned}$$

fricas [F] time = 0.93, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{A^2 b^3 g^3 x^3 + 3 A^2 a b^2 g^3 x^2 + 3 A^2 a^2 b g^3 x + A^2 a^3 g^3 + (B^2 b^3 g^3 x^3 + 3 B^2 a b^2 g^3 x^2 + 3 B^2 a^2 b g^3 x + B^2 a^3 g^3)}{dix + ci} \right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i),x, algorithm="fricas")

[Out] integral((A^2*b^3*g^3*x^3 + 3*A^2*a*b^2*g^3*x^2 + 3*A^2*a^2*b*g^3*x + A^2*a^3*g^3 + (B^2*b^3*g^3*x^3 + 3*B^2*a*b^2*g^3*x^2 + 3*B^2*a^2*b*g^3*x + B^2*a^3*g^3)*log(e*((b*x + a)/(d*x + c))^n))^2 + 2*(A*B*b^3*g^3*x^3 + 3*A*B*a*b^2*g^3*x^2 + 3*A*B*a^2*b*g^3*x + A*B*a^3*g^3)*log(e*((b*x + a)/(d*x + c))^n))/(d*i*x + c*i), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i),x, algorithm="giac")

[Out] Timed out

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{(bgx + ag)^3 \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)^2}{dix + ci} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(d*i*x+c*i),x)

[Out] int((b*g*x+a*g)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(d*i*x+c*i),x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i),x, algorithm="maxima")

[Out] 3*A^2*a^2*b*g^3*(x/(d*i) - c*log(d*x + c)/(d^2*i)) - 1/6*A^2*b^3*g^3*(6*c^3*log(d*x + c)/(d^4*i) - (2*d^2*x^3 - 3*c*d*x^2 + 6*c^2*x)/(d^3*i)) + 3/2*A^2*a*b^2*g^3*(2*c^2*log(d*x + c)/(d^3*i) + (d*x^2 - 2*c*x)/(d^2*i)) + A^2*a^3*g^3*log(d*i*x + c*i)/(d*i) + 1/6*(2*B^2*b^3*d^3*g^3*x^3 - 3*(b^3*c*d^2*g^3 - 3*a*b^2*d^3*g^3)*B^2*x^2 + 6*(b^3*c^2*d*g^3 - 3*a*b^2*c*d^2*g^3 + 3*a^2*b*d^3*g^3)*B^2*x - 6*(b^3*c^3*g^3 - 3*a*b^2*c^2*d*g^3 + 3*a^2*b*c*d^2*g^3 - a^3*d^3*g^3)*B^2*log(d*x + c))*log((d*x + c)^n)^2/(d^4*i) - integrate(-1/3*(3*B^2*a^3*d^3*g^3*log(e)^2 + 6*A*B*a^3*d^3*g^3*log(e) + 3*(B^2*b^3*d^3*g^3*log(e)^2 + 2*A*B*b^3*d^3*g^3*log(e))*x^3 + 9*(B^2*a*b^2*d^3*g^3*log(e)^2 + 2*A*B*a*b^2*d^3*g^3*log(e))*x^2 + 3*(B^2*b^3*d^3*g^3*x^3 + 3*B^2*a*b^2*d^3*g^3*x^2 + 3*B^2*a^2*b*d^3*g^3*x + B^2*a^3*d^3*g^3)*log((b*x + a)^n)^2 + 9*(B^2*a^2*b*d^3*g^3*log(e)^2 + 2*A*B*a^2*b*d^3*g^3*log(e))*x + 6*(B^2*a^3*d^3*g^3*log(e) + A*B*a^3*d^3*g^3 + (B^2*b^3*d^3*g^3*log(e) + A*B*b^3*d^3*g^3)*x^3 + 3*(B^2*a*b^2*d^3*g^3*log(e) + A*B*a*b^2*d^3*g^3)*x^2 + 3*(B^2*a^2*b*d^3*g^3*log(e) + A*B*a^2*b*d^3*g^3)*x)*log((b*x + a)^n) - (6*B^2*a^3*d^3*g^3*log(e) + 6*A*B*a^3*d^3*g^3 + 2*(3*A*B*b^3*d^3*g^3 + (g^3*n + 3*g^3*log(e))*B^2*b^3*d^3)*x^3 - 6*(b^3*c^3*g^3*n - 3*a*b^2*c^2*d*g^3*n + 3*a^2*b*c*d^2*g^3*n - a^3*d^3*g^3*n)*B^2*log(d*x + c) + 3*(6*A*B*a*b^2*d^3*g^3 - (b^3*c*d^2*g^3*n - 3*(g^3*n + 2*g^3*log(e))*a*b^2*d^3)*B^2)*x^2 + 6*(3*A*B*a^2*b*d^3*g^3 + (b^3*c^2*d*g^3*n - 3*a*b^2*c*d^2*g^3*n + 3*(g^3*n + g^3*log(e))*a^2*b*d^3)*B^2)*x + 6*(B^2*b^3*d^3*g^3*x^3 + 3*B^2*a*b^2*d^3*g^3*x^2 + 3*B^2*a^2*b*d^3*g^3*x + B^2*a^3*d^3*g^3)*log((b*x + a)^n))*log((d*x + c)^n))/(d^4*i*x + c*d^3*i), x)

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ag + bgx)^3 \left(A + B \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{ci + dix} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((a*g + b*g*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(c*i + d*i*x),x)

[Out] int(((a*g + b*g*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(c*i + d*i*x), x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**3*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(d*i*x+c*i),x)
```

```
[Out] Timed out
```


$$3.187 \quad \int \frac{(ag+bgx)^2 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{ci+dix} dx$$

Optimal. Leaf size=573

$$\frac{b^2 g^2 (c+dx)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)^2}{2d^3 i} - \frac{2B g^2 n (bc-ad)^2 \text{Li}_2 \left(\frac{d(a+bx)}{b(c+dx)} \right) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{d^3 i} - g^2 (bc-ad)^2 \log$$

[Out] $-B*(-a*d+b*c)*g^{2*n}*(b*x+a)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/d^{2/i}-2*(-a*d+b*c)*g^{2*(b*x+a)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^{2/d^{2/i+1/2}}*b^{2*g^{2*(d*x+c)^{2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^{2/d^{3/i-4}}}}*B*(-a*d+b*c)^{2*g^{2*n}*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))*\ln((-a*d+b*c)/b/(d*x+c))/d^{3/i}-(a*d+b*c)^{2*g^{2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^{2*\ln((-a*d+b*c)/b/(d*x+c))/d^{3/i+B^{2*(-a*d+b*c)^{2*g^{2*n^2*\ln(d*x+c)/d^{3/i+B^{2*(-a*d+b*c)^{2*g^{2*n}*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))*\ln(1-b*(d*x+c)/d/(b*x+a))/d^{3/i-4}}}}*B^{2*(-a*d+b*c)^{2*g^{2*n^2*\text{polylog}(2,d*(b*x+a)/b/(d*x+c))/d^{3/i-2}}}}*B^{2*(-a*d+b*c)^{2*g^{2*n}*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))*\text{polylog}(2,d*(b*x+a)/b/(d*x+c))/d^{3/i-B^{2*(-a*d+b*c)^{2*g^{2*n^2*\text{polylog}(2,b*(d*x+c)/d/(b*x+a))/d^{3/i+2}}}}*B^{2*(-a*d+b*c)^{2*g^{2*n^2*\text{polylog}(3,d*(b*x+a)/b/(d*x+c))/d^{3/i}}$

Rubi [B] time = 4.75, antiderivative size = 1780, normalized size of antiderivative = 3.11, number of steps used = 82, number of rules used = 27, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}} = 0.600$, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 2486, 31, 6688, 6742, 2499, 2396, 2433, 2374, 6589, 2302, 30, 2500, 2375, 2317, 2440, 2434}

result too large to display

Antiderivative was successfully verified.

[In] $\text{Int}[(a*g + b*g*x)^{2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2}/(c*i + d*i*x), x]$

[Out] $-((A*B*B*(b*c - a*d)*g^{2*n*x}/(d^{2*i})) + (a*B^{2*(b*c - a*d)*g^{2*n^2*\text{Log}[a + b*x]^2}/(d^{2*i}) - (B^{2*(b*c - a*d)*g^{2*n}*(a + b*x)*\text{Log}[e*((a + b*x)/(c + d*x))^n]}/(d^{2*i}) - (2*a*B*(b*c - a*d)*g^{2*n*\text{Log}[a + b*x]*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])}/(d^{2*i}) - (b*(b*c - a*d)*g^{2*x*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2}/(d^{2*i}) + (g^{2*(a + b*x)^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2}/(2*d*i) + (B^{2*(b*c - a*d)^{2*g^{2*n^2*\text{Log}[c + d*x]}}}/(d^{3*i}) - (2*b*B^{2*c*(b*c - a*d)*g^{2*n^2*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]}*\text{Log}[c + d*x])/d^{3*i} - (B^{2*(b*c - a*d)^{2*g^{2*n^2*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]}]*\text{Log}[c + d*x])/d^{3*i} + (2*b*B*c*(b*c - a*d)*g^{2*n*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]})*\text{Log}[c + d*x])/d^{3*i} + (B*(b*c - a*d)^{2*g^{2*n}*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])})*\text{Log}[c + d*x])/d^{3*i} + (b*B^{2*c*(b*c - a*d)*g^{2*$

$$\begin{aligned}
& n^2 \text{Log}[c + d*x]^2 / (d^3*i) + (B^2*(b*c - a*d)^2*g^2*n^2*\text{Log}[c + d*x]^2) / (2 \\
& *d^3*i) - (2*a*B^2*(b*c - a*d)*g^2*n^2*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x)) / (b*c \\
& - a*d)]) / (d^2*i) + (B^2*(b*c - a*d)^2*g^2*\text{Log}[(a + b*x)^n]^2*\text{Log}[(b*(c + d* \\
& x)) / (b*c - a*d)]) / (d^3*i) - (B^2*(b*c - a*d)^2*g^2*\text{Log}[(a + b*x)^n]^2*\text{Log}[i \\
& *(c + d*x)]) / (d^3*i) + (A*B*(b*c - a*d)^2*g^2*n*\text{Log}[i*(c + d*x)]^2) / (d^3*i) \\
& - (B^2*(b*c - a*d)^2*g^2*n^2*\text{Log}[a + b*x]*\text{Log}[i*(c + d*x)]^2) / (d^3*i) + (B \\
& ^2*(b*c - a*d)^2*g^2*n^2*\text{Log}[-(d*(a + b*x)) / (b*c - a*d)]*\text{Log}[i*(c + d*x)] \\
& ^2) / (d^3*i) + (B^2*(b*c - a*d)^2*g^2*n^2*\text{Log}[i*(c + d*x)]^3) / (3*d^3*i) - (2 \\
& *B^2*(b*c - a*d)^2*g^2*n*\text{Log}[a + b*x]*\text{Log}[i*(c + d*x)]*\text{Log}[(c + d*x)^(-n)]) \\
& / (d^3*i) - (B^2*(b*c - a*d)^2*g^2*\text{Log}[a + b*x]*\text{Log}[(c + d*x)^(-n)]^2) / (d^3* \\
& i) + (B^2*(b*c - a*d)^2*g^2*\text{Log}[-(d*(a + b*x)) / (b*c - a*d)]*\text{Log}[(c + d*x) \\
& ^(-n)]^2) / (d^3*i) - (2*A*B*(b*c - a*d)^2*g^2*n*\text{Log}[-(d*(a + b*x)) / (b*c - a \\
& *d)]*\text{Log}[c*i + d*i*x]) / (d^3*i) + ((b*c - a*d)^2*g^2*(A + B*\text{Log}[e*((a + b*x) \\
&) / (c + d*x)]^n))^2*\text{Log}[c*i + d*i*x]) / (d^3*i) + (2*B^2*(b*c - a*d)^2*g^2*n*L \\
& og[-((d*(a + b*x)) / (b*c - a*d))*(\text{Log}[(a + b*x)^n] - \text{Log}[e*((a + b*x)) / (c + \\
& d*x)]^n) + \text{Log}[(c + d*x)^(-n)])*\text{Log}[c*i + d*i*x]) / (d^3*i) - (B^2*(b*c - a*d) \\
& ^2*g^2*n^2*\text{Log}[-(d*(a + b*x)) / (b*c - a*d)]*\text{Log}[c*i + d*i*x]^2) / (d^3*i) + \\
& (B^2*(b*c - a*d)^2*g^2*n*\text{Log}[e*((a + b*x)) / (c + d*x)]^n)*\text{Log}[c*i + d*i*x]^2 \\
&) / (d^3*i) - (2*a*B^2*(b*c - a*d)*g^2*n^2*\text{PolyLog}[2, -(d*(a + b*x)) / (b*c - \\
& a*d)]) / (d^2*i) + (2*B^2*(b*c - a*d)^2*g^2*n*\text{Log}[(a + b*x)^n]*\text{PolyLog}[2, -(\\
& (d*(a + b*x)) / (b*c - a*d)]) / (d^3*i) - (2*A*B*(b*c - a*d)^2*g^2*n*\text{PolyLog}[2 \\
& , (b*(c + d*x)) / (b*c - a*d)]) / (d^3*i) - (2*b*B^2*c*(b*c - a*d)*g^2*n^2*\text{Poly} \\
& \text{Log}[2, (b*(c + d*x)) / (b*c - a*d)]) / (d^3*i) - (B^2*(b*c - a*d)^2*g^2*n^2*\text{Pol} \\
& \text{yLog}[2, (b*(c + d*x)) / (b*c - a*d)]) / (d^3*i) - (2*B^2*(b*c - a*d)^2*g^2*n*Lo \\
& g[(c + d*x)^(-n)]*\text{PolyLog}[2, (b*(c + d*x)) / (b*c - a*d)]) / (d^3*i) + (2*B^2*(\\
& b*c - a*d)^2*g^2*n*(\text{Log}[(a + b*x)^n] - \text{Log}[e*((a + b*x)) / (c + d*x)]^n) + \text{Log} \\
& [(c + d*x)^(-n)])*\text{PolyLog}[2, (b*(c + d*x)) / (b*c - a*d)]) / (d^3*i) - (2*B^2*(\\
& b*c - a*d)^2*g^2*n^2*\text{PolyLog}[3, -(d*(a + b*x)) / (b*c - a*d)]) / (d^3*i) - (2 \\
& *B^2*(b*c - a*d)^2*g^2*n^2*\text{PolyLog}[3, (b*(c + d*x)) / (b*c - a*d)]) / (d^3*i)
\end{aligned}$$

Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 30

```
Int[(x_)^(m_), x_Symbol] := Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(n_), x_Symbol] := Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2301

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2302

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] := Dist[1/(b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p}, x]

Rule 2317

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol] := Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e, Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]

Rule 2374

Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*(a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] := -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0] && EqQ[d*e, 1]

Rule 2375

Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]^(r_.))*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] := Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m - 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d, e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.)]*(b_.))^(p_.))*((f_) + (g_.)*(x_)^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))*](b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x
), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))*](b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n]))^p/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n]))^(p - 1)/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))*](b_.))^(p_.)*(RFx_), x_Sy
mbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))*](b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_)^(m_.))*](g_.))*((k_.) + (l_.)*(x_)^(r_.)), x_Sym
bol] := Dist[1/e, Subst[Int[(k*x)/d]^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
e*i - d*j)/e + (j*x)/e]^m), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))*](b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_)^(m_.))*](g_.)))/(x_), x_Symbol] := Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n]*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m))]/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
```

, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]

Rule 2440

Int[((a_.) + Log[(c_.)*((d_.) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.) *((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] := Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n)]*(f + g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]

Rule 2486

Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]^(s_.), x_Symbol] := Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]

Rule 2499

Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.) + (k_.)*(x_)), x_Symbol] := Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dist[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x), x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r}, x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]

Rule 2500

Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k_.)*(x_)), x_Symbol] := Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r] - Log[(a + b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k*x), x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x), x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ[b*c - a*d, 0]

Rule 2523

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] := Simp[x*(a + b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, p}, x] && Rat

ionalFunctionQ[RFx, x] && IGtQ[n, 0]

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol]
:> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e,
Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.),
x_Symbol]
:> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)),
Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /;
FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol]
:> With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /;
FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_Symbol]
:> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6688

```
Int[u_, x_Symbol]
:> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; SimplifierIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol]
:> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]]
```

Rubi steps

$$\begin{aligned}
\int \frac{(ag + bgx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{187c + 187dx} dx &= \int \left[-\frac{b(bc - ad)g^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{187d^2} + \frac{(bc - ad)^2 g^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{d^2(187c)} \right] dx \\
&= \frac{(bg) \int (ag + bgx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx}{187d} - \frac{(b(bc - ad)g^2) \int \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx}{187d^2} \\
&= -\frac{b(bc - ad)g^2 x \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{187d^2} + \frac{g^2(a + bx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{374d} \\
&= -\frac{b(bc - ad)g^2 x \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{187d^2} + \frac{g^2(a + bx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{374d} \\
&= -\frac{b(bc - ad)g^2 x \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{187d^2} + \frac{g^2(a + bx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{374d} \\
&= -\frac{b(bc - ad)g^2 x \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{187d^2} + \frac{g^2(a + bx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{374d} \\
&= -\frac{AbB(bc - ad)g^2 nx}{187d^2} - \frac{2aB(bc - ad)g^2 n \log(a + bx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{187d^2} \\
&= -\frac{AbB(bc - ad)g^2 nx}{187d^2} - \frac{B^2(bc - ad)g^2 n(a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{187d^2} \\
&= -\frac{AbB(bc - ad)g^2 nx}{187d^2} - \frac{B^2(bc - ad)g^2 n(a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{187d^2} \\
&= -\frac{AbB(bc - ad)g^2 nx}{187d^2} - \frac{B^2(bc - ad)g^2 n(a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{187d^2} \\
&= -\frac{AbB(bc - ad)g^2 nx}{187d^2} + \frac{aB^2(bc - ad)g^2 n^2 \log^2(a + bx)}{187d^2} - \frac{B^2(bc - ad)g^2 n(a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{187d^2}
\end{aligned}$$

Mathematica [B] time = 1.65, size = 1741, normalized size = 3.04

result too large to display

Antiderivative was successfully verified.

[In] Integrate[((a*g + b*g*x)^2*(A + B*Log[$e^{\frac{a + b*x}{c + d*x}}$])^n)]^2/(c*i + d*i*x), x]

[Out] $(g^2*(-2*b*d*(b*c - 2*a*d)*x*(A + B*\text{Log}[e^{\frac{a + b*x}{c + d*x}}])^n - B*n*\text{Log}[\frac{a + b*x}{c + d*x}]^2 + b^2*d^2*x^2*(A + B*\text{Log}[e^{\frac{a + b*x}{c + d*x}}])^n - B*n*\text{Log}[\frac{a + b*x}{c + d*x}]^2 + 2*(b*c - a*d)^2*(A + B*\text{Log}[e^{\frac{a + b*x}{c + d*x}}])^n - B*n*\text{Log}[\frac{a + b*x}{c + d*x}]^2*\text{Log}[c + d*x] + 2*B*n*(A + B*\text{Log}[e^{\frac{a + b*x}{c + d*x}}])^n - B*n*\text{Log}[\frac{a + b*x}{c + d*x}]*(-2*b^2*c^2 + 2*a*b*c*d - b^2*c*d*x + a*b*d^2*x + 2*b^2*c^2*\text{Log}[c/d + x] - b^2*c^2*\text{Log}[c/d + x]^2 - a^2*d^2*\text{Log}[a + b*x] - 2*b^2*c*d*x*\text{Log}[\frac{a + b*x}{c + d*x}]) + b^2*d^2*x^2*\text{Log}[\frac{a + b*x}{c + d*x}] + b^2*c^2*\text{Log}[c + d*x] + 2*b^2*c^2*\text{Log}[c/d + x]*\text{Log}[c + d*x] + 2*b^2*c^2*\text{Log}[\frac{a + b*x}{c + d*x}]*\text{Log}[c + d*x] - 2*b*c*\text{Log}[a/b + x]*(a*d + b*c*\text{Log}[c + d*x] - b*c*\text{Log}[\frac{b*(c + d*x)}{b*c - a*d}])) + 2*b^2*c^2*\text{PolyLog}[2, \frac{d*(a + b*x)}{-(b*c) + a*d}]) - 2*a^2*B*d^2*n*(A + B*\text{Log}[e^{\frac{a + b*x}{c + d*x}}])^n - B*n*\text{Log}[\frac{a + b*x}{c + d*x}])*(\text{Log}[c/d + x]^2 + 2*(\text{Log}[a/b + x] - \text{Log}[c/d + x] - \text{Log}[\frac{a + b*x}{c + d*x}]))*\text{Log}[c + d*x] - 2*(\text{Log}[a/b + x]*\text{Log}[\frac{b*(c + d*x)}{b*c - a*d}] + \text{PolyLog}[2, \frac{d*(a + b*x)}{-(b*c) + a*d}])) - 4*a*B*d*n*(A + B*\text{Log}[e^{\frac{a + b*x}{c + d*x}}])^n - B*n*\text{Log}[\frac{a + b*x}{c + d*x}])*(-2*d*(a + b*x)*(-1 + \text{Log}[a/b + x]) + 2*b*(c + d*x)*(-1 + \text{Log}[c/d + x]) - b*c*\text{Log}[c/d + x]^2 + 2*b*(\text{Log}[a/b + x] - \text{Log}[c/d + x] - \text{Log}[\frac{a + b*x}{c + d*x}]))*(d*x - c*\text{Log}[c + d*x]) + 2*b*c*(\text{Log}[a/b + x]*\text{Log}[\frac{b*(c + d*x)}{b*c - a*d}] + \text{PolyLog}[2, \frac{d*(a + b*x)}{-(b*c) + a*d}])) + 4*a*B^2*d*n^2*(d*(a + b*x)*\text{Log}[\frac{a + b*x}{c + d*x}]^2 + b*c*\text{Log}[\frac{a + b*x}{c + d*x}]^2*\text{Log}[\frac{b*c - a*d}{b*c + b*d*x}] - (b*c - a*d)*(\text{Log}[\frac{b*c - a*d}{b*c + b*d*x}])*(2*\text{Log}[\frac{d*(a + b*x)}{-(b*c) + a*d}] - 2*\text{Log}[\frac{a + b*x}{c + d*x}] + \text{Log}[\frac{b*c - a*d}{b*c + b*d*x}]) - 2*\text{PolyLog}[2, \frac{b*(c + d*x)}{b*c - a*d}]) + 2*b*c*(\text{Log}[\frac{a + b*x}{c + d*x}]*\text{PolyLog}[2, \frac{d*(a + b*x)}{b*(c + d*x)}]) - \text{PolyLog}[3, \frac{d*(a + b*x)}{b*(c + d*x)}])) + B^2*n^2*(2*d*(-b*c) + a*d)*(a + b*x)*\text{Log}[\frac{a + b*x}{c + d*x}] - 2*a^2*d^2*\text{Log}[a + b*x]*\text{Log}[\frac{a + b*x}{c + d*x}] + b^2*d^2*x^2*\text{Log}[\frac{a + b*x}{c + d*x}]^2 - 2*b*c*d*(a + b*x)*\text{Log}[\frac{a + b*x}{c + d*x}]^2 + 2*(b*c - a*d)^2*\text{Log}[c + d*x] - 2*b^2*c^2*\text{Log}[\frac{a + b*x}{c + d*x}]*\text{Log}[\frac{b*c - a*d}{b*c + b*d*x}] - 2*b^2*c^2*\text{Log}[\frac{a + b*x}{c + d*x}]^2*\text{Log}[\frac{b*c - a*d}{b*c + b*d*x}] + a^2*d^2*(\text{Log}[a + b*x]*(\text{Log}[a + b*x] - 2*\text{Log}[\frac{b*(c + d*x)}{b*c - a*d}])) - 2*\text{PolyLog}[2, \frac{d*(a + b*x)}{-(b*c) + a*d}]) + b^2*c^2*(\text{Log}[\frac{b*c - a*d}{b*c + b*d*x}])*(2*\text{Log}[\frac{d*(a + b*x)}{-(b*c) + a*d}] + \text{Log}[\frac{b*c - a*d}{b*c + b*d*x}]) - 2*\text{PolyLog}[2, \frac{b*(c + d*x)}{b*c - a*d}]) + 2*b*c*(b*c - a*d)*(\text{Log}[\frac{b*c - a*d}{b*c + b*d*x}])*(2*\text{Log}[\frac{d*(a + b*x)}{-(b*c) + a*d}] - 2*\text{Log}[\frac{a + b*x}{c + d*x}] + \text{Log}[\frac{b*c - a*d}{b*c + b*d*x}]) - 2*\text{PolyLog}[2, \frac{b*(c + d*x)}{b*(c + d*x)}])$

$(b*c - a*d)] - 4*b^2*c^2*(\text{Log}[(a + b*x)/(c + d*x)]*\text{PolyLog}[2, (d*(a + b*x))/(b*(c + d*x))]/(b*(c + d*x))] - \text{PolyLog}[3, (d*(a + b*x))/(b*(c + d*x))]) - 2*a^2*B^2*d^2*n^2*(\text{Log}[(a + b*x)/(c + d*x)]^2*\text{Log}[(b*c - a*d)/(b*c + b*d*x)] + 2*\text{Log}[(a + b*x)/(c + d*x)]*\text{PolyLog}[2, (d*(a + b*x))/(b*(c + d*x))] - 2*\text{PolyLog}[3, (d*(a + b*x))/(b*(c + d*x))])/(2*d^3*i)$

fricas [F] time = 0.88, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{A^2 b^2 g^2 x^2 + 2 A^2 a b g^2 x + A^2 a^2 g^2 + (B^2 b^2 g^2 x^2 + 2 B^2 a b g^2 x + B^2 a^2 g^2) \log \left(e \left(\frac{bx+a}{dx+c} \right)^n \right)^2 + 2 (A B b^2 g^2 x^2}{dix + ci} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i),x, algorithm="fricas")

[Out] integral((A^2*b^2*g^2*x^2 + 2*A^2*a*b*g^2*x + A^2*a^2*g^2 + (B^2*b^2*g^2*x^2 + 2*B^2*a*b*g^2*x + B^2*a^2*g^2)*log(e*((b*x + a)/(d*x + c))^n)^2 + 2*(A*B*b^2*g^2*x^2 + 2*A*B*a*b*g^2*x + A*B*a^2*g^2)*log(e*((b*x + a)/(d*x + c))^n))/(d*i*x + c*i), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i),x, algorithm="giac")

[Out] Timed out

maple [F] time = 0.46, size = 0, normalized size = 0.00

$$\int \frac{(bgx + ag)^2 \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)^2}{dix + ci} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(d*i*x+c*i),x)

[Out] int((b*g*x+a*g)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(d*i*x+c*i),x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$2A^2abg^2\left(\frac{x}{di} - \frac{c \log(dx+c)}{d^2i}\right) + \frac{1}{2}A^2b^2g^2\left(\frac{2c^2 \log(dx+c)}{d^3i} + \frac{dx^2 - 2cx}{d^2i}\right) + \frac{A^2a^2g^2 \log(dix+ci)}{di} + \frac{(B^2b^2d^2g^2x^2 -$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i),x, algorithm="maxima")

[Out] 2*A^2*a*b*g^2*(x/(d*i) - c*log(d*x + c)/(d^2*i)) + 1/2*A^2*b^2*g^2*(2*c^2*log(d*x + c)/(d^3*i) + (d*x^2 - 2*c*x)/(d^2*i)) + A^2*a^2*g^2*log(d*i*x + c*i)/(d*i) + 1/2*(B^2*b^2*d^2*g^2*x^2 - 2*(b^2*c*d*g^2 - 2*a*b*d^2*g^2)*B^2*x + 2*(b^2*c^2*g^2 - 2*a*b*c*d*g^2 + a^2*d^2*g^2)*B^2*log(d*x + c))*log((d*x + c)^n)^2/(d^3*i) - integrate(-(B^2*a^2*d^2*g^2*log(e)^2 + 2*A*B*a^2*d^2*g^2*log(e) + (B^2*b^2*d^2*g^2*log(e)^2 + 2*A*B*b^2*d^2*g^2*log(e))*x^2 + (B^2*b^2*d^2*g^2*x^2 + 2*B^2*a*b*d^2*g^2*x + B^2*a^2*d^2*g^2)*log((b*x + a)^n)^2 + 2*(B^2*a*b*d^2*g^2*log(e)^2 + 2*A*B*a*b*d^2*g^2*log(e))*x + 2*(B^2*a^2*d^2*g^2*log(e) + A*B*a^2*d^2*g^2 + (B^2*b^2*d^2*g^2*log(e) + A*B*b^2*d^2*g^2)*x^2 + 2*(B^2*a*b*d^2*g^2*log(e) + A*B*a*b*d^2*g^2)*x)*log((b*x + a)^n) - (2*B^2*a^2*d^2*g^2*log(e) + 2*A*B*a^2*d^2*g^2 + 2*(b^2*c^2*g^2*n - 2*a*b*c*d*g^2*n + a^2*d^2*g^2*n)*B^2*log(d*x + c) + (2*A*B*b^2*d^2*g^2 + (g^2*n + 2*g^2*log(e))*B^2*b^2*d^2)*x^2 + 2*(2*A*B*a*b*d^2*g^2 - (b^2*c*d*g^2*n - 2*(g^2*n + g^2*log(e))*a*b*d^2)*B^2)*x + 2*(B^2*b^2*d^2*g^2*x^2 + 2*B^2*a*b*d^2*g^2*x + B^2*a^2*d^2*g^2)*log((b*x + a)^n))*log((d*x + c)^n))/(d^3*i*x + c*d^2*i), x)

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ag + bgx)^2 \left(A + B \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{ci + dix} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((a*g + b*g*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(c*i + d*i*x),x)

[Out] int(((a*g + b*g*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(c*i + d*i*x), x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(d*i*x+c*i),x)
```

```
[Out] Timed out
```

$$3.188 \quad \int \frac{(ag+bgx) \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{ci+dix} dx$$

Optimal. Leaf size=303

$$\frac{2Bgn(bc-ad) \operatorname{Li}_2 \left(\frac{d(a+bx)}{b(c+dx)} \right) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{d^2i} + \frac{2Bgn(bc-ad) \log \left(\frac{bc-ad}{b(c+dx)} \right) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{d^2i} + \frac{g(bc-ad)}{d^2i}$$

[Out] $g*(b*x+a)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/d/i+2*B*(-a*d+b*c)*g*n*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))*\ln((-a*d+b*c)/b/(d*x+c))/d^2/i+(-a*d+b*c)*g*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2*\ln((-a*d+b*c)/b/(d*x+c))/d^2/i+2*B^2*(-a*d+b*c)*g*n^2*\operatorname{polylog}(2,d*(b*x+a)/b/(d*x+c))/d^2/i+2*B*(-a*d+b*c)*g*n*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))*\operatorname{polylog}(2,d*(b*x+a)/b/(d*x+c))/d^2/i-2*B^2*(-a*d+b*c)*g*n^2*\operatorname{polylog}(3,d*(b*x+a)/b/(d*x+c))/d^2/i$

Rubi [B] time = 4.03, antiderivative size = 1156, normalized size of antiderivative = 3.82, number of steps used = 65, number of rules used = 24, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.558$, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2500, 2433, 2375, 2317, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

$$\frac{B^2(bc-ad)gn^2 \log^3(c+dx)}{3d^2i} - \frac{bB^2cgn^2 \log^2(c+dx)}{d^2i} - \frac{AB(bc-ad)gn \log^2(c+dx)}{d^2i} + \frac{B^2(bc-ad)gn^2 \log(a+bx)}{d^2i}$$

Antiderivative was successfully verified.

[In] $\operatorname{Int}[(a*g + b*g*x)*(A + B*\operatorname{Log}[e*((a + b*x)/(c + d*x))^n])^2]/(c*i + d*i*x), x]$

[Out] $-((a*B^2*g*n^2*\operatorname{Log}[a + b*x]^2)/(d*i)) + (2*a*B*g*n*\operatorname{Log}[a + b*x]*(A + B*\operatorname{Log}[e*((a + b*x)/(c + d*x))^n]))/(d*i) + (b*g*x*(A + B*\operatorname{Log}[e*((a + b*x)/(c + d*x))^n])^2)/(d*i) + (2*A*B*(b*c - a*d)*g*n*\operatorname{Log}[-((d*(a + b*x))/(b*c - a*d))] * \operatorname{Log}[c + d*x])/(d^2*i) + (2*b*B^2*c*g*n^2*\operatorname{Log}[-((d*(a + b*x))/(b*c - a*d))] * \operatorname{Log}[c + d*x])/(d^2*i) + (B^2*(b*c - a*d)*g*\operatorname{Log}[(a + b*x)^n]^2*\operatorname{Log}[c + d*x])/(d^2*i) - (2*b*B*c*g*n*(A + B*\operatorname{Log}[e*((a + b*x)/(c + d*x))^n])*\operatorname{Log}[c + d*x])/(d^2*i) - ((b*c - a*d)*g*(A + B*\operatorname{Log}[e*((a + b*x)/(c + d*x))^n])^2*\operatorname{Log}[c + d*x])/(d^2*i) - (A*B*(b*c - a*d)*g*n*\operatorname{Log}[c + d*x]^2)/(d^2*i) - (b*B^2*c*g*n^2*\operatorname{Log}[c + d*x]^2)/(d^2*i) + (B^2*(b*c - a*d)*g*n^2*\operatorname{Log}[a + b*x]*\operatorname{Log}[c + d*x]^2)/(d^2*i) - (B^2*(b*c - a*d)*g*n*\operatorname{Log}[e*((a + b*x)/(c + d*x))^n]*\operatorname{Log}[c + d*x]^2)/(d^2*i) - (B^2*(b*c - a*d)*g*n^2*\operatorname{Log}[c + d*x]^3)/(3*d^2*i) + (2*a*B^2*g*n^2*\operatorname{Log}[a + b*x]*\operatorname{Log}[(b*(c + d*x))/(b*c - a*d)])/(d*i) - (B^2*(b*c - a*d)*g*\operatorname{Log}[(a + b*x)^n]^2*\operatorname{Log}[(b*(c + d*x))/(b*c - a*d)])/(d^2*i) + (2*B^2$

$$\begin{aligned}
& 2*(b*c - a*d)*g*n*Log[a + b*x]*Log[c + d*x]*Log[(c + d*x)^{-n}]/(d^{2*i}) + \\
& (B^{2*(b*c - a*d)}*g*Log[a + b*x]*Log[(c + d*x)^{-n}]^2)/(d^{2*i}) - (B^{2*(b*c - a*d)}*g*Log[-((d*(a + b*x))/(b*c - a*d))] * Log[(c + d*x)^{-n}]^2)/(d^{2*i}) - \\
& (2*B^{2*(b*c - a*d)}*g*n*Log[-((d*(a + b*x))/(b*c - a*d))] * Log[c + d*x]*(Log[(a + b*x)^n] - Log[e*((a + b*x)/(c + d*x))^n] + Log[(c + d*x)^{-n}]))/d^{2*i} + \\
& (2*a*B^{2*g*n^2}*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))]/(d*i) - (2*B^{2*(b*c - a*d)}*g*n*Log[(a + b*x)^n]*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))]/(d^{2*i}) + \\
& (2*A*B*(b*c - a*d)*g*n*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]/(d^{2*i}) + (2*b*B^{2*c}*g*n^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]/(d^{2*i}) + \\
& (2*B^{2*(b*c - a*d)}*g*n*Log[(c + d*x)^{-n}]*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]/(d^{2*i}) - (2*B^{2*(b*c - a*d)}*g*n*(Log[(a + b*x)^n] - Log[e*((a + b*x)/(c + d*x))^n] + Log[(c + d*x)^{-n}])*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]/(d^{2*i}) + \\
& (2*B^{2*(b*c - a*d)}*g*n^2*PolyLog[3, -((d*(a + b*x))/(b*c - a*d))]/(d^{2*i}) + (2*B^{2*(b*c - a*d)}*g*n^2*PolyLog[3, (b*(c + d*x))/(b*c - a*d)]/(d^{2*i}))
\end{aligned}$$
Rule 12

$$\text{Int}[(a_*)(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \ \&\& \ !\text{MatchQ}[u, (b_)*(v_)] /; \text{FreeQ}[b, x]$$
Rule 30

$$\text{Int}[(x_)^{(m_.)}, x_Symbol] \rightarrow \text{Simp}[x^{(m + 1)}/(m + 1), x] /; \text{FreeQ}[m, x] \ \&\& \ \text{NeQ}[m, -1]$$
Rule 2301

$$\text{Int}[(a_. + Log[(c_.)*(x_)^{(n_.)}]*(b_.))/(x_), x_Symbol] \rightarrow \text{Simp}[(a + b*Log[c*x^n])^2/(2*b*n), x] /; \text{FreeQ}\{a, b, c, n\}, x]$$
Rule 2302

$$\text{Int}[(a_. + Log[(c_.)*(x_)^{(n_.)}]*(b_.))^{(p_.)}/(x_), x_Symbol] \rightarrow \text{Dist}[1/(b*n), \text{Subst}[\text{Int}[x^p, x], x, a + b*Log[c*x^n]], x] /; \text{FreeQ}\{a, b, c, n, p\}, x]$$
Rule 2317

$$\text{Int}[(a_. + Log[(c_.)*(x_)^{(n_.)}]*(b_.))^{(p_.)}/((d_.) + (e_.)*(x_)), x_Symbol] \rightarrow \text{Simp}[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - \text{Dist}[(b*n*p)/e, \text{Int}[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^{(p - 1)})/x, x], x] /; \text{FreeQ}\{a, b, c, d, e, n\}, x] \ \&\& \ \text{IGtQ}[p, 0]$$
Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.))/(x_), x_Symbol] := -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0] && EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.))/(x_), x_Symbol] := Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m - 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d, e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*((f_) + (g_.)*(x_)^(q_.)), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_)/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
```

$(a + b \log[c(d + ex)^n])^{p-1} / (d + ex), x, x] /;$ FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]

Rule 2418

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] :=> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n]^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]

Rule 2433

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] :=> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(e*i - d*j)/e + (j*x)/e]^m)], x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]

Rule 2434

Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :=> Simp[Log[x]*(a + b*Log[c*(d + e*x)^n]*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Log[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x]*(f + g*Log[h*(i + j*x)^m))]/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]

Rule 2440

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] :=> Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n]*(f + g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m)], x], x, k + l*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]

Rule 2499

Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.))^r]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.) + (k_.)*(x_)), x_Symbol] :=> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r)/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dist[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x), x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},

$x] \&\& \text{NeQ}[b*c - a*d, 0] \&\& \text{EqQ}[h*j - g*k, 0] \&\& \text{IGtQ}[m, 0]$

Rule 2500

$\text{Int}[(\text{Log}[(e_{.}) * ((f_{.}) * ((a_{.}) + (b_{.}) * (x_{.}))^{(p_{.})} * ((c_{.}) + (d_{.}) * (x_{.}))^{(q_{.})})^{(r_{.})}) * ((s_{.}) + \text{Log}[(i_{.}) * ((g_{.}) + (h_{.}) * (x_{.}))^{(n_{.})}) * (t_{.})) / ((j_{.}) + (k_{.}) * (x_{.}))], x_Symbol] \rightarrow \text{Dist}[\text{Log}[e * (f * (a + b*x)^p * (c + d*x)^q)^r] - \text{Log}[(a + b*x)^{(p*r)}] - \text{Log}[(c + d*x)^{(q*r)}], \text{Int}[(s + t*\text{Log}[i*(g + h*x)^n]) / (j + k*x), x], x] + (\text{Int}[(\text{Log}[(a + b*x)^{(p*r)}) * (s + t*\text{Log}[i*(g + h*x)^n]) / (j + k*x), x] + \text{Int}[(\text{Log}[(c + d*x)^{(q*r)}) * (s + t*\text{Log}[i*(g + h*x)^n]) / (j + k*x), x]) /; \text{FreeQ}\{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r\}, x] \&\& \text{NeQ}[b*c - a*d, 0]$

Rule 2523

$\text{Int}[(a_{.}) + \text{Log}[(c_{.}) * (\text{RFx}_{.})^{(p_{.})}] * (b_{.})]^{(n_{.})}, x_Symbol] \rightarrow \text{Simp}[x * (a + b * \text{Log}[c * \text{RFx}^p])^n, x] - \text{Dist}[b * n * p, \text{Int}[\text{SimplifyIntegrand}[x * (a + b * \text{Log}[c * \text{RFx}^p])^{(n-1)} * D[\text{RFx}, x]) / \text{RFx}, x], x] /; \text{FreeQ}\{a, b, c, p\}, x] \&\& \text{RationalFunctionQ}[\text{RFx}, x] \&\& \text{IGtQ}[n, 0]$

Rule 2524

$\text{Int}[(a_{.}) + \text{Log}[(c_{.}) * (\text{RFx}_{.})^{(p_{.})}] * (b_{.})]^{(n_{.})} / ((d_{.}) + (e_{.}) * (x_{.})), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[d + e*x] * (a + b * \text{Log}[c * \text{RFx}^p])^n) / e, x] - \text{Dist}[(b * n * p) / e, \text{Int}[(\text{Log}[d + e*x] * (a + b * \text{Log}[c * \text{RFx}^p])^{(n-1)} * D[\text{RFx}, x]) / \text{RFx}, x], x] /; \text{FreeQ}\{a, b, c, d, e, p\}, x] \&\& \text{RationalFunctionQ}[\text{RFx}, x] \&\& \text{IGtQ}[n, 0]$

Rule 2528

$\text{Int}[(a_{.}) + \text{Log}[(c_{.}) * (\text{RFx}_{.})^{(p_{.})}] * (b_{.})]^{(n_{.})} * (\text{RGx}_{.}), x_Symbol] \rightarrow \text{With}[\{u = \text{ExpandIntegrand}[(a + b * \text{Log}[c * \text{RFx}^p])^n, \text{RGx}, x]\}, \text{Int}[u, x] /; \text{SumQ}[u]] /; \text{FreeQ}\{a, b, c, p\}, x] \&\& \text{RationalFunctionQ}[\text{RFx}, x] \&\& \text{RationalFunctionQ}[\text{RGx}, x] \&\& \text{IGtQ}[n, 0]$

Rule 6589

$\text{Int}[\text{PolyLog}[n_{.}, (c_{.}) * ((a_{.}) + (b_{.}) * (x_{.}))^{(p_{.})}] / ((d_{.}) + (e_{.}) * (x_{.})), x_Symbol] \rightarrow \text{Simp}[\text{PolyLog}[n + 1, c * (a + b*x)^p] / (e*p), x] /; \text{FreeQ}\{a, b, c, d, e, n, p\}, x] \&\& \text{EqQ}[b*d, a*e]$

Rule 6688

$\text{Int}[u_{.}, x_Symbol] \rightarrow \text{With}[\{v = \text{SimplifyIntegrand}[u, x]\}, \text{Int}[v, x] /; \text{SimplerIntegrandQ}[v, u, x]]$

Rule 6742

```
Int[u_, x_Symbol] :=> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]  
]
```

Rubi steps

$$\begin{aligned}
\int \frac{(ag + bgx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{188c + 188dx} dx &= \int \left(\frac{bg \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{188d} + \frac{(-bc + ad)g \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{188d(c + dx)} \right) dx \\
&= \frac{(bg) \int \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx}{188d} - \frac{((bc - ad)g) \int \frac{\left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{c+dx} dx}{188d} \\
&= \frac{bgx \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{188d} - \frac{(bc - ad)g \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{188d^2} \\
&= \frac{bgx \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{188d} - \frac{(bc - ad)g \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{188d^2} \\
&= \frac{bgx \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{188d} - \frac{(bc - ad)g \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{188d^2} \\
&= \frac{bgx \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{188d} - \frac{(bc - ad)g \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{188d^2} \\
&= \frac{bgx \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{188d} - \frac{(bc - ad)g \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{188d^2} \\
&= \frac{aBgn \log(a + bx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{94d} + \frac{bgx \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{188d} \\
&= \frac{aBgn \log(a + bx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{94d} + \frac{bgx \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{188d} \\
&= \frac{aBgn \log(a + bx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{94d} + \frac{bgx \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{188d} \\
&= \frac{aBgn \log(a + bx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{94d} + \frac{bgx \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{188d} \\
&= -\frac{aB^2gn^2 \log^2(a + bx)}{188d} + \frac{aBgn \log(a + bx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{94d}
\end{aligned}$$

$$\frac{aBgn \log(a + bx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{94d}$$

Mathematica [B] time = 0.70, size = 802, normalized size = 2.65

$$g \left(-B^2 \left(d(a+bx) \log^2 \left(\frac{a+bx}{c+dx} \right) + bc \log \left(\frac{bc-ad}{bc+bdx} \right) \log^2 \left(\frac{a+bx}{c+dx} \right) - (bc-ad) \left(\log \left(\frac{bc-ad}{bc+bdx} \right) \left(2 \log \left(\frac{d(a+bx)}{ad-bc} \right) - 2 \log \left(\frac{a}{c} \right) \right) \right) \right)$$

Antiderivative was successfully verified.

[In] Integrate[((a*g + b*g*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(c*i + d*i*x), x]

[Out] -((g*(-(b*d*x*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x]))^2) + (b*c - a*d)*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x]))^2*Log[c + d*x] + a*B*d*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x]))*(Log[c/d + x]^2 + 2*(Log[a/b + x] - Log[c/d + x] - Log[(a + b*x)/(c + d*x]))*Log[c + d*x] - 2*(Log[a/b + x]*Log[(b*(c + d*x))/(b*c - a*d)] + PolyLog[2, (d*(a + b*x))/(-b*c + a*d)])) + B*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x]))*(-2*d*(a + b*x)*(-1 + Log[a/b + x]) + 2*b*(c + d*x)*(-1 + Log[c/d + x]) - b*c*Log[c/d + x]^2 + 2*b*(Log[a/b + x] - Log[c/d + x] - Log[(a + b*x)/(c + d*x]))*(d*x - c*Log[c + d*x]) + 2*b*c*(Log[a/b + x]*Log[(b*(c + d*x))/(b*c - a*d)] + PolyLog[2, (d*(a + b*x))/(-b*c + a*d)])) - B^2*n^2*(d*(a + b*x)*Log[(a + b*x)/(c + d*x)]^2 + b*c*Log[(a + b*x)/(c + d*x)]^2*Log[(b*c - a*d)/(b*c + b*d*x]) - (b*c - a*d)*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-b*c + a*d)] - 2*Log[(a + b*x)/(c + d*x)] + Log[(b*c - a*d)/(b*c + b*d*x])) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)] + 2*b*c*(Log[(a + b*x)/(c + d*x)]*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))] - PolyLog[3, (d*(a + b*x))/(b*(c + d*x))])) + a*B^2*d*n^2*(Log[(a + b*x)/(c + d*x)]^2*Log[(b*c - a*d)/(b*c + b*d*x]) + 2*Log[(a + b*x)/(c + d*x)]*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))] - 2*PolyLog[3, (d*(a + b*x))/(b*(c + d*x))]))/(d^2*i)

fricas [F] time = 0.66, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{A^2 b g x + A^2 a g + (B^2 b g x + B^2 a g) \log \left(e \left(\frac{b x + a}{d x + c} \right)^n \right)^2 + 2 (A B b g x + A B a g) \log \left(e \left(\frac{b x + a}{d x + c} \right)^n \right)}{d i x + c i}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i), x, algorithm="fricas")

[Out] integral((A^2*b*g*x + A^2*a*g + (B^2*b*g*x + B^2*a*g)*log(e*((b*x + a)/(d*x + c))^n))^2 + 2*(A*B*b*g*x + A*B*a*g)*log(e*((b*x + a)/(d*x + c))^n))/(d*i*x + c*i), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i),x, algorithm="giac")

[Out] Timed out

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int \frac{(bgx + ag) \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)^2}{dix + ci} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(d*i*x+c*i),x)

[Out] int((b*g*x+a*g)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(d*i*x+c*i),x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$A^2bg \left(\frac{x}{di} - \frac{c \log(dx+c)}{d^2i} \right) + \frac{A^2ag \log(dix+ci)}{di} + \frac{(B^2bdgx - (bcg - adg)B^2 \log(dx+c)) \log((dx+c)^n)^2}{d^2i} - \int -B^2$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i),x, algorithm="maxima")

[Out] A^2*b*g*(x/(d*i) - c*log(d*x + c)/(d^2*i)) + A^2*a*g*log(d*i*x + c*i)/(d*i) + (B^2*b*d*g*x - (b*c*g - a*d*g)*B^2*log(d*x + c))*log((d*x + c)^n)^2/(d^2*i) - integrate(-(B^2*a*d*g*log(e)^2 + 2*A*B*a*d*g*log(e) + (B^2*b*d*g*x + B^2*a*d*g)*log((b*x + a)^n)^2 + (B^2*b*d*g*log(e)^2 + 2*A*B*b*d*g*log(e))*x + 2*(B^2*a*d*g*log(e) + A*B*a*d*g + (B^2*b*d*g*log(e) + A*B*b*d*g)*x)*log((b*x + a)^n) - 2*(B^2*a*d*g*log(e) + A*B*a*d*g - (b*c*g*n - a*d*g*n)*B^2*log(d*x + c) + ((g*n + g*log(e))*B^2*b*d + A*B*b*d*g)*x + (B^2*b*d*g*x + B^2*a*d*g)*log((b*x + a)^n))*log((d*x + c)^n)/(d^2*i*x + c*d*i), x)

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ag + bgx) \left(A + B \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{ci + dix} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(c*i + d*i*x),
x)
```

```
[Out] int(((a*g + b*g*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(c*i + d*i*x),
x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$g \left(\int \frac{A^2 a}{c+dx} dx + \int \frac{A^2 bx}{c+dx} dx + \int \frac{B^2 a \log \left(e \left(\frac{a}{c+dx} + \frac{bx}{c+dx} \right)^n \right)^2}{c+dx} dx + \int \frac{2ABa \log \left(e \left(\frac{a}{c+dx} + \frac{bx}{c+dx} \right)^n \right)}{c+dx} dx + \int \frac{B^2 bx \log \left(e \left(\frac{a}{c+dx} + \frac{bx}{c+dx} \right)^n \right)^2}{c+dx} dx \right) / i$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i),x)
```

```
[Out] g*(Integral(A**2*a/(c + d*x), x) + Integral(A**2*b*x/(c + d*x), x) + Integr
al(B**2*a*log(e*(a/(c + d*x) + b*x/(c + d*x)))**n)**2/(c + d*x), x) + Integr
al(2*A*B*a*log(e*(a/(c + d*x) + b*x/(c + d*x)))**n)/(c + d*x), x) + Integral
(B**2*b*x*log(e*(a/(c + d*x) + b*x/(c + d*x)))**n)**2/(c + d*x), x) + Integr
al(2*A*B*b*x*log(e*(a/(c + d*x) + b*x/(c + d*x)))**n)/(c + d*x), x))/i
```

$$3.189 \quad \int \frac{\left(A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{ci+dx} dx$$

Optimal. Leaf size=137

$$\frac{2Bn\text{Li}_2\left(\frac{d(a+bx)}{b(c+dx)}\right)\left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{di} - \frac{\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{di} + \frac{2B^2n^2\text{Li}_3\left(\frac{d(a+bx)}{b(c+dx)}\right)}{di}$$

[Out] $-(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2*\ln((-a*d+b*c)/b/(d*x+c))/d/i-2*B*n*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))*\text{polylog}(2,d*(b*x+a)/b/(d*x+c))/d/i+2*B^2*n^2*\text{polylog}(3,d*(b*x+a)/b/(d*x+c))/d/i$

Rubi [B] time = 3.17, antiderivative size = 782, normalized size of antiderivative = 5.71, number of steps used = 45, number of rules used = 23, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.657$, Rules used = {2524, 2528, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 12, 6742, 2499, 2396, 2433, 2374, 6589, 2302, 30, 2500, 2375, 2317, 2440, 2434}

$$\frac{2ABn\text{PolyLog}\left(2, \frac{b(c+dx)}{bc-ad}\right)}{di} + \frac{2B^2n\text{PolyLog}\left(2, \frac{b(c+dx)}{bc-ad}\right)\left(-\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+\log((a+bx)^n)+\log((c+dx)^{-n})\right)}{di}$$

Antiderivative was successfully verified.

[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/(c*i + d*i*x), x]

[Out] $(B^2*\text{Log}[(a + b*x)^n]^2*\text{Log}[(b*(c + d*x))/(b*c - a*d)]/(d*i) - (B^2*\text{Log}[(a + b*x)^n]^2*\text{Log}[i*(c + d*x)]/(d*i) + (A*B*n*\text{Log}[i*(c + d*x)]^2)/(d*i) - (B^2*n^2*\text{Log}[a + b*x]*\text{Log}[i*(c + d*x)]^2)/(d*i) + (B^2*n^2*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[i*(c + d*x)]^2)/(d*i) + (B^2*n^2*\text{Log}[i*(c + d*x)]^3)/(3*d*i) - (2*B^2*n*\text{Log}[a + b*x]*\text{Log}[i*(c + d*x)]*\text{Log}[(c + d*x)^{-n}])/(d*i) - (B^2*\text{Log}[a + b*x]*\text{Log}[(c + d*x)^{-n}]^2)/(d*i) + (B^2*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[(c + d*x)^{-n}]^2)/(d*i) - (2*A*B*n*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c*i + d*i*x])/(d*i) + ((A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2*\text{Log}[c*i + d*i*x])/(d*i) + (2*B^2*n*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*(\text{Log}[(a + b*x)^n] - \text{Log}[e*((a + b*x)/(c + d*x))^n] + \text{Log}[(c + d*x)^{-n}]))*\text{Log}[c*i + d*i*x])/(d*i) - (B^2*n^2*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c*i + d*i*x]^2)/(d*i) + (B^2*n*\text{Log}[e*((a + b*x)/(c + d*x))^n]*\text{Log}[c*i + d*i*x]^2)/(d*i) + (2*B^2*n*\text{Log}[(a + b*x)^n]*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))])/(d*i) - (2*A*B*n*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]/(d*i) - (2*B^2*n*\text{Log}[(c + d*x)^{-n}]*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]/(d*i) + (2*B^2*n*(\text{Log}[(a + b*x)^n] - \text{Log}[e*((a + b*x)/(c + d*x))^n] + \text{Log}[(c + d*x)^{-n}]))*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]/(d*i) - (2*B^2*n^2*\text{PolyLog}[3, -$

$$\frac{(d*(a + b*x))/(b*c - a*d))]/(d*i) - (2*B^2*n^2*PolyLog[3, (b*(c + d*x))/(b*c - a*d)]/(d*i)$$

Rule 12

$$\text{Int}[(a_*)*(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \ \&\& \ !\text{Match} \\ \text{Q}[u, (b_*)*(v_)] /; \text{FreeQ}[b, x]$$

Rule 30

$$\text{Int}[(x_)^(m_), x_Symbol] \rightarrow \text{Simp}[x^(m + 1)/(m + 1), x] /; \text{FreeQ}[m, x] \ \&\& \ \text{NeQ}[m, -1]$$

Rule 2301

$$\text{Int}[(a_.) + \text{Log}[(c_.)*(x_)^(n_.)]*(b_.)]/(x_), x_Symbol] \rightarrow \text{Simp}[(a + b*\text{Log}[c*x^n])^2/(2*b*n), x] /; \text{FreeQ}[\{a, b, c, n\}, x]$$

Rule 2302

$$\text{Int}[(a_.) + \text{Log}[(c_.)*(x_)^(n_.)]*(b_.)]^(p_.)/(x_), x_Symbol] \rightarrow \text{Dist}[1/(b*n), \text{Subst}[\text{Int}[x^p, x], x, a + b*\text{Log}[c*x^n]], x] /; \text{FreeQ}[\{a, b, c, n, p\}, x]$$

Rule 2317

$$\text{Int}[(a_.) + \text{Log}[(c_.)*(x_)^(n_.)]*(b_.)]^(p_.)/((d_) + (e_.)*(x_)), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[1 + (e*x)/d]*(a + b*\text{Log}[c*x^n])^p)/e, x] - \text{Dist}[(b*n*p)/e, \\ \text{Int}[(\text{Log}[1 + (e*x)/d]*(a + b*\text{Log}[c*x^n])^(p - 1))/x, x], x] /; \text{FreeQ}[\{a, b, c, d, e, n\}, x] \ \&\& \ \text{IGtQ}[p, 0]$$

Rule 2374

$$\text{Int}[(\text{Log}[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*(a_.) + \text{Log}[(c_.)*(x_)^(n_.)]*(b_.)]^(p_.)/(x_), x_Symbol] \rightarrow -\text{Simp}[(\text{PolyLog}[2, -(d*f*x^m)]*(a + b*\text{Log}[c*x^n])^p)/m, x] + \text{Dist}[(b*n*p)/m, \text{Int}[(\text{PolyLog}[2, -(d*f*x^m)]*(a + b*\text{Log}[c*x^n])^(p - 1))/x, x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, m, n\}, x] \ \&\& \ \text{IGtQ}[p, 0] \\ \ \&\& \ \text{EqQ}[d*e, 1]$$

Rule 2375

$$\text{Int}[(\text{Log}[(d_.)*((e_) + (f_.)*(x_)^(m_.))]^(r_.)]*(a_.) + \text{Log}[(c_.)*(x_)^(n_.)]*(b_.)]^(p_.)/(x_), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[d*(e + f*x^m)^r]*(a + b*\text{Log}[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - \text{Dist}[(f*m*r)/(b*n*(p + 1)), \text{Int}[(x^(m - 1)*(a + b*\text{Log}[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; \text{FreeQ}[\{a, b, c, d,$$

$e, f, r, m, n\}, x] \&\& \text{IGtQ}[p, 0] \&\& \text{NeQ}[d*e, 1]$

Rule 2390

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_) + (e_.)*(x_.))^{(n_.)}]*(b_.))^{(p_.)}*((f_) + (g_.)*(x_.))^{(q_.)}, x_Symbol] \rightarrow \text{Dist}[1/e, \text{Subst}[\text{Int}[(f*x)/d]^q*(a + b*\text{Log}[c*x^n])^p, x], x, d + e*x], x] /; \text{FreeQ}\{a, b, c, d, e, f, g, n, p, q\}, x] \&\& \text{EqQ}[e*f - d*g, 0]$

Rule 2391

$\text{Int}[\text{Log}[(c_.)*((d_) + (e_.)*(x_.))^{(n_.)}]]/(x_), x_Symbol] \rightarrow -\text{Simp}[\text{PolyLog}[2, -(c*e*x^n)]/n, x] /; \text{FreeQ}\{c, d, e, n\}, x] \&\& \text{EqQ}[c*d, 1]$

Rule 2393

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_) + (e_.)*(x_.))]*(b_.)]/((f_.) + (g_.)*(x_.)), x_Symbol] \rightarrow \text{Dist}[1/g, \text{Subst}[\text{Int}[(a + b*\text{Log}[1 + (c*e*x)/g]]/x, x], x, f + g*x], x] /; \text{FreeQ}\{a, b, c, d, e, f, g\}, x] \&\& \text{NeQ}[e*f - d*g, 0] \&\& \text{EqQ}[g + c*(e*f - d*g), 0]$

Rule 2394

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_) + (e_.)*(x_.))^{(n_.)}]*(b_.)]/((f_.) + (g_.)*(x_.)), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[(e*(f + g*x))/(e*f - d*g)]*(a + b*\text{Log}[c*(d + e*x)^n]))/g, x] - \text{Dist}[(b*e*n)/g, \text{Int}[\text{Log}[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; \text{FreeQ}\{a, b, c, d, e, f, g, n\}, x] \&\& \text{NeQ}[e*f - d*g, 0]$

Rule 2396

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_) + (e_.)*(x_.))^{(n_.)}]*(b_.))^{(p_.)}/((f_.) + (g_.)*(x_.)), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[(e*(f + g*x))/(e*f - d*g)]*(a + b*\text{Log}[c*(d + e*x)^n])^p)/g, x] - \text{Dist}[(b*e*n*p)/g, \text{Int}[(\text{Log}[(e*(f + g*x))/(e*f - d*g)]*(a + b*\text{Log}[c*(d + e*x)^n])^{(p-1)})/(d + e*x), x], x] /; \text{FreeQ}\{a, b, c, d, e, f, g, n, p\}, x] \&\& \text{NeQ}[e*f - d*g, 0] \&\& \text{IGtQ}[p, 1]$

Rule 2418

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_) + (e_.)*(x_.))^{(n_.)}]*(b_.))^{(p_.)}*(\text{RFx}_), x_Symbol] \rightarrow \text{With}\{u = \text{ExpandIntegrand}[(a + b*\text{Log}[c*(d + e*x)^n])^p, \text{RFx}, x]\}, \text{Int}[u, x] /; \text{SumQ}[u] /; \text{FreeQ}\{a, b, c, d, e, n\}, x] \&\& \text{RationalFunctionQ}[\text{RFx}, x] \&\& \text{IntegerQ}[p]$

Rule 2433


```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] := Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
]*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))/(x_), x_Symbol] := Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m))]/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
]*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] :=
Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*(s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/(j_.
) + (k_.)*(x_)), x_Symbol] := Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q]^r)/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*(s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))/(j_.) + (k
_.)*(x_)), x_Symbol] := Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol]
:> Simp[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^n)/e, x] - Dist[(b*n*p)/e,
Int[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol]
:> With[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]]
/; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x]
&& IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_Symbol]
:> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d, e, n, p}, x]
&& EqQ[b*d, a*e]
```

Rule 6688

```
Int[u_, x_Symbol]
:> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; SimplifyIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol]
:> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]]
```

Rubi steps

$$\begin{aligned}
\int \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{189c + 189dx} dx &= \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 \log(189c + 189dx)}{189d} - \frac{(2Bn) \int \frac{(c+dx)\left(-\frac{d(a+bx)}{(c+dx)^2} + \frac{b}{c+dx}\right)\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{189d} dx}{189d} \\
&= \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 \log(189c + 189dx)}{189d} - \frac{(2Bn) \int \frac{(bc-ad)\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(a+bx)(c+dx)} dx}{189d} \\
&= \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 \log(189c + 189dx)}{189d} - \frac{(2B(bc-ad)n) \int \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(a+bx)(c+dx)} dx}{189d} \\
&= \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 \log(189c + 189dx)}{189d} - \frac{(2B(bc-ad)n) \int \frac{d\left(-A - B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(a+bx)(c+dx)} dx}{189d} \\
&= \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 \log(189c + 189dx)}{189d} - \frac{1}{189}(2Bn) \int \frac{\left(-A - B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(a+bx)(c+dx)} dx \\
&= \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 \log(189c + 189dx)}{189d} - \frac{1}{189}(2Bn) \int \frac{A \log(189c + 189dx) - B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{-c - dx} dx \\
&= \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 \log(189c + 189dx)}{189d} - \frac{1}{189}(2ABn) \int \frac{\log(189c + 189dx)}{-c - dx} dx \\
&= -\frac{2ABn \log\left(-\frac{d(a+bx)}{bc-ad}\right) \log(189c + 189dx)}{189d} + \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 \log(189c + 189dx)}{189d} \\
&= -\frac{2ABn \log\left(-\frac{d(a+bx)}{bc-ad}\right) \log(189c + 189dx)}{189d} + \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 \log(189c + 189dx)}{189d} \\
&= -\frac{B^2 \log^2\left((a+bx)^n\right) \log(189(c+dx))}{189d} + \frac{ABn \log^2(189(c+dx))}{189d} - \frac{2B^2n \log\left((a+bx)^n\right) \log(189(c+dx))}{189d} \\
&= -\frac{B^2 \log^2\left((a+bx)^n\right) \log(189(c+dx))}{189d} + \frac{ABn \log^2(189(c+dx))}{189d} + \frac{B^2 \log^2\left((a+bx)^n\right) \log(189(c+dx))}{189d}
\end{aligned}$$

$$-\frac{B^2 \log^2\left((a+bx)^n\right) \log(189(c+dx))}{189d} + \frac{ABn \log^2(189(c+dx))}{189d} - \frac{B^2n^2 \log\left((a+bx)^n\right) \log(189(c+dx))}{189d}$$

Mathematica [B] time = 0.28, size = 306, normalized size = 2.23

$$-Bn \left(-2 \left(\operatorname{Li}_2 \left(\frac{d(a+bx)}{ad-bc} \right) + \log \left(\frac{a}{b} + x \right) \log \left(\frac{b(c+dx)}{bc-ad} \right) \right) + 2 \log(c+dx) \left(-\log \left(\frac{a+bx}{c+dx} \right) + \log \left(\frac{a}{b} + x \right) - \log \left(\frac{c}{d} + x \right) \right) + 1 \right)$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/(c*i + d*i*x),x]

[Out] ((A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])^2*Log[c + d*x] - B*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])*(Log[c/d + x]^2 + 2*(Log[a/b + x] - Log[c/d + x] - Log[(a + b*x)/(c + d*x)])*Log[c + d*x] - 2*(Log[a/b + x]*Log[(b*(c + d*x))/(b*c - a*d)] + PolyLog[2, (d*(a + b*x))/(-b*c + a*d)])) - B^2*n^2*(Log[(a + b*x)/(c + d*x)]^2*Log[(b*c - a*d)/(b*c + b*d*x)] + 2*Log[(a + b*x)/(c + d*x)]*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))] - 2*PolyLog[3, (d*(a + b*x))/(b*(c + d*x))]))/(d*i)

fricas [F] time = 0.88, size = 0, normalized size = 0.00

$$\operatorname{integral} \left(\frac{B^2 \log \left(e \left(\frac{bx+a}{dx+c} \right)^n \right)^2 + 2AB \log \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A^2}{dix + ci}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i),x, algorithm="fricas")

[Out] integral((B^2*log(e*((b*x + a)/(d*x + c))^n)^2 + 2*A*B*log(e*((b*x + a)/(d*x + c))^n) + A^2)/(d*i*x + c*i), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i),x, algorithm="giac")

[Out] Timed out

maple [F] time = 0.32, size = 0, normalized size = 0.00

$$\int \frac{\left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)^2}{dix + ci} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(d*i*x+c*i),x)

[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(d*i*x+c*i),x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{B^2 \log(dx+c) \log((dx+c)^n)^2}{di} + \frac{A^2 \log(dix+ci)}{di} - \int \frac{B^2 \log((bx+a)^n)^2 + B^2 \log(e)^2 + 2AB \log(e) + 2(B^2 \log(dx+c) \log((dx+c)^n)^2 + A^2 \log(dix+ci))}{dix+ci} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i),x, algorithm="maxima")

[Out] B^2*log(dx+c)*log((dx+c)^n)^2/(d*i) + A^2*log(dix+ci)/(d*i) - integrate(-(B^2*log((bx+a)^n)^2 + B^2*log(e)^2 + 2*A*B*log(e) + 2*(B^2*log(e) + A*B)*log((bx+a)^n) - 2*(B^2*n*log(dx+c) + B^2*log((bx+a)^n) + B^2*log(e) + A*B)*log((dx+c)^n))/(dix+ci), x)

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(A + B \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{ci + dix} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))^2/(c*i + d*i*x),x)

[Out] int((A + B*log(e*((a + b*x)/(c + d*x))^n))^2/(c*i + d*i*x), x)

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{A^2}{c+dx} dx + \int \frac{B^2 \log \left(e \left(\frac{a}{c+dx} + \frac{bx}{c+dx} \right)^n \right)^2}{c+dx} dx + \int \frac{2AB \log \left(e \left(\frac{a}{c+dx} + \frac{bx}{c+dx} \right)^n \right)}{c+dx} dx}{i}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(d*i*x+c*i),x)
```

```
[Out] (Integral(A**2/(c + d*x), x) + Integral(B**2*log(e*(a/(c + d*x) + b*x/(c + d*x))**n)**2/(c + d*x), x) + Integral(2*A*B*log(e*(a/(c + d*x) + b*x/(c + d*x))**n)/(c + d*x), x))/i
```

$$3.190 \quad \int \frac{\left(A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ag+bgx)(ci+dix)} dx$$

Optimal. Leaf size=50

$$\frac{\left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A\right)^3}{3Bgin(bc-ad)}$$

[Out] $1/3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^3/B/(-a*d+b*c)/g/i/n$

Rubi [C] time = 5.32, antiderivative size = 1237, normalized size of antiderivative = 24.74, number of steps used = 59, number of rules used = 29, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}} = 0.644$, Rules used = {2528, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 12, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

$$\frac{B^2 n^2 \log^3(c+dx)}{3(bc-ad)gi} - \frac{ABn \log^2(c+dx)}{(bc-ad)gi} + \frac{B^2 n^2 \log(a+bx) \log^2(c+dx)}{(bc-ad)gi} - \frac{B^2 n \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) \log^2(c+dx)}{(bc-ad)gi} + \frac{B^2 n \log^3(c+dx)}{(bc-ad)gi}$$

Antiderivative was successfully verified.

[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)*(c*i + d*i*x)), x]

[Out] $-\left(\frac{A*B*n*Log[a + b*x]^2}{(b*c - a*d)*g*i}\right) - \left(\frac{B^2*Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*((a + b*x)/(c + d*x))^n]^2}{(b*c - a*d)*g*i} - \left(\frac{B^2*Log[a + b*x]*Log[e*((a + b*x)/(c + d*x))^n]^2}{(b*c - a*d)*g*i} + \left(\frac{Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2}{(b*c - a*d)*g*i} + \left(\frac{2*A*B*n*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x]}{(b*c - a*d)*g*i} + \left(\frac{B^2*Log[(a + b*x)^n]^2*Log[c + d*x]}{(b*c - a*d)*g*i} - \left(\frac{(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2*Log[c + d*x]}{(b*c - a*d)*g*i} - \left(\frac{A*B*n*Log[c + d*x]^2}{(b*c - a*d)*g*i} + \left(\frac{B^2*n^2*Log[a + b*x]*Log[c + d*x]^2}{(b*c - a*d)*g*i} - \left(\frac{B^2*n*Log[e*((a + b*x)/(c + d*x))^n]*Log[c + d*x]^2}{(b*c - a*d)*g*i} - \left(\frac{B^2*n^2*Log[c + d*x]^3}{3*(b*c - a*d)*g*i} + \left(\frac{2*A*B*n*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)]}{(b*c - a*d)*g*i} - \left(\frac{B^2*Log[(a + b*x)^n]^2*Log[(b*(c + d*x))/(b*c - a*d)]}{(b*c - a*d)*g*i} + \left(\frac{2*B^2*n*Log[a + b*x]*Log[c + d*x]*Log[(c + d*x)^{-n}]}{(b*c - a*d)*g*i} + \left(\frac{B^2*Log[a + b*x]*Log[(c + d*x)^{-n}]^2}{(b*c - a*d)*g*i} - \left(\frac{B^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[(c + d*x)^{-n}]^2}{(b*c - a*d)*g*i} - \left(\frac{2*B^2*n*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x]*\left(\frac{Log[(a + b*x)^n] - Log[e*((a + b*x)/(c + d*x))^n] + Log[(c + d*x)^{-n}]\right)}{(b*c - a*d)*g*i} + \left(\frac{2*A*B*n*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))]}{(b*c - a*d)*g*i} - \left(\frac{2*B^2*n*Log[(a + b*x)^n]*PolyLog[2, -($

$$\frac{(d*(a + b*x))/(b*c - a*d)}{(b*c - a*d)*g*i} + (2*A*B*n*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]/(b*c - a*d)*g*i) + (2*B^2*n*Log[(c + d*x)^{-n}]*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]/(b*c - a*d)*g*i) - (2*B^2*n*(Log[(a + b*x)^n] - Log[e*((a + b*x)/(c + d*x))^n] + Log[(c + d*x)^{-n}])*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]/(b*c - a*d)*g*i) + (2*B^2*n*Log[e*((a + b*x)/(c + d*x))^n]*PolyLog[2, 1 + (b*c - a*d)/(d*(a + b*x))]/(b*c - a*d)*g*i) + (2*B^2*n^2*PolyLog[3, -((d*(a + b*x))/(b*c - a*d))]/(b*c - a*d)*g*i) + (2*B^2*n^2*PolyLog[3, (b*(c + d*x))/(b*c - a*d)]/(b*c - a*d)*g*i) + (2*B^2*n^2*PolyLog[3, 1 + (b*c - a*d)/(d*(a + b*x))]/(b*c - a*d)*g*i)$$
Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 30

```
Int[(x_)^(m_), x_Symbol] := Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && NeQ[m, -1]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] := Dist[1/(b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol] := Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e, Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))), x_Symbol] := Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]
```


Rule 2374

Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.))/(x_), x_Symbol] := -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0] && EqQ[d*e, 1]

Rule 2375

Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*(a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.))/(x_), x_Symbol] := Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m - 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d, e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))])*(b_.)/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2396

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.

```
)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] := Dist[1/e, Subst[Int[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] := Dist[1/e, Subst[Int[(k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(e*i - d*j)/e + (j*x)/e]^m), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int((((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] := Simp[Log[x]*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Log[x]*(a + b*Log[c*(d + e*x)^n])]/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x]*(f + g*Log[h*(i + j*x)^m])]/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] := Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-(e*k - d*l)/l) + (e*x)/l]^n)*(f + g*Log[h*(-(j*k - i*l)/l) + (j*x)/l]^m), x], x, k + l*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2488

Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] := -Simp[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/h, x] + Dist[(p*r*s*(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/(a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c, d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ[b*g - a*h, 0] && IGtQ[s, 0]

Rule 2499

Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]*(s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.) + (k_.)*(x_)), x_Symbol] := Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dist[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x), x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r}, x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]

Rule 2500

Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]*(s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))/((j_.) + (k_.)*(x_)), x_Symbol] := Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r] - Log[(a + b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x), x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ[b*c - a*d, 0]

Rule 2506

Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] := With[{g = Simplify[((v - 1)*(c + d*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/(b*c - a*d), x] + Dist[h*p*r*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/(a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]

Rule 2507

Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))

```

^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] :=> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^(s + 1))/(p*r*(s + 1)*(b*c
- a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q]^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
EqQ[p + q, 0] && NeQ[s, -1]

```

Rule 2524

```

Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :=> Simp[(Log[d + e*x]*(a + b*Log[c*RFX^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFX^p])^(n - 1)*D[RFX, x])/RFX, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFX, x] && IGtQ[n, 0]

```

Rule 2528

```

Int[((a_.) + Log[(c_.)*(RFX_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :=> With
[{u = ExpandIntegrand[(a + b*Log[c*RFX^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFX, x] && RationalFunci
onQ[RGx, x] && IGtQ[n, 0]

```

Rule 6589

```

Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :=> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]

```

Rule 6610

```

Int[(u_)*PolyLog[n_, v_], x_Symbol] :=> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /; !FalseQ[w]] /; FreeQ[n, x]

```

Rule 6688

```

Int[u_, x_Symbol] :=> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]

```

Rule 6742

```

Int[u_, x_Symbol] :=> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]

```

Rubi steps

$$\begin{aligned}
\int \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(190c + 190dx)(ag + bgx)} dx &= \int \left(\frac{b\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{190(bc - ad)g(a + bx)} - \frac{d\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{190(bc - ad)g(c + dx)} \right) dx \\
&= \frac{b \int \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{a+bx} dx}{190(bc - ad)g} - \frac{d \int \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{c+dx} dx}{190(bc - ad)g} \\
&= \frac{\log(a + bx) \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{190(bc - ad)g} - \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 \log(c + dx)}{190(bc - ad)g} \\
&= \frac{\log(a + bx) \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{190(bc - ad)g} - \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 \log(c + dx)}{190(bc - ad)g} \\
&= \frac{\log(a + bx) \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{190(bc - ad)g} - \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 \log(c + dx)}{190(bc - ad)g} \\
&= \frac{\log(a + bx) \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{190(bc - ad)g} - \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 \log(c + dx)}{190(bc - ad)g} \\
&= \frac{\log(a + bx) \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{190(bc - ad)g} - \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 \log(c + dx)}{190(bc - ad)g} \\
&= \frac{\log(a + bx) \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{190(bc - ad)g} - \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 \log(c + dx)}{190(bc - ad)g} \\
&= -\frac{B^2 \log(a + bx) \log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{190(bc - ad)g} + \frac{\log(a + bx) \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{190(bc - ad)g} \\
&= -\frac{B^2 \log\left(-\frac{bc-ad}{d(a+bx)}\right) \log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{190(bc - ad)g} - \frac{B^2 \log(a + bx) \log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{190(bc - ad)g} + \frac{\log(a + bx) \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{190(bc - ad)g} \\
&= -\frac{ABn \log^2(a + bx)}{190(bc - ad)g} - \frac{B^2 \log\left(-\frac{bc-ad}{d(a+bx)}\right) \log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{190(bc - ad)g} - \frac{B^2 \log(a + bx) \log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{190(bc - ad)g} \\
&= -\frac{ABn \log^2(a + bx)}{190(bc - ad)g} - \frac{B^2 \log\left(-\frac{bc-ad}{d(a+bx)}\right) \log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{190(bc - ad)g} - \frac{B^2 \log(a + bx) \log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{190(bc - ad)g}
\end{aligned}$$

Mathematica [A] time = 0.39, size = 90, normalized size = 1.80

$$\frac{3A^2 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + 3AB \log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + B^2 \log^3\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{3bcgin - 3adgin}$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)*(c*i + d*i*x)),x]

[Out] (3*A^2*Log[e*((a + b*x)/(c + d*x))^n] + 3*A*B*Log[e*((a + b*x)/(c + d*x))^n]^2 + B^2*Log[e*((a + b*x)/(c + d*x))^n]^3)/(3*b*c*g*i*n - 3*a*d*g*i*n)

fricas [B] time = 0.92, size = 149, normalized size = 2.98

$$\frac{B^2 n^2 \log\left(\frac{bx+a}{dx+c}\right)^3 + 3B^2 \log(e)^2 \log\left(\frac{bx+a}{dx+c}\right) + 3ABn \log\left(\frac{bx+a}{dx+c}\right)^2 + 3A^2 \log\left(\frac{bx+a}{dx+c}\right) + 3\left(B^2 n \log\left(\frac{bx+a}{dx+c}\right)^2 + 2AB \log\left(\frac{bx+a}{dx+c}\right)\right)}{3(bc - ad)gi}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)/(d*i*x+c*i),x, algorithm="fricas")

[Out] 1/3*(B^2*n^2*log((b*x + a)/(d*x + c))^3 + 3*B^2*log(e)^2*log((b*x + a)/(d*x + c)) + 3*A*B*n*log((b*x + a)/(d*x + c))^2 + 3*A^2*log((b*x + a)/(d*x + c)) + 3*(B^2*n*log((b*x + a)/(d*x + c))^2 + 2*A*B*log((b*x + a)/(d*x + c)))*log(e))/(b*c - a*d)*g*i

giac [B] time = 1.66, size = 162, normalized size = 3.24

$$\frac{\left(B^2 i n^2 \log\left(\frac{bx+a}{dx+c}\right)^3 + 3ABin \log\left(\frac{bx+a}{dx+c}\right)^2 + 3B^2 i n \log\left(\frac{bx+a}{dx+c}\right)^2 + 3A^2 i \log\left(\frac{bx+a}{dx+c}\right) + 6ABi \log\left(\frac{bx+a}{dx+c}\right) + 3B^2 i \log\left(\frac{bx+a}{dx+c}\right)\right)}{3g}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)/(d*i*x+c*i),x, algorithm="giac")

[Out] -1/3*(B^2*i*n^2*log((b*x + a)/(d*x + c))^3 + 3*A*B*i*n*log((b*x + a)/(d*x + c))^2 + 3*B^2*i*n*log((b*x + a)/(d*x + c))^2 + 3*A^2*i*log((b*x + a)/(d*x + c)) + 6*A*B*i*log((b*x + a)/(d*x + c)) + 3*B^2*i*log((b*x + a)/(d*x + c)))*(b*c/(b*c - a*d)^2 - a*d/(b*c - a*d)^2)/g

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{\left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)^2}{(bgx+ag)(dix+ci)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)/(d*i*x+c*i),x)

[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)/(d*i*x+c*i),x)

maxima [B] time = 1.19, size = 407, normalized size = 8.14

$$B^2 \left(\frac{\log(bx+a)}{(bc-ad)gi} - \frac{\log(dx+c)}{(bc-ad)gi} \right) \log \left(e \left(\frac{bx}{dx+c} + \frac{a}{dx+c} \right)^n \right)^2 + 2AB \left(\frac{\log(bx+a)}{(bc-ad)gi} - \frac{\log(dx+c)}{(bc-ad)gi} \right) \log \left(e \left(\frac{bx}{dx+c} \right. \right.$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)/(d*i*x+c*i),x, algorithm="maxima")

[Out] B^2*(log(b*x + a)/((b*c - a*d)*g*i) - log(d*x + c)/((b*c - a*d)*g*i))*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)^2 + 2*A*B*(log(b*x + a)/((b*c - a*d)*g*i) - log(d*x + c)/((b*c - a*d)*g*i))*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/3*((log(b*x + a)^3 - 3*log(b*x + a)^2*log(d*x + c) + 3*log(b*x + a)*log(d*x + c)^2 - log(d*x + c)^3)*n^2/(b*c*g*i - a*d*g*i) - 3*(log(b*x + a)^2 - 2*log(b*x + a)*log(d*x + c) + log(d*x + c)^2)*n*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b*c*g*i - a*d*g*i))*B^2 - (log(b*x + a)^2 - 2*log(b*x + a)*log(d*x + c) + log(d*x + c)^2)*A*B*n/(b*c*g*i - a*d*g*i) + A^2*(log(b*x + a)/((b*c - a*d)*g*i) - log(d*x + c)/((b*c - a*d)*g*i))

mupad [B] time = 5.68, size = 122, normalized size = 2.44

$$-\frac{\frac{B^2 \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)^3}{3} + AB \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)^2}{gin(ad-bc)} + \frac{A^2 \operatorname{atan} \left(\frac{ad1i+bc1i+bdx2i}{ad-bc} \right) 2i}{gi(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))^2/((a*g + b*g*x)*(c*i + d*i*x)), x)

[Out] $(A^2 \operatorname{atan}((a*d*1i + b*c*1i + b*d*x*2i)/(a*d - b*c))*2i)/(g*i*(a*d - b*c)) - ((B^2 \log(e*((a + b*x)/(c + d*x))^n))^3)/3 + A*B \log(e*((a + b*x)/(c + d*x))^n)^2)/(g*i*n*(a*d - b*c))$

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{A^2}{ac+adx+bcx+bdx^2} dx + \int \frac{B^2 \log\left(e\left(\frac{a}{c+dx} + \frac{bx}{c+dx}\right)^n\right)^2}{ac+adx+bcx+bdx^2} dx + \int \frac{2AB \log\left(e\left(\frac{a}{c+dx} + \frac{bx}{c+dx}\right)^n\right)}{ac+adx+bcx+bdx^2} dx}{gi}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((A+B*ln(e*((b*x+a)/(d*x+c)**n))**2/(b*g*x+a*g)/(d*i*x+c*i),x)`

[Out] $(\operatorname{Integral}(A**2/(a*c + a*d*x + b*c*x + b*d*x**2), x) + \operatorname{Integral}(B**2*\log(e*(a/(c + d*x) + b*x/(c + d*x))**n)**2/(a*c + a*d*x + b*c*x + b*d*x**2), x) + \operatorname{Integral}(2*A*B*\log(e*(a/(c + d*x) + b*x/(c + d*x))**n)/(a*c + a*d*x + b*c*x + b*d*x**2), x))/(g*i)$

$$3.191 \quad \int \frac{\left(A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ag+bgx)^2(ci+dix)} dx$$

Optimal. Leaf size=199

$$\frac{d\left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^3}{3Bg^2in(bc-ad)^2} - \frac{b(c+dx)\left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{g^2i(a+bx)(bc-ad)^2} - \frac{2bBn(c+dx)\left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{g^2i(a+bx)(bc-ad)^2} - \frac{2b}{g^2i(a+bx)}$$

[Out] $-2*b*B^2*n^2*(d*x+c)/(-a*d+b*c)^2/g^2/i/(b*x+a)-2*b*B*n*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^2/g^2/i/(b*x+a)-b*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^2/g^2/i/(b*x+a)-1/3*d*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^3/B/(-a*d+b*c)^2/g^2/i/n$

Rubi [C] time = 6.09, antiderivative size = 1800, normalized size of antiderivative = 9.05, number of steps used = 83, number of rules used = 31, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}} = 0.689$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)^2*(c*i + d*i*x)), x]

[Out] $(-2*B^2*n^2)/((b*c - a*d)*g^2*i*(a + b*x)) - (2*B^2*d*n^2*Log[a + b*x])/((b*c - a*d)^2*g^2*i) + (A*B*d*n*Log[a + b*x]^2)/((b*c - a*d)^2*g^2*i) + (B^2*d*n^2*Log[a + b*x]^2)/((b*c - a*d)^2*g^2*i) + (B^2*d*Log[-((b*c - a*d)/(d*(a + b*x))])*Log[e*((a + b*x)/(c + d*x))^n]^2)/((b*c - a*d)^2*g^2*i) + (B^2*d*Log[a + b*x]*Log[e*((a + b*x)/(c + d*x))^n]^2)/((b*c - a*d)^2*g^2*i) - (2*B*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)*g^2*i*(a + b*x)) - (2*B*d*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)^2*g^2*i) - (A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((b*c - a*d)*g^2*i*(a + b*x)) - (d*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/((b*c - a*d)^2*g^2*i) + (2*B^2*d*n^2*Log[c + d*x])/((b*c - a*d)^2*g^2*i) - (2*A*B*d*n*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/((b*c - a*d)^2*g^2*i) - (2*B^2*d*n^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/((b*c - a*d)^2*g^2*i) - (B^2*d*Log[(a + b*x)^n]^2*Log[c + d*x])/((b*c - a*d)^2*g^2*i) + (2*B*d*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x])/((b*c - a*d)^2*g^2*i) + (d*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2*Log[c + d*x])/((b*c - a*d)^2*g^2*i) + (A*B*d*n*Log[c + d*x]^2)/((b*c - a*d)^2*g^2*i) + (B^2*d*n^2*Log[c + d*x]^2)/((b*c - a*d)^2*g^2*i) - (B^2*d*n^2*Log[a + b*x]*Log[c +$

$$\begin{aligned} & d*x]^2)/((b*c - a*d)^2*g^2*i) + (B^2*d*n*Log[e*((a + b*x)/(c + d*x))^n]*Log \\ & g[c + d*x]^2)/((b*c - a*d)^2*g^2*i) + (B^2*d*n^2*Log[c + d*x]^3)/(3*(b*c - \\ & a*d)^2*g^2*i) - (2*A*B*d*n*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b \\ & *c - a*d)^2*g^2*i) - (2*B^2*d*n^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d \\ &)])/((b*c - a*d)^2*g^2*i) + (B^2*d*Log[(a + b*x)^n]^2*Log[(b*(c + d*x))/(b* \\ & c - a*d)])/((b*c - a*d)^2*g^2*i) - (2*B^2*d*n*Log[a + b*x]*Log[c + d*x]*Log \\ & [(c + d*x)^(-n)])/((b*c - a*d)^2*g^2*i) - (B^2*d*Log[a + b*x]*Log[(c + d*x) \\ & ^(-n)]^2)/((b*c - a*d)^2*g^2*i) + (B^2*d*Log[-((d*(a + b*x))/(b*c - a*d))] * \\ & Log[(c + d*x)^(-n)]^2)/((b*c - a*d)^2*g^2*i) + (2*B^2*d*n*Log[-((d*(a + b*x) \\ &))/(b*c - a*d)]*Log[c + d*x]*(Log[(a + b*x)^n] - Log[e*((a + b*x)/(c + d*x) \\ &))^n] + Log[(c + d*x)^(-n)]))/((b*c - a*d)^2*g^2*i) - (2*A*B*d*n*PolyLog[2, \\ & -((d*(a + b*x))/(b*c - a*d))]/((b*c - a*d)^2*g^2*i) - (2*B^2*d*n^2*PolyLo \\ & g[2, -((d*(a + b*x))/(b*c - a*d))]/((b*c - a*d)^2*g^2*i) + (2*B^2*d*n*Log[\\ & (a + b*x)^n]*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))]/((b*c - a*d)^2*g^2*i \\ &) - (2*A*B*d*n*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^2*g^2*i) \\ & - (2*B^2*d*n^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^2*g^2*i \\ &) - (2*B^2*d*n*Log[(c + d*x)^(-n)]*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/ \\ & ((b*c - a*d)^2*g^2*i) + (2*B^2*d*n*(Log[(a + b*x)^n] - Log[e*((a + b*x)/(c + \\ & d*x))^n] + Log[(c + d*x)^(-n)]*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b \\ & *c - a*d)^2*g^2*i) - (2*B^2*d*n*Log[e*((a + b*x)/(c + d*x))^n]*PolyLog[2, 1 \\ & + (b*c - a*d)/(d*(a + b*x))]/((b*c - a*d)^2*g^2*i) - (2*B^2*d*n^2*PolyLog \\ & [3, -((d*(a + b*x))/(b*c - a*d))]/((b*c - a*d)^2*g^2*i) - (2*B^2*d*n^2*Pol \\ & yLog[3, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^2*g^2*i) - (2*B^2*d*n^2*Pol \\ & yLog[3, 1 + (b*c - a*d)/(d*(a + b*x))]/((b*c - a*d)^2*g^2*i) \end{aligned}$$
Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 30

```
Int[(x_)^(m_), x_Symbol] := Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && NeQ[m, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &&
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] := Dist[1/(b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p}, x]

Rule 2317

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol] := Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e, Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]

Rule 2344

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))), x_Symbol] := Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]

Rule 2374

Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*)((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] := -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0] && EqQ[d*e, 1]

Rule 2375

Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]^(r_.))*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] := Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m - 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d, e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])^p/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*((f_.) + (g_.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] := Dist[1/e, Subst[Int[(g*x/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*((f_.) + Log
```

$[(h_.) * ((i_.) + (j_.) * (x_.))^{(m_.)}] * (g_.) * ((k_.) + (l_.) * (x_.))^{(r_.)}, x_Symbol] \rightarrow \text{Dist}[1/e, \text{Subst}[\text{Int}[(k*x)/d]^r * (a + b * \text{Log}[c*x^n])^p * (f + g * \text{Log}[h * (e*i - d*j)/e + (j*x)/e]^m)], x], x, d + e*x], x] /; \text{FreeQ}\{a, b, c, d, e, f, g, h, i, j, k, l, n, p, r\}, x] \&\& \text{EqQ}[e*k - d*l, 0]$

Rule 2434

$\text{Int}[(((a_.) + \text{Log}[(c_.) * ((d_.) + (e_.) * (x_.))^{(n_.)}] * (b_.)) * ((f_.) + \text{Log}[(h_.) * ((i_.) + (j_.) * (x_.))^{(m_.)}] * (g_.)))/(x_.), x_Symbol] \rightarrow \text{Simp}[\text{Log}[x] * (a + b * \text{Log}[c * (d + e*x)^n]) * (f + g * \text{Log}[h * (i + j*x)^m]), x] + (-\text{Dist}[e*g*m, \text{Int}[(\text{Log}[x] * (a + b * \text{Log}[c * (d + e*x)^n])]/(d + e*x), x], x] - \text{Dist}[b*j*n, \text{Int}[(\text{Log}[x] * (f + g * \text{Log}[h * (i + j*x)^m])]/(i + j*x), x], x)] /; \text{FreeQ}\{a, b, c, d, e, f, g, h, i, j, m, n\}, x] \&\& \text{EqQ}[e*i - d*j, 0]$

Rule 2440

$\text{Int}[(a_.) + \text{Log}[(c_.) * ((d_.) + (e_.) * (x_.))^{(n_.)}] * (b_.) * ((f_.) + \text{Log}[(h_.) * ((i_.) + (j_.) * (x_.))^{(m_.)}] * (g_.)) * ((k_.) + (l_.) * (x_.))^{(r_.)}, x_Symbol] \rightarrow \text{Dist}[1/l, \text{Subst}[\text{Int}[x^r * (a + b * \text{Log}[c * ((e*k - d*l)/l + (e*x)/l]^n)] * (f + g * \text{Log}[h * ((j*k - i*l)/l + (j*x)/l]^m)], x], x, k + l*x], x] /; \text{FreeQ}\{a, b, c, d, e, f, g, h, i, j, k, l, m, n\}, x] \&\& \text{IntegerQ}[r]$

Rule 2488

$\text{Int}[\text{Log}[(e_.) * ((f_.) * ((a_.) + (b_.) * (x_.))^{(p_.)} * ((c_.) + (d_.) * (x_.))^{(q_.)})^{(r_.)} / ((g_.) + (h_.) * (x_.)), x_Symbol] \rightarrow -\text{Simp}[(\text{Log}[-(b*c - a*d)/(d*(a + b*x))]) * \text{Log}[e * (f * (a + b*x)^p * (c + d*x)^q)^r]^s / h, x] + \text{Dist}[(p*r*s * (b*c - a*d)) / h, \text{Int}[(\text{Log}[-(b*c - a*d)/(d*(a + b*x))]) * \text{Log}[e * (f * (a + b*x)^p * (c + d*x)^q)^r]^{(s - 1)} / ((a + b*x) * (c + d*x)), x], x] /; \text{FreeQ}\{a, b, c, d, e, f, g, h, p, q, r, s\}, x] \&\& \text{NeQ}[b*c - a*d, 0] \&\& \text{EqQ}[p + q, 0] \&\& \text{EqQ}[b*g - a*h, 0] \&\& \text{IGtQ}[s, 0]$

Rule 2499

$\text{Int}[(\text{Log}[(e_.) * ((f_.) * ((a_.) + (b_.) * (x_.))^{(p_.)} * ((c_.) + (d_.) * (x_.))^{(q_.)})^{(r_.)}] * ((s_.) + \text{Log}[(i_.) * ((g_.) + (h_.) * (x_.))^{(n_.)}] * (t_.))^{(m_.)} / ((j_.) + (k_.) * (x_.)), x_Symbol] \rightarrow \text{Simp}[(s + t * \text{Log}[i * (g + h*x)^n])^{(m + 1)} * \text{Log}[e * (f * (a + b*x)^p * (c + d*x)^q)^r] / (k*n*t*(m + 1)), x] + (-\text{Dist}[(b*p*r) / (k*n*t*(m + 1)), \text{Int}[(s + t * \text{Log}[i * (g + h*x)^n])^{(m + 1)} / (a + b*x), x], x] - \text{Dist}[(d*q*r) / (k*n*t*(m + 1)), \text{Int}[(s + t * \text{Log}[i * (g + h*x)^n])^{(m + 1)} / (c + d*x), x], x]) /; \text{FreeQ}\{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r\}, x] \&\& \text{NeQ}[b*c - a*d, 0] \&\& \text{EqQ}[h*j - g*k, 0] \&\& \text{IGtQ}[m, 0]$

Rule 2500

```

Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]

```

Rule 2506

```

Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[(v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1)/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]

```

Rule 2507

```

Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] :> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
h*x)^t]^u)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s + 1)/(p*r*(s + 1)*(b*c
- a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q]^r]^s + 1)/(g + h*x), x], x] /; FreeQ[k, x] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
EqQ[p + q, 0] && NeQ[s, -1]

```

Rule 2524

```

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]

```

Rule 2525

```

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*
(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||

```

IntegerQ[m]) && NeQ[m, -1]

Rule 2528

Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :=> With[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]

Rule 6589

Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_Symbol] :=> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d, e, n, p}, x] && EqQ[b*d, a*e]

Rule 6610

Int[(u_)*PolyLog[n_, v_], x_Symbol] :=> With[{w = DerivativeDivides[v, u*v, x]}, Simp[w*PolyLog[n + 1, v], x] /; !FalseQ[w]] /; FreeQ[n, x]

Rule 6688

Int[u_, x_Symbol] :=> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; SimplifyIntegrandQ[v, u, x]]

Rule 6742

Int[u_, x_Symbol] :=> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]]

Rubi steps

$$\begin{aligned}
\int \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(191c + 191dx)(ag + bgx)^2} dx &= \int \left[\frac{b\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{191(bc - ad)g^2(a + bx)^2} - \frac{bd\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{191(bc - ad)^2g^2(a + bx)} + \frac{d^2\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{191(bc - ad)^2g^2} \right] dx \\
&= -\frac{(bd) \int \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{a+bx} dx}{191(bc - ad)^2g^2} + \frac{d^2 \int \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{c+dx} dx}{191(bc - ad)^2g^2} + \frac{b \int \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(a+bx)^2} dx}{191(bc - ad)^2g^2} \\
&= -\frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{191(bc - ad)g^2(a + bx)} - \frac{d \log(a + bx) \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{191(bc - ad)^2g^2} + \frac{d \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{191(bc - ad)^2g^2} \\
&= -\frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{191(bc - ad)g^2(a + bx)} - \frac{d \log(a + bx) \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{191(bc - ad)^2g^2} + \frac{d \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{191(bc - ad)^2g^2} \\
&= -\frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{191(bc - ad)g^2(a + bx)} - \frac{d \log(a + bx) \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{191(bc - ad)^2g^2} + \frac{d \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{191(bc - ad)^2g^2} \\
&= -\frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{191(bc - ad)g^2(a + bx)} - \frac{d \log(a + bx) \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{191(bc - ad)^2g^2} + \frac{d \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{191(bc - ad)^2g^2} \\
&= -\frac{2Bn \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{191(bc - ad)g^2(a + bx)} - \frac{2Bdn \log(a + bx) \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{191(bc - ad)^2g^2} + \frac{2Bdn \log(a + bx) \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{191(bc - ad)^2g^2} \\
&= \frac{B^2d \log(a + bx) \log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{191(bc - ad)^2g^2} - \frac{2Bn \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{191(bc - ad)g^2(a + bx)} - \frac{2Bdn \log(a + bx) \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{191(bc - ad)^2g^2} \\
&= \frac{B^2d \log\left(-\frac{bc-ad}{d(a+bx)}\right) \log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{191(bc - ad)^2g^2} + \frac{B^2d \log(a + bx) \log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{191(bc - ad)^2g^2} - \frac{2Bn \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{191(bc - ad)g^2(a + bx)} \\
&= -\frac{2B^2n^2}{191(bc - ad)g^2(a + bx)} - \frac{2B^2dn^2 \log(a + bx)}{191(bc - ad)^2g^2} + \frac{ABdn \log^2(a + bx)}{191(bc - ad)^2g^2} + \frac{B^2dn \log(a + bx)}{191(bc - ad)^2g^2} \\
&= -\frac{2B^2n^2}{191(bc - ad)g^2(a + bx)} - \frac{2B^2dn^2 \log(a + bx)}{191(bc - ad)^2g^2} + \frac{ABdn \log^2(a + bx)}{191(bc - ad)^2g^2} + \frac{B^2dn \log(a + bx)}{191(bc - ad)^2g^2}
\end{aligned}$$

Mathematica [B] time = 0.83, size = 793, normalized size = 3.98

$$\frac{-2AB \left(\log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) - n \log \left(\frac{a+bx}{c+dx} \right) \right) - B^2 \left(\log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) - n \log \left(\frac{a+bx}{c+dx} \right) \right)^2 - 2B^2 n \left(\log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) - n \log \left(\frac{a+bx}{c+dx} \right) \right)}{g^2 i(a+bx)(bc-ad)}$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)^2*(c*i + d*i*x)), x]

[Out]
$$\frac{-1/3*(B^2*d*n^2*Log[(a + b*x)/(c + d*x)]^3)/((b*c - a*d)^2*g^2*i) + (2*B*n*Log[(a + b*x)/(c + d*x)]*(A + B*n + B*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)])))/((-b*c) + a*d)*g^2*i*(a + b*x) + (Log[(a + b*x)/(c + d*x)]^2*(-a*A*B*d*n) - b*B^2*c*n^2 - A*b*B*d*n*x - b*B^2*d*n^2*x - a*B^2*d*n*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)]) - b*B^2*d*n*x*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)])))/((-b*c) + a*d)^2*g^2*i*(a + b*x) + (-A^2 - 2*A*B*n - 2*B^2*n^2 - 2*A*B*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)]) - 2*B^2*n*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)])) - B^2*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)])^2)/((b*c - a*d)*g^2*i*(a + b*x)) - (d*Log[a + b*x]*(A^2 + 2*A*B*n + 2*B^2*n^2 + 2*A*B*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)])) + 2*B^2*n*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)])) + B^2*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)])^2)/((b*c - a*d)^2*g^2*i) + (d*(A^2 + 2*A*B*n + 2*B^2*n^2 + 2*A*B*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)])) + 2*B^2*n*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)])) + B^2*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)])^2)*Log[c + d*x])/((b*c - a*d)^2*g^2*i)$$

fricas [B] time = 0.96, size = 428, normalized size = 2.15

$$\frac{3A^2bc - 3A^2ad + (B^2bdn^2x + B^2adn^2) \log\left(\frac{bx+a}{dx+c}\right)^3 + 6(B^2bc - B^2ad)n^2 + 3(B^2bc - B^2ad + (B^2bdx + B^2ad))}{g^2 i(a+bx)(bc-ad)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^2/(d*i*x+c*i), x, algorithm="fricas")

[Out]
$$\frac{-1/3*(3*A^2*b*c - 3*A^2*a*d + (B^2*b*d*n^2*x + B^2*a*d*n^2)*log((b*x + a)/(d*x + c))^3 + 6*(B^2*b*c - B^2*a*d)*n^2 + 3*(B^2*b*c - B^2*a*d + (B^2*b*d*x + B^2*a*d)*log((b*x + a)/(d*x + c)))*log(e)^2 + 3*(B^2*b*c*n^2 + A*B*a*d*n + (B^2*b*d*n^2 + A*B*b*d*n)*x)*log((b*x + a)/(d*x + c))^2 + 6*(A*B*b*c - A$$

$*B*a*d)*n + 3*(2*A*B*b*c - 2*A*B*a*d + (B^2*b*d*n*x + B^2*a*d*n)*\log((b*x + a)/(d*x + c))^2 + 2*(B^2*b*c - B^2*a*d)*n + 2*(B^2*b*c*n + A*B*a*d + (B^2*b*d*n + A*B*b*d)*x)*\log((b*x + a)/(d*x + c))*\log(e) + 3*(2*B^2*b*c*n^2 + 2*A*B*b*c*n + A^2*a*d + (2*B^2*b*d*n^2 + 2*A*B*b*d*n + A^2*b*d)*x)*\log((b*x + a)/(d*x + c)))/((b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*g^2*i*x + (a*b^2*c^2 - 2*a^2*b*c*d + a^3*d^2)*g^2*i)$

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^2/(d*i*x+c*i),x, algorithm="giac")

[Out] Timed out

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{\left(B \ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right) + A\right)^2}{(bgx + ag)^2 (dix + ci)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^2/(d*i*x+c*i),x)

[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^2/(d*i*x+c*i),x)

maxima [B] time = 1.22, size = 1018, normalized size = 5.12

$$-B^2 \left(\frac{1}{(b^2c - abd)g^2ix + (abc - a^2d)g^2i} + \frac{d \log(bx + a)}{(b^2c^2 - 2abcd + a^2d^2)g^2i} - \frac{d \log(dx + c)}{(b^2c^2 - 2abcd + a^2d^2)g^2i} \right) \log\left(e\left(\frac{bx}{dx + c} + \dots\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^2/(d*i*x+c*i),x, algorithm="maxima")

[Out] $-B^2*(1/((b^2*c - a*b*d)*g^2*i*x + (a*b*c - a^2*d)*g^2*i) + d*\log(b*x + a)/((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*g^2*i) - d*\log(d*x + c)/((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*g^2*i))*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n)^2 - 2*A*B*(1/((b^2*c - a*b*d)*g^2*i*x + (a*b*c - a^2*d)*g^2*i) + d*\log(b*x + a)/((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*g^2*i))$

$$2 - 2*a*b*c*d + a^2*d^2)*g^{2*i}) - d*\log(d*x + c)/((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*g^{2*i}))*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) - 1/3*(((b*d*x + a*d)*\log(b*x + a)^3 - (b*d*x + a*d)*\log(d*x + c)^3 - 3*(b*d*x + a*d)*\log(b*x + a)^2 - 3*(b*d*x + a*d - (b*d*x + a*d)*\log(b*x + a))*\log(d*x + c)^2 + 6*b*c - 6*a*d + 6*(b*d*x + a*d)*\log(b*x + a) - 3*(2*b*d*x + (b*d*x + a*d)*\log(b*x + a)^2 + 2*a*d - 2*(b*d*x + a*d)*\log(b*x + a))*\log(d*x + c))*n^2/(a*b^2*c^2*g^{2*i} - 2*a^2*b*c*d*g^{2*i} + a^3*d^2*g^{2*i} + (b^3*c^2*g^{2*i} - 2*a*b^2*c*d*g^{2*i} + a^2*b*d^2*g^{2*i})*x) - 3*((b*d*x + a*d)*\log(b*x + a)^2 + (b*d*x + a*d)*\log(d*x + c)^2 - 2*b*c + 2*a*d - 2*(b*d*x + a*d)*\log(b*x + a) + 2*(b*d*x + a*d - (b*d*x + a*d)*\log(b*x + a))*\log(d*x + c))*n*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(a*b^2*c^2*g^{2*i} - 2*a^2*b*c*d*g^{2*i} + a^3*d^2*g^{2*i} + (b^3*c^2*g^{2*i} - 2*a*b^2*c*d*g^{2*i} + a^2*b*d^2*g^{2*i})*x))*B^2 + ((b*d*x + a*d)*\log(b*x + a)^2 + (b*d*x + a*d)*\log(d*x + c)^2 - 2*b*c + 2*a*d - 2*(b*d*x + a*d)*\log(b*x + a) + 2*(b*d*x + a*d - (b*d*x + a*d)*\log(b*x + a))*\log(d*x + c))*A*B*n/(a*b^2*c^2*g^{2*i} - 2*a^2*b*c*d*g^{2*i} + a^3*d^2*g^{2*i} + (b^3*c^2*g^{2*i} - 2*a*b^2*c*d*g^{2*i} + a^2*b*d^2*g^{2*i})*x) - A^2*(1/((b^2*c - a*b*d)*g^{2*i}*x + (a*b*c - a^2*d)*g^{2*i}) + d*\log(b*x + a)/((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*g^{2*i}) - d*\log(d*x + c)/((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*g^{2*i}))$$

mupad [B] time = 5.85, size = 361, normalized size = 1.81

$$\ln\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^2\left(\frac{B^2}{(ad-bc)(ag^2i+bg^2ix)} - \frac{Bd(A+Bn)}{g^2in(ad-bc)^2}\right) + \frac{A^2+2ABn+2B^2n^2}{(ad-bc)(ag^2i+bg^2ix)} + \frac{2B\ln\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))^2/((a*g + b*g*x)^2*(c*i + d*i*x)), x)

[Out] log(e*((a + b*x)/(c + d*x))^n)^2*(B^2/((a*d - b*c)*(a*g^2*i + b*g^2*i*x)) - (B*d*(A + B*n))/(g^2*i*n*(a*d - b*c)^2)) + (A^2 + 2*B^2*n^2 + 2*A*B*n)/((a*d - b*c)*(a*g^2*i + b*g^2*i*x)) + (2*B*log(e*((a + b*x)/(c + d*x))^n)*(A + B*n))/((a*d - b*c)*(a*g^2*i + b*g^2*i*x)) + (d*atan((d*(2*b*d*x + (a^2*d^2*g^2*i - b^2*c^2*g^2*i)/(g^2*i*(a*d - b*c))))*(A^2 + 2*B^2*n^2 + 2*A*B*n)*1i)/((a*d - b*c)*(A^2*d + 2*B^2*d*n^2 + 2*A*B*d*n)))*(A^2 + 2*B^2*n^2 + 2*A*B*n)*2i)/(g^2*i*(a*d - b*c)^2) - (B^2*d*log(e*((a + b*x)/(c + d*x))^n)^3)/(3*g^2*i*n*(a*d - b*c)^2)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(b*g*x+a*g)**2/(d*i*x+c*i),x)
```

```
[Out] Timed out
```

$$3.192 \quad \int \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ag+bgx)^3(ci+dix)} dx$$

Optimal. Leaf size=369

$$\frac{b^2(c+dx)^2 \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A\right)^2}{2g^3i(a+bx)^2(bc-ad)^3} - \frac{b^2Bn(c+dx)^2 \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A\right)}{2g^3i(a+bx)^2(bc-ad)^3} + \frac{d^2 \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A\right)^3}{3Bg^3in(bc-ad)^3} + \dots$$

[Out] $4*b*B^2*d*n^2*(d*x+c)/(-a*d+b*c)^3/g^3/i/(b*x+a)-1/4*b^2*B^2*n^2*(d*x+c)^2/(-a*d+b*c)^3/g^3/i/(b*x+a)^2+4*b*B*d*n*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^3/g^3/i/(b*x+a)-1/2*b^2*B*n*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^3/g^3/i/(b*x+a)^2+2*b*d*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^3/g^3/i/(b*x+a)-1/2*b^2*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^3/g^3/i/(b*x+a)^2+1/3*d^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^3/B/(-a*d+b*c)^3/g^3/i/n$

Rubi [C] time = 7.20, antiderivative size = 2025, normalized size of antiderivative = 5.49, number of steps used = 111, number of rules used = 31, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}} = 0.689$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)^3*(c*i + d*i*x)), x]

[Out] $-(B^2*n^2)/(4*(b*c - a*d)*g^3*i*(a + b*x)^2) + (7*B^2*d*n^2)/(2*(b*c - a*d)^2*g^3*i*(a + b*x)) + (7*B^2*d^2*n^2*Log[a + b*x])/(2*(b*c - a*d)^3*g^3*i) - (A*B*d^2*n*Log[a + b*x]^2)/((b*c - a*d)^3*g^3*i) - (3*B^2*d^2*n^2*Log[a + b*x]^2)/(2*(b*c - a*d)^3*g^3*i) - (B^2*d^2*Log[-((b*c - a*d)/(d*(a + b*x))])*Log[e*((a + b*x)/(c + d*x))^n]^2)/((b*c - a*d)^3*g^3*i) - (B^2*d^2*Log[a + b*x]*Log[e*((a + b*x)/(c + d*x))^n]^2)/((b*c - a*d)^3*g^3*i) - (B*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(2*(b*c - a*d)*g^3*i*(a + b*x)^2) + (3*B*d*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)^2*g^3*i*(a + b*x)) + (3*B*d^2*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)^3*g^3*i) - (A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/(2*(b*c - a*d)*g^3*i*(a + b*x)^2) + (d*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/((b*c - a*d)^2*g^3*i*(a + b*x)) + (d^2*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/((b*c - a*d)^3*g^3*i) - (7*B^2*d^2*n^2*Log[c + d*x])/(2*(b*c - a*d)^3*g^3*i) + (2*A*B*d^2*n*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(($

$$\begin{aligned}
& (b*c - a*d)^3*g^3*i) + (3*B^2*d^2*n^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log \\
& [c + d*x])/((b*c - a*d)^3*g^3*i) + (B^2*d^2*Log[(a + b*x)^n]^2*Log[c + d*x] \\
&)/((b*c - a*d)^3*g^3*i) - (3*B*d^2*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) \\
& *Log[c + d*x])/((b*c - a*d)^3*g^3*i) - (d^2*(A + B*Log[e*((a + b*x)/(c + d* \\
& x))^n])^2*Log[c + d*x])/((b*c - a*d)^3*g^3*i) - (A*B*d^2*n*Log[c + d*x]^2)/ \\
& ((b*c - a*d)^3*g^3*i) - (3*B^2*d^2*n^2*Log[c + d*x]^2)/(2*(b*c - a*d)^3*g^3 \\
& *i) + (B^2*d^2*n^2*Log[a + b*x]*Log[c + d*x]^2)/((b*c - a*d)^3*g^3*i) - (B^ \\
& 2*d^2*n^2*Log[e*((a + b*x)/(c + d*x))^n]*Log[c + d*x]^2)/((b*c - a*d)^3*g^3*i \\
&) - (B^2*d^2*n^2*Log[c + d*x]^3)/(3*(b*c - a*d)^3*g^3*i) + (2*A*B*d^2*n*Log \\
& [a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)]/((b*c - a*d)^3*g^3*i) + (3*B^2*d^ \\
& 2*n^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)]/((b*c - a*d)^3*g^3*i) - \\
& (B^2*d^2*Log[(a + b*x)^n]^2*Log[(b*(c + d*x))/(b*c - a*d)]/((b*c - a*d)^3* \\
& g^3*i) + (2*B^2*d^2*n*Log[a + b*x]*Log[c + d*x]*Log[(c + d*x)^(-n)]/((b*c \\
& - a*d)^3*g^3*i) + (B^2*d^2*Log[a + b*x]*Log[(c + d*x)^(-n)]^2)/((b*c - a*d) \\
& ^3*g^3*i) - (B^2*d^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[(c + d*x)^(-n)]^ \\
& 2)/((b*c - a*d)^3*g^3*i) - (2*B^2*d^2*n*Log[-((d*(a + b*x))/(b*c - a*d))]*L \\
& og[c + d*x]*(Log[(a + b*x)^n] - Log[e*((a + b*x)/(c + d*x))^n] + Log[(c + d \\
& *x)^(-n)]))/((b*c - a*d)^3*g^3*i) + (2*A*B*d^2*n*PolyLog[2, -((d*(a + b*x)) \\
& / (b*c - a*d))]/((b*c - a*d)^3*g^3*i) + (3*B^2*d^2*n^2*PolyLog[2, -((d*(a + \\
& b*x))/(b*c - a*d))]/((b*c - a*d)^3*g^3*i) - (2*B^2*d^2*n*Log[(a + b*x)^n] \\
& *PolyLog[2, -((d*(a + b*x))/(b*c - a*d))]/((b*c - a*d)^3*g^3*i) + (2*A*B*d \\
& ^2*n*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]/((b*c - a*d)^3*g^3*i) + (3*B^2*d^ \\
& 2*n^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]/((b*c - a*d)^3*g^3*i) + (2*B \\
& ^2*d^2*n*Log[(c + d*x)^(-n)]*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]/((b*c - \\
& a*d)^3*g^3*i) - (2*B^2*d^2*n*(Log[(a + b*x)^n] - Log[e*((a + b*x)/(c + d*x) \\
&)^n] + Log[(c + d*x)^(-n)]*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]/((b*c - \\
& a*d)^3*g^3*i) + (2*B^2*d^2*n*Log[e*((a + b*x)/(c + d*x))^n]*PolyLog[2, 1 + \\
& (b*c - a*d)/(d*(a + b*x))]/((b*c - a*d)^3*g^3*i) + (2*B^2*d^2*n^2*PolyLog \\
& [3, -((d*(a + b*x))/(b*c - a*d))]/((b*c - a*d)^3*g^3*i) + (2*B^2*d^2*n^2*P \\
& olyLog[3, (b*(c + d*x))/(b*c - a*d)]/((b*c - a*d)^3*g^3*i) + (2*B^2*d^2*n^ \\
& 2*PolyLog[3, 1 + (b*c - a*d)/(d*(a + b*x))]/((b*c - a*d)^3*g^3*i)
\end{aligned}$$

Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 30

```
Int[(x_)^(m_), x_Symbol] := Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
```

& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])

Rule 2301

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2302

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] := Dist[1/(b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p}, x]

Rule 2317

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol] := Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e, Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]

Rule 2344

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))), x_Symbol] := Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]

Rule 2374

Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*(a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] := -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0] && EqQ[d*e, 1]

Rule 2375

Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]^(r_.))*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] := Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m - 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d, e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.)
)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_))^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.)
)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_.)
)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] := Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
```



```
mbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFX, x]},
Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFX, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] := Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e]^m)], x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] := Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n]*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m))]/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] :=
Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n]*(f +
g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m)], x], x, k + l*x], x] /; FreeQ[{a,
b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] := -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q]^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] := Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q]^r)/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
```

$t*(m + 1)), \text{Int}[(s + t*\text{Log}[i*(g + h*x)^n])^{(m + 1)/(a + b*x)}, x], x] - \text{Dist}[(d*q*r)/(k*n*t*(m + 1)), \text{Int}[(s + t*\text{Log}[i*(g + h*x)^n])^{(m + 1)/(c + d*x)}, x], x) /; \text{FreeQ}\{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r\}, x] \&\& \text{NeQ}[b*c - a*d, 0] \&\& \text{EqQ}[h*j - g*k, 0] \&\& \text{IGtQ}[m, 0]$

Rule 2500

$\text{Int}[(\text{Log}[(e_.)*((f_.)*((a_.) + (b_.)*(x_.))^{(p_.)*((c_.) + (d_.)*(x_.))^{(q_.)})^{(r_.)}]*((s_.) + \text{Log}[(i_.)*((g_.) + (h_.)*(x_.))^{(n_.)}]*(t_.)))/((j_.) + (k_.)*(x_.)), x_Symbol] \rightarrow \text{Dist}[\text{Log}[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - \text{Log}[(a + b*x)^{(p*r)}] - \text{Log}[(c + d*x)^{(q*r)}], \text{Int}[(s + t*\text{Log}[i*(g + h*x)^n])/(j + k*x), x], x] + (\text{Int}[(\text{Log}[(a + b*x)^{(p*r)}]*(s + t*\text{Log}[i*(g + h*x)^n]))/(j + k*x), x] + \text{Int}[(\text{Log}[(c + d*x)^{(q*r)}]*(s + t*\text{Log}[i*(g + h*x)^n]))/(j + k*x), x]) /; \text{FreeQ}\{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r\}, x] \&\& \text{NeQ}[b*c - a*d, 0]$

Rule 2506

$\text{Int}[\text{Log}[v_*]\text{Log}[(e_.)*((f_.)*((a_.) + (b_.)*(x_.))^{(p_.)*((c_.) + (d_.)*(x_.))^{(q_.)})^{(r_.)}]^{(s_.)}*(u_), x_Symbol] \rightarrow \text{With}\{g = \text{Simplify}[(v - 1)*(c + d*x)/(a + b*x)], h = \text{Simplify}[u*(a + b*x)*(c + d*x)]\}, -\text{Simp}[(h*\text{PolyLog}[2, 1 - v]*\text{Log}[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + \text{Dist}[h*p*r*s, \text{Int}[(\text{PolyLog}[2, 1 - v]*\text{Log}[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^{(s - 1)})/((a + b*x)*(c + d*x)), x], x] /; \text{FreeQ}\{g, h\}, x] /; \text{FreeQ}\{a, b, c, d, e, f, p, q, r, s\}, x] \&\& \text{NeQ}[b*c - a*d, 0] \&\& \text{IGtQ}[s, 0] \&\& \text{EqQ}[p + q, 0]$

Rule 2507

$\text{Int}[\text{Log}[(e_.)*((f_.)*((a_.) + (b_.)*(x_.))^{(p_.)*((c_.) + (d_.)*(x_.))^{(q_.)})^{(r_.)}]^{(s_.)}*\text{Log}[(i_.)*((j_.)*((g_.) + (h_.)*(x_.))^{(t_.)})^{(u_.)}]*(v_), x_Symbol] \rightarrow \text{With}\{k = \text{Simplify}[v*(a + b*x)*(c + d*x)]\}, \text{Simp}[(k*\text{Log}[i*(j*(g + h*x)^t)^u]*\text{Log}[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^{(s + 1)})/(p*r*(s + 1)*(b*c - a*d)), x] - \text{Dist}[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), \text{Int}[\text{Log}[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^{(s + 1)}/(g + h*x), x], x] /; \text{FreeQ}[k, x] /; \text{FreeQ}\{a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u\}, x] \&\& \text{NeQ}[b*c - a*d, 0] \&\& \text{EqQ}[p + q, 0] \&\& \text{NeQ}[s, -1]$

Rule 2524

$\text{Int}[(a_.) + \text{Log}[(c_.)*(RFX_)^{(p_.)}]*(b_.)]^{(n_.)}/((d_.) + (e_.)*(x_.)), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[d + e*x]*(a + b*\text{Log}[c*RFX^p])^n)/e, x] - \text{Dist}[(b*n*p)/e, \text{Int}[(\text{Log}[d + e*x]*(a + b*\text{Log}[c*RFX^p])^n - 1)*D[RFX, x])/RFX, x], x] /; \text{FreeQ}\{a, b, c, d, e, p\}, x] \&\& \text{RationalFunctionQ}[RFX, x] \&\& \text{IGtQ}[n, 0]$

Rule 2525

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_.))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_.))^(p_.)]/((d_.) + (e_.)*(x_.)), x_Symbol] := Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] := With[{w = DerivativeDivides[v, u*v, x]}, Simp[w*PolyLog[n + 1, v], x] /; !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] := With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; SimplifyIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] := With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]]
```

Rubi steps

$$\begin{aligned}
\int \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(192c + 192dx)(ag + bgx)^3} dx &= \int \left[\frac{b\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{192(bc - ad)g^3(a + bx)^3} - \frac{bd\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{192(bc - ad)^2g^3(a + bx)^2} + \frac{bd^2\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{192(bc - ad)^3g^3} \right] dx \\
&= \frac{(bd^2) \int \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{a+bx} dx}{192(bc - ad)^3g^3} - \frac{d^3 \int \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{c+dx} dx}{192(bc - ad)^3g^3} - \frac{(bd) \int \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(a+bx)^2} dx}{192(bc - ad)^3g^3} \\
&= -\frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{384(bc - ad)g^3(a + bx)^2} + \frac{d\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{192(bc - ad)^2g^3(a + bx)} + \frac{d^2 \log(a + bx)\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{192(bc - ad)^3g^3} \\
&= -\frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{384(bc - ad)g^3(a + bx)^2} + \frac{d\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{192(bc - ad)^2g^3(a + bx)} + \frac{d^2 \log(a + bx)\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{192(bc - ad)^3g^3} \\
&= -\frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{384(bc - ad)g^3(a + bx)^2} + \frac{d\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{192(bc - ad)^2g^3(a + bx)} + \frac{d^2 \log(a + bx)\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{192(bc - ad)^3g^3} \\
&= -\frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{384(bc - ad)g^3(a + bx)^2} + \frac{d\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{192(bc - ad)^2g^3(a + bx)} + \frac{d^2 \log(a + bx)\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{192(bc - ad)^3g^3} \\
&= -\frac{Bn\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{384(bc - ad)g^3(a + bx)^2} + \frac{Bdn\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{64(bc - ad)^2g^3(a + bx)} + \frac{Bd^2n \log(a + bx)\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{64(bc - ad)^3g^3} \\
&= -\frac{B^2d^2 \log(a + bx) \log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{192(bc - ad)^3g^3} - \frac{Bn\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{384(bc - ad)g^3(a + bx)^2} + \frac{Bdn\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{64(bc - ad)^3g^3} \\
&= -\frac{B^2d^2 \log\left(-\frac{bc-ad}{d(a+bx)}\right) \log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{192(bc - ad)^3g^3} - \frac{B^2d^2 \log(a + bx) \log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{192(bc - ad)^3g^3} \\
&= -\frac{B^2n^2}{768(bc - ad)g^3(a + bx)^2} + \frac{7B^2dn^2}{384(bc - ad)^2g^3(a + bx)} + \frac{7B^2d^2n^2 \log(a + bx)}{384(bc - ad)^3g^3} \\
&= -\frac{B^2n^2}{768(bc - ad)g^3(a + bx)^2} + \frac{7B^2dn^2}{384(bc - ad)^2g^3(a + bx)} + \frac{7B^2d^2n^2 \log(a + bx)}{384(bc - ad)^3g^3}
\end{aligned}$$

Mathematica [B] time = 1.40, size = 975, normalized size = 2.64

$$4B^2d^2n^2(a+bx)^2 \log^3\left(\frac{a+bx}{c+dx}\right) + 6Bn\left(2Ad^2x^2b^2 + 3Bd^2nx^2b^2 - Bc^2nb^2 + 2Bcdnxb^2 + 4aBcdnb + 4aAd^2xb + 4\right)$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)^3*(c*i + d*i*x)), x]

[Out] (4*B^2*d^2*n^2*(a + b*x)^2*Log[(a + b*x)/(c + d*x)]^3 + 6*B*n*Log[(a + b*x)/(c + d*x)]^2*(2*a^2*A*d^2 - b^2*B*c^2*n + 4*a*b*B*c*d*n + 4*a*A*b*d^2*x + 2*b^2*B*c*d*n*x + 4*a*b*B*d^2*n*x + 2*A*b^2*d^2*x^2 + 3*b^2*B*d^2*n*x^2 + 2*B*d^2*(a + b*x)^2*Log[e*((a + b*x)/(c + d*x))^n] - 2*B*d^2*n*(a + b*x)^2*Log[(a + b*x)/(c + d*x)]) - 6*B*(b*c - a*d)*n*Log[(a + b*x)/(c + d*x)]*(2*A*b*c - 6*a*A*d + b*B*c*n - 7*a*B*d*n - 4*A*b*d*x - 6*b*B*d*n*x + 2*B*(-3*a*d + b*(c - 2*d*x))*Log[e*((a + b*x)/(c + d*x))^n] + 2*B*n*(-(b*c) + 3*a*d + 2*b*d*x)*Log[(a + b*x)/(c + d*x)]) - 3*(b*c - a*d)^2*(2*A^2 + 2*A*B*n + B^2*n^2 + 2*B^2*Log[e*((a + b*x)/(c + d*x))^n]^2 - 2*B*n*(2*A + B*n)*Log[(a + b*x)/(c + d*x)] + 2*B^2*n^2*Log[(a + b*x)/(c + d*x)]^2 + 2*B*Log[e*((a + b*x)/(c + d*x))^n]*(2*A + B*n - 2*B*n*Log[(a + b*x)/(c + d*x)])) + 6*d*(b*c - a*d)*(a + b*x)*(2*A^2 + 6*A*B*n + 7*B^2*n^2 + 2*B^2*Log[e*((a + b*x)/(c + d*x))^n]^2 - 2*B*n*(2*A + 3*B*n)*Log[(a + b*x)/(c + d*x)] + 2*B^2*n^2*Log[(a + b*x)/(c + d*x)]^2 + 2*B*Log[e*((a + b*x)/(c + d*x))^n]*(2*A + 3*B*n - 2*B*n*Log[(a + b*x)/(c + d*x)])) + 6*d^2*(a + b*x)^2*Log[a + b*x]*(2*A^2 + 6*A*B*n + 7*B^2*n^2 + 2*B^2*Log[e*((a + b*x)/(c + d*x))^n]^2 - 2*B*n*(2*A + 3*B*n)*Log[(a + b*x)/(c + d*x)] + 2*B^2*n^2*Log[(a + b*x)/(c + d*x)]^2 + 2*B*Log[e*((a + b*x)/(c + d*x))^n]*(2*A + 3*B*n - 2*B*n*Log[(a + b*x)/(c + d*x)])) - 6*d^2*(a + b*x)^2*(2*A^2 + 6*A*B*n + 7*B^2*n^2 + 2*B^2*Log[e*((a + b*x)/(c + d*x))^n]^2 - 2*B*n*(2*A + 3*B*n)*Log[(a + b*x)/(c + d*x)] + 2*B^2*n^2*Log[(a + b*x)/(c + d*x)]^2 + 2*B*Log[e*((a + b*x)/(c + d*x))^n]*(2*A + 3*B*n - 2*B*n*Log[(a + b*x)/(c + d*x)])))*Log[c + d*x]/(12*(b*c - a*d)^3*g^3*i*(a + b*x)^2)

fricas [B] time = 1.00, size = 1068, normalized size = 2.89

$$6A^2b^2c^2 - 24A^2abcd + 18A^2a^2d^2 - 4\left(B^2b^2d^2n^2x^2 + 2B^2abd^2n^2x + B^2a^2d^2n^2\right) \log\left(\frac{bx+a}{dx+c}\right)^3 + 3\left(B^2b^2c^2 - 16\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^3/(d*i*x+c*i), x, algorithm="fricas")

```
[Out] -1/12*(6*A^2*b^2*c^2 - 24*A^2*a*b*c*d + 18*A^2*a^2*d^2 - 4*(B^2*b^2*d^2*n^2
*x^2 + 2*B^2*a*b*d^2*n^2*x + B^2*a^2*d^2*n^2)*log((b*x + a)/(d*x + c))^3 +
3*(B^2*b^2*c^2 - 16*B^2*a*b*c*d + 15*B^2*a^2*d^2)*n^2 + 6*(B^2*b^2*c^2 - 4*
B^2*a*b*c*d + 3*B^2*a^2*d^2 - 2*(B^2*b^2*c*d - B^2*a*b*d^2)*x - 2*(B^2*b^2*
d^2*x^2 + 2*B^2*a*b*d^2*x + B^2*a^2*d^2)*log((b*x + a)/(d*x + c))*log(e)^2
- 6*(2*A*B*a^2*d^2*n - (B^2*b^2*c^2 - 4*B^2*a*b*c*d)*n^2 + (3*B^2*b^2*d^2*
n^2 + 2*A*B*b^2*d^2*n)*x^2 + 2*(2*A*B*a*b*d^2*n + (B^2*b^2*c*d + 2*B^2*a*b*
d^2)*n^2)*x)*log((b*x + a)/(d*x + c))^2 + 6*(A*B*b^2*c^2 - 8*A*B*a*b*c*d +
7*A*B*a^2*d^2)*n - 6*(2*A^2*b^2*c*d - 2*A^2*a*b*d^2 + 7*(B^2*b^2*c*d - B^2*
a*b*d^2)*n^2 + 6*(A*B*b^2*c*d - A*B*a*b*d^2)*n)*x + 6*(2*A*B*b^2*c^2 - 8*A*
B*a*b*c*d + 6*A*B*a^2*d^2 - 2*(B^2*b^2*d^2*n*x^2 + 2*B^2*a*b*d^2*n*x + B^2*
a^2*d^2*n)*log((b*x + a)/(d*x + c))^2 + (B^2*b^2*c^2 - 8*B^2*a*b*c*d + 7*B^
2*a^2*d^2)*n - 2*(2*A*B*b^2*c*d - 2*A*B*a*b*d^2 + 3*(B^2*b^2*c*d - B^2*a*b*
d^2)*n)*x - 2*(2*A*B*a^2*d^2 + (3*B^2*b^2*d^2*n + 2*A*B*b^2*d^2)*x^2 - (B^2
*b^2*c^2 - 4*B^2*a*b*c*d)*n + 2*(2*A*B*a*b*d^2 + (B^2*b^2*c*d + 2*B^2*a*b*d
^2)*n)*x)*log((b*x + a)/(d*x + c))*log(e) - 6*(2*A^2*a^2*d^2 - (B^2*b^2*c^
2 - 8*B^2*a*b*c*d)*n^2 + (7*B^2*b^2*d^2*n^2 + 6*A*B*b^2*d^2*n + 2*A^2*b^2*d
^2)*x^2 - 2*(A*B*b^2*c^2 - 4*A*B*a*b*c*d)*n + 2*(2*A^2*a*b*d^2 + (3*B^2*b^2
*c*d + 4*B^2*a*b*d^2)*n^2 + 2*(A*B*b^2*c*d + 2*A*B*a*b*d^2)*n)*x)*log((b*x
+ a)/(d*x + c)))/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)
*g^3*i*x^2 + 2*(a*b^4*c^3 - 3*a^2*b^3*c^2*d + 3*a^3*b^2*c*d^2 - a^4*b*d^3)*
g^3*i*x + (a^2*b^3*c^3 - 3*a^3*b^2*c^2*d + 3*a^4*b*c*d^2 - a^5*d^3)*g^3*i)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^3/(d*i*x+c*i),x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.48, size = 0, normalized size = 0.00

$$\int \frac{\left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)^2}{(bgx + ag)^3 (dix + ci)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^3/(d*i*x+c*i),x)
```

```
[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^3/(d*i*x+c*i),x)
```

maxima [B] time = 2.12, size = 2126, normalized size = 5.76

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^3/(d*i*x+c*i),x, algorithm="maxima")

[Out]
$$\frac{1}{2}B^2 \left(\frac{(2bdx - bc + 3ad)}{(b^4c^2 - 2ab^3cd + a^2b^2d^2)} g^3 i^3 x^2 + 2 \frac{(ab^3c^2 - 2a^2b^2cd + a^3bd^2)}{g^3 i^3} x + \frac{(a^2b^2c^2 - 2a^3b^2cd + a^4d^2)}{g^3 i^3} \right) + 2d^2 \frac{\log(bx + a)}{(b^3c^3 - 3ab^2c^2d + 3a^2b^2cd^2 - a^3d^3)} g^3 i^3 - 2d^2 \frac{\log(dx + c)}{(b^3c^3 - 3ab^2c^2d + 3a^2b^2cd^2 - a^3d^3)} g^3 i^3 \log\left(\frac{e(bx/(dx + c) + a/(dx + c))^n}{e(bx/(dx + c) + a/(dx + c))^n}\right) + AB \left(\frac{(2bdx - bc + 3ad)}{(b^4c^2 - 2ab^3cd + a^2b^2d^2)} g^3 i^3 x^2 + 2 \frac{(ab^3c^2 - 2a^2b^2cd + a^3bd^2)}{g^3 i^3} x + \frac{(a^2b^2c^2 - 2a^3b^2cd + a^4d^2)}{g^3 i^3} \right) + 2d^2 \frac{\log(bx + a)}{(b^3c^3 - 3ab^2c^2d + 3a^2b^2cd^2 - a^3d^3)} g^3 i^3 - 2d^2 \frac{\log(dx + c)}{(b^3c^3 - 3ab^2c^2d + 3a^2b^2cd^2 - a^3d^3)} g^3 i^3 \log\left(\frac{e(bx/(dx + c) + a/(dx + c))^n}{e(bx/(dx + c) + a/(dx + c))^n}\right) - \frac{1}{12} \left((3b^2c^2 - 48ab^2cd + 45a^2d^2 - 4(b^2d^2x^2 + 2ab^2d^2x + a^2d^2)) \log(bx + a)^3 + 4(b^2d^2x^2 + 2ab^2d^2x + a^2d^2) \log(dx + c)^3 + 18(b^2d^2x^2 + 2ab^2d^2x + a^2d^2) \log(bx + a)^2 + 6(3b^2d^2x^2 + 6ab^2d^2x + 3a^2d^2 - 2(b^2d^2x^2 + 2ab^2d^2x + a^2d^2)) \log(bx + a) \log(dx + c)^2 - 42(b^2cd - ab^2d^2)x - 42(b^2d^2x^2 + 2ab^2d^2x + a^2d^2) \log(bx + a) + 6(7b^2d^2x^2 + 14ab^2d^2x + 7a^2d^2 + 2(b^2d^2x^2 + 2ab^2d^2x + a^2d^2)) \log(bx + a)^2 - 6(b^2d^2x^2 + 2ab^2d^2x + a^2d^2) \log(bx + a) \log(dx + c) \right) n^2 / (a^2b^3c^3g^3i - 3a^3b^2c^2dg^3i + 3a^4b^2cd^2g^3i - a^5d^3g^3i + (b^5c^3g^3i - 3ab^4c^2dg^3i + 3a^2b^3cd^2g^3i - a^3b^2d^3g^3i)x^2 + 2(ab^4c^3g^3i - 3a^2b^3c^2dg^3i + 3a^3b^2cd^2g^3i - a^4bd^3g^3i)x) + 6(b^2c^2 - 8ab^2cd + 7a^2d^2 + 2(b^2d^2x^2 + 2ab^2d^2x + a^2d^2)) \log(bx + a)^2 + 2(b^2d^2x^2 + 2ab^2d^2x + a^2d^2) \log(dx + c)^2 - 6(b^2cd - ab^2d^2)x - 6(b^2d^2x^2 + 2ab^2d^2x + a^2d^2) \log(bx + a) + 2(3b^2d^2x^2 + 6ab^2d^2x + 3a^2d^2 - 2(b^2d^2x^2 + 2ab^2d^2x + a^2d^2)) \log(bx + a) \log(dx + c) \right) n \log\left(\frac{e(bx/(dx + c) + a/(dx + c))^n}{e(bx/(dx + c) + a/(dx + c))^n}\right) / (a^2b^3c^3g^3i - 3a^3b^2c^2dg^3i + 3a^4b^2cd^2g^3i - a^5d^3g^3i + (b^5c^3g^3i - 3ab^4c^2dg^3i + 3a^2b^3cd^2g^3i - a^3b^2d^3g^3i)x^2 + 2(ab^4c^3g^3i - 3a^2b^3c^2dg^3i + 3a^3b^2cd^2g^3i - a^4bd^3g^3i)x) \right) B^2 - \frac{1}{2} \left(b^2c^2 - 8ab^2cd + 7a^2d^2 + 2(b^2d^2x^2 + 2ab^2d^2x + a^2d^2) \log(bx + a)^2 + 2(b^2d^2x^2 + 2ab^2d^2x + a^2d^2) \log(dx + c)^2 - 6(b^2cd - ab^2d^2)x - 6(b^2d^2x^2 + 2ab^2d^2x + a^2d^2) \log(bx + a) + 2(3b^2d^2x^2 + 6ab^2d^2x + 3a^2d^2 - 2(b^2d^2x^2 + 2ab^2d^2x + a^2d^2)) \log(bx + a) \log(dx + c) \right) AB n / (a^2b^3c^3g^3i - 3a^3b^2c^2dg^3i + 3a^4b^2cd^2g^3i - a^5d^3g^3i + (b^5c^3g^3i - 3ab^4c^2dg^3i + 3a^2b^3cd^2g^3i - a^3b^2d^3g^3i)x^2 + 2(ab^4c^3g^3i - 3a^2b^3c^2dg^3i + 3a^3b^2cd^2g^3i - a^4bd^3g^3i)x)$$

```

3*g^3*i + (b^5*c^3*g^3*i - 3*a*b^4*c^2*d*g^3*i + 3*a^2*b^3*c*d^2*g^3*i - a^
3*b^2*d^3*g^3*i)*x^2 + 2*(a*b^4*c^3*g^3*i - 3*a^2*b^3*c^2*d*g^3*i + 3*a^3*b
^2*c*d^2*g^3*i - a^4*b*d^3*g^3*i)*x) + 1/2*A^2*((2*b*d*x - b*c + 3*a*d)/((b
^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)*g^3*i*x^2 + 2*(a*b^3*c^2 - 2*a^2*b^2*c*
d + a^3*b*d^2)*g^3*i*x + (a^2*b^2*c^2 - 2*a^3*b*c*d + a^4*d^2)*g^3*i) + 2*d
^2*log(b*x + a)/((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^3*i)
- 2*d^2*log(d*x + c)/((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*
g^3*i))

```

mupad [B] time = 8.49, size = 1011, normalized size = 2.74

$$\ln\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) \left(\frac{B^2 n}{x^2 (b^3 c g^3 i - a b^2 d g^3 i) + x (2 a b^2 c g^3 i - 2 a^2 b d g^3 i) - a^3 d g^3 i + a^2 b c g^3 i} - \frac{g^3 i n (a d - b c)}{g^3 i n (a d - b c)} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

```

[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))^2/((a*g + b*g*x)^3*(c*i + d*i*x)
),x)

```

```

[Out] log(e*((a + b*x)/(c + d*x))^n)*((B^2*n)/(x^2*(b^3*c*g^3*i - a*b^2*d*g^3*i)
+ x*(2*a*b^2*c*g^3*i - 2*a^2*b*d*g^3*i) - a^3*d*g^3*i + a^2*b*c*g^3*i) - (d
^2*(3*B^2*n + 2*A*B)*((a*g^3*i*n*(a*d - b*c)^2)/(2*d) + (g^3*i*n*(a*d - b*c)
)^2*(2*a*d - b*c))/(2*d^2) + (b*g^3*i*n*x*(a*d - b*c)^2/d))/(g^3*i*n*(a*d
- b*c)*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)*(x^2*(b^3*c*g^3*i - a*b^2*d*g^3*i) +
x*(2*a*b^2*c*g^3*i - 2*a^2*b*d*g^3*i) - a^3*d*g^3*i + a^2*b*c*g^3*i)) - l
og(e*((a + b*x)/(c + d*x))^n)^2*((d^2*(3*B^2*n + 2*A*B))/(2*g^3*i*n*(a*d -
b*c)*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) - (B^2*d^2*((g^3*i*n*(a*d - b*c)*(2*a
*d - b*c))/(2*d^2) + (a*g^3*i*n*(a*d - b*c))/(2*d) + (b*g^3*i*n*x*(a*d - b*
c))/d))/(g^3*i*n*(a*d - b*c)*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)*(a^2*g^3*i + b
^2*g^3*i*x^2 + 2*a*b*g^3*i*x)) - ((6*A^2*a*d - 2*A^2*b*c + 15*B^2*a*d*n^2
- B^2*b*c*n^2 + 14*A*B*a*d*n - 2*A*B*b*c*n)/(2*(a*d - b*c)) + (x*(2*A^2*b*d
+ 7*B^2*b*d*n^2 + 6*A*B*b*d*n))/(a*d - b*c))/(x^2*(2*b^3*c*g^3*i - 2*a*b^2
*d*g^3*i) + x*(4*a*b^2*c*g^3*i - 4*a^2*b*d*g^3*i) - 2*a^3*d*g^3*i + 2*a^2*b
*c*g^3*i) + (d^2*atan((d^2*((a^3*d^3*g^3*i + b^3*c^3*g^3*i - a*b^2*c^2*d*g^
3*i - a^2*b*c*d^2*g^3*i)/(a^2*d^2*g^3*i + b^2*c^2*g^3*i - 2*a*b*c*d*g^3*i)
+ 2*b*d*x)*(A^2 + (7*B^2*n^2)/2 + 3*A*B*n)*(a^2*d^2*g^3*i + b^2*c^2*g^3*i -
2*a*b*c*d*g^3*i)*2i)/(g^3*i*(a*d - b*c)^3*(2*A^2*d^2 + 7*B^2*d^2*n^2 + 6*A
*B*d^2*n)))*(A^2 + (7*B^2*n^2)/2 + 3*A*B*n)*2i)/(g^3*i*(a*d - b*c)^3) - (B
^2*d^2*log(e*((a + b*x)/(c + d*x))^n)^3)/(3*g^3*i*n*(a*d - b*c)*(a^2*d^2 + b
^2*c^2 - 2*a*b*c*d))

```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(b*g*x+a*g)**3/(d*i*x+c*i),x)
```

```
[Out] Timed out
```

$$3.193 \quad \int \frac{\left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag+bgx)^4(ci+dix)} dx$$

Optimal. Leaf size=543

$$\frac{b^3(c+dx)^3 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)^2}{3g^4i(a+bx)^3(bc-ad)^4} - \frac{2b^3Bn(c+dx)^3 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{9g^4i(a+bx)^3(bc-ad)^4} + \frac{3b^2d(c+dx)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{2g^4i(a+bx)^2(bc-ad)^4}$$

[Out] $-6*b*B^2*d^2*n^2*(d*x+c)/(-a*d+b*c)^4/g^4/i/(b*x+a)+3/4*b^2*B^2*d*n^2*(d*x+c)^2/(-a*d+b*c)^4/g^4/i/(b*x+a)^2-2/27*b^3*B^2*n^2*(d*x+c)^3/(-a*d+b*c)^4/g^4/i/(b*x+a)^3-6*b*B*d^2*n*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^4/g^4/i/(b*x+a)+3/2*b^2*B*d*n*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^4/g^4/i/(b*x+a)^2-2/9*b^3*B*n*(d*x+c)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^4/g^4/i/(b*x+a)^3-3*b*d^2*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^4/g^4/i/(b*x+a)+3/2*b^2*d*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^4/g^4/i/(b*x+a)^2-1/3*b^3*(d*x+c)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^4/g^4/i/(b*x+a)^3-1/3*d^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^3/B/(-a*d+b*c)^4/g^4/i/n$

Rubi [C] time = 8.35, antiderivative size = 2180, normalized size of antiderivative = 4.01, number of steps used = 143, number of rules used = 31, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}} = 0.689$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)^4*(c*i + d*i*x)), x]

[Out] $(-2*B^2*n^2)/(27*(b*c - a*d)*g^4*i*(a + b*x)^3) + (19*B^2*d*n^2)/(36*(b*c - a*d)^2*g^4*i*(a + b*x)^2) - (85*B^2*d^2*n^2)/(18*(b*c - a*d)^3*g^4*i*(a + b*x)) - (85*B^2*d^3*n^2*\text{Log}[a + b*x])/(18*(b*c - a*d)^4*g^4*i) + (A*B*d^3*n*\text{Log}[a + b*x]^2)/((b*c - a*d)^4*g^4*i) + (11*B^2*d^3*n^2*\text{Log}[a + b*x]^2)/(6*(b*c - a*d)^4*g^4*i) + (B^2*d^3*\text{Log}[-((b*c - a*d)/(d*(a + b*x))])*\text{Log}[e*((a + b*x)/(c + d*x))^n]^2)/((b*c - a*d)^4*g^4*i) + (B^2*d^3*\text{Log}[a + b*x]*\text{Log}[e*((a + b*x)/(c + d*x))^n]^2)/((b*c - a*d)^4*g^4*i) - (2*B*n*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(9*(b*c - a*d)*g^4*i*(a + b*x)^3) + (5*B*d*n*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(6*(b*c - a*d)^2*g^4*i*(a + b*x)^2) - (11*B*d^2*n*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(3*(b*c - a*d)^3*g^4*i*(a + b*x)) - (11*B*d^3*n*\text{Log}[a + b*x]*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))$

$$\begin{aligned} &)) / (3*(b*c - a*d)^4*g^4*i) - (A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2 / (3*(b \\ & *c - a*d)*g^4*i*(a + b*x)^3 + (d*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2) \\ & / (2*(b*c - a*d)^2*g^4*i*(a + b*x)^2 - (d^2*(A + B*\text{Log}[e*((a + b*x)/(c + d* \\ & x))^n])^2) / ((b*c - a*d)^3*g^4*i*(a + b*x)) - (d^3*\text{Log}[a + b*x]*(A + B*\text{Log}[e \\ & *((a + b*x)/(c + d*x))^n])^2) / ((b*c - a*d)^4*g^4*i) + (85*B^2*d^3*n^2*\text{Log}[c \\ & + d*x]) / (18*(b*c - a*d)^4*g^4*i) - (2*A*B*d^3*n*\text{Log}[-((d*(a + b*x))/(b*c - \\ & a*d))]*\text{Log}[c + d*x]) / ((b*c - a*d)^4*g^4*i) - (11*B^2*d^3*n^2*\text{Log}[-((d*(a + \\ & b*x))/(b*c - a*d))]*\text{Log}[c + d*x]) / (3*(b*c - a*d)^4*g^4*i) - (B^2*d^3*\text{Log}[(\\ & a + b*x)^n]^2*\text{Log}[c + d*x]) / ((b*c - a*d)^4*g^4*i) + (11*B*d^3*n*(A + B*\text{Log}[\\ & e*((a + b*x)/(c + d*x))^n])*\text{Log}[c + d*x]) / (3*(b*c - a*d)^4*g^4*i) + (d^3*(A \\ & + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2*\text{Log}[c + d*x]) / ((b*c - a*d)^4*g^4*i) \\ & + (A*B*d^3*n*\text{Log}[c + d*x]^2) / ((b*c - a*d)^4*g^4*i) + (11*B^2*d^3*n^2*\text{Log}[c \\ & + d*x]^2) / (6*(b*c - a*d)^4*g^4*i) - (B^2*d^3*n^2*\text{Log}[a + b*x]*\text{Log}[c + d*x]^ \\ & 2) / ((b*c - a*d)^4*g^4*i) + (B^2*d^3*n*\text{Log}[e*((a + b*x)/(c + d*x))^n]*\text{Log}[c \\ & + d*x]^2) / ((b*c - a*d)^4*g^4*i) + (B^2*d^3*n^2*\text{Log}[c + d*x]^3) / (3*(b*c - a* \\ & d)^4*g^4*i) - (2*A*B*d^3*n*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)]) / ((b \\ & *c - a*d)^4*g^4*i) - (11*B^2*d^3*n^2*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - \\ & a*d)]) / (3*(b*c - a*d)^4*g^4*i) + (B^2*d^3*\text{Log}[(a + b*x)^n]^2*\text{Log}[(b*(c + d* \\ & x))/(b*c - a*d)]) / ((b*c - a*d)^4*g^4*i) - (2*B^2*d^3*n*\text{Log}[a + b*x]*\text{Log}[c + \\ & d*x]*\text{Log}[(c + d*x)^(-n)]) / ((b*c - a*d)^4*g^4*i) - (B^2*d^3*\text{Log}[a + b*x]*\text{Lo \\ & g}[(c + d*x)^(-n)]^2) / ((b*c - a*d)^4*g^4*i) + (B^2*d^3*\text{Log}[-((d*(a + b*x))/(\\ & b*c - a*d))]*\text{Log}[(c + d*x)^(-n)]^2) / ((b*c - a*d)^4*g^4*i) + (2*B^2*d^3*n*\text{Lo \\ & g}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c + d*x]*(\text{Log}[(a + b*x)^n] - \text{Log}[e*((a \\ & + b*x)/(c + d*x))^n] + \text{Log}[(c + d*x)^(-n)])) / ((b*c - a*d)^4*g^4*i) - (2*A*B \\ & *d^3*n*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))]) / ((b*c - a*d)^4*g^4*i) - (1 \\ & 1*B^2*d^3*n^2*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))]) / (3*(b*c - a*d)^4*g^ \\ & 4*i) + (2*B^2*d^3*n*\text{Log}[(a + b*x)^n]*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d) \\ &)]) / ((b*c - a*d)^4*g^4*i) - (2*A*B*d^3*n*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a* \\ & d)]) / ((b*c - a*d)^4*g^4*i) - (11*B^2*d^3*n^2*\text{PolyLog}[2, (b*(c + d*x))/(b*c \\ & - a*d)]) / (3*(b*c - a*d)^4*g^4*i) - (2*B^2*d^3*n*\text{Log}[(c + d*x)^(-n)]*\text{PolyLog} \\ & [2, (b*(c + d*x))/(b*c - a*d)]) / ((b*c - a*d)^4*g^4*i) + (2*B^2*d^3*n*(\text{Log}[(\\ & a + b*x)^n] - \text{Log}[e*((a + b*x)/(c + d*x))^n] + \text{Log}[(c + d*x)^(-n)])*\text{PolyLog} \\ & [2, (b*(c + d*x))/(b*c - a*d)]) / ((b*c - a*d)^4*g^4*i) - (2*B^2*d^3*n*\text{Log}[e \\ & *((a + b*x)/(c + d*x))^n]*\text{PolyLog}[2, 1 + (b*c - a*d)/(d*(a + b*x))]) / ((b*c - \\ & a*d)^4*g^4*i) - (2*B^2*d^3*n^2*\text{PolyLog}[3, -((d*(a + b*x))/(b*c - a*d))]) / (\\ & (b*c - a*d)^4*g^4*i) - (2*B^2*d^3*n^2*\text{PolyLog}[3, (b*(c + d*x))/(b*c - a*d)] \\ &) / ((b*c - a*d)^4*g^4*i) - (2*B^2*d^3*n^2*\text{PolyLog}[3, 1 + (b*c - a*d)/(d*(a + \\ & b*x)]) / ((b*c - a*d)^4*g^4*i) \end{aligned}$$
Rule 12

`Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]`

Rule 30

$\text{Int}[(x_)^{(m_)}, x_Symbol] \rightarrow \text{Simp}[x^{(m+1)}/(m+1), x] \text{ /; FreeQ}[m, x] \ \&\& \ \text{NeQ}[m, -1]$

Rule 44

$\text{Int}[(a_ + (b_)*(x_))^{(m_)}*((c_ + (d_)*(x_))^{(n_)}), x_Symbol] \rightarrow \text{Int}[\text{ExpandIntegrand}[(a + b*x)^m*(c + d*x)^n, x], x] \text{ /; FreeQ}[\{a, b, c, d\}, x] \ \&\& \ \text{NeQ}[b*c - a*d, 0] \ \&\& \ \text{ILtQ}[m, 0] \ \&\& \ \text{IntegerQ}[n] \ \&\& \ !(\text{IGtQ}[n, 0] \ \&\& \ \text{LtQ}[m + n + 2, 0])$

Rule 2301

$\text{Int}[(a_ + \text{Log}[(c_)*(x_)^{(n_)}])*(b_)]/(x_), x_Symbol] \rightarrow \text{Simp}[(a + b*\text{Log}[c*x^n])^2/(2*b*n), x] \text{ /; FreeQ}[\{a, b, c, n\}, x]$

Rule 2302

$\text{Int}[(a_ + \text{Log}[(c_)*(x_)^{(n_)}])*(b_)]^{(p_)}(x_), x_Symbol] \rightarrow \text{Dist}[1/(b*n), \text{Subst}[\text{Int}[x^p, x], x, a + b*\text{Log}[c*x^n]], x] \text{ /; FreeQ}[\{a, b, c, n, p\}, x]$

Rule 2317

$\text{Int}[(a_ + \text{Log}[(c_)*(x_)^{(n_)}])*(b_)]^{(p_)}((d_ + (e_)*(x_))), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[1 + (e*x)/d]*(a + b*\text{Log}[c*x^n])^p)/e, x] - \text{Dist}[(b*n*p)/e, \text{Int}[(\text{Log}[1 + (e*x)/d]*(a + b*\text{Log}[c*x^n])^{(p-1)})/x, x], x] \text{ /; FreeQ}[\{a, b, c, d, e, n\}, x] \ \&\& \ \text{IGtQ}[p, 0]$

Rule 2344

$\text{Int}[(a_ + \text{Log}[(c_)*(x_)^{(n_)}])*(b_)]^{(p_)}((x_)*((d_ + (e_)*(x_)))), x_Symbol] \rightarrow \text{Dist}[1/d, \text{Int}[(a + b*\text{Log}[c*x^n])^p/x, x], x] - \text{Dist}[e/d, \text{Int}[(a + b*\text{Log}[c*x^n])^p/(d + e*x), x], x] \text{ /; FreeQ}[\{a, b, c, d, e, n\}, x] \ \&\& \ \text{IGtQ}[p, 0]$

Rule 2374

$\text{Int}[(\text{Log}[(d_)*((e_ + (f_)*(x_)^{(m_)}))])*(a_ + \text{Log}[(c_)*(x_)^{(n_)}])*(b_)]^{(p_)}(x_), x_Symbol] \rightarrow -\text{Simp}[(\text{PolyLog}[2, -(d*f*x^m)]*(a + b*\text{Log}[c*x^n])^p)/m, x] + \text{Dist}[(b*n*p)/m, \text{Int}[(\text{PolyLog}[2, -(d*f*x^m)]*(a + b*\text{Log}[c*x^n])^{(p-1)})/x, x], x] \text{ /; FreeQ}[\{a, b, c, d, e, f, m, n\}, x] \ \&\& \ \text{IGtQ}[p, 0] \ \&\& \ \text{EqQ}[d*e, 1]$

Rule 2375

Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.))/(x_), x_Symbol] := Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m - 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d, e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*((f_) + (g_.)*(x_)^(q_.)), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2396

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_)/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])^p/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]

Rule 2411

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*((f_.) + (g_.)*(x_)^(q_.))*((h_.) + (i_.)*(x_)^(r_.)), x_Symbol] := Dist[1/e, Subst[Int[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e

```
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n])]/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m))]/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] :>
Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] :> -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q]^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] := Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q]^r)/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/(j_.) + (k
_.)*(x_)), x_Symbol] := Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2506

```
Int[Log[v]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] := With[{g = Simplify[(v - 1)*(c + d
*x)/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] := With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
h*x)^t]^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^(s + 1))/(p*r*(s + 1)*(b*c
- a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q]^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] := With[{w = DerivativeDivides[v, u*v, x]}, Simp[w*PolyLog[n + 1, v], x] /; !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] := With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; SimplifyIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] := With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]]
```

Rubi steps

$$\begin{aligned}
\int \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(193c + 193dx)(ag + bgx)^4} dx &= \int \left[\frac{b\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{193(bc - ad)g^4(a + bx)^4} - \frac{bd\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{193(bc - ad)^2g^4(a + bx)^3} + \frac{bd^2\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{193(bc - ad)^3g^4(a + bx)^2} \right. \\
&= -\frac{(bd^3) \int \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{a+bx} dx}{193(bc - ad)^4g^4} + \frac{d^4 \int \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{c+dx} dx}{193(bc - ad)^4g^4} + \frac{(bd^2) \int \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{a+bx} dx}{193(bc - ad)^3g^4} \\
&= -\frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{579(bc - ad)g^4(a + bx)^3} + \frac{d\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{386(bc - ad)^2g^4(a + bx)^2} - \frac{d^2\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{193(bc - ad)^3g^4(a + bx)} \\
&= -\frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{579(bc - ad)g^4(a + bx)^3} + \frac{d\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{386(bc - ad)^2g^4(a + bx)^2} - \frac{d^2\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{193(bc - ad)^3g^4(a + bx)} \\
&= -\frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{579(bc - ad)g^4(a + bx)^3} + \frac{d\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{386(bc - ad)^2g^4(a + bx)^2} - \frac{d^2\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{193(bc - ad)^3g^4(a + bx)} \\
&= -\frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{579(bc - ad)g^4(a + bx)^3} + \frac{d\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{386(bc - ad)^2g^4(a + bx)^2} - \frac{d^2\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{193(bc - ad)^3g^4(a + bx)} \\
&= -\frac{2Bn\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{1737(bc - ad)g^4(a + bx)^3} + \frac{5Bdn\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{1158(bc - ad)^2g^4(a + bx)^2} - \frac{11Bd^2n\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{579(bc - ad)^3g^4(a + bx)} \\
&= \frac{B^2d^3 \log(a + bx) \log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{193(bc - ad)^4g^4} - \frac{2Bn\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{1737(bc - ad)g^4(a + bx)^3} + \frac{5Bdn\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{1158(bc - ad)^2g^4(a + bx)^2} \\
&= \frac{B^2d^3 \log\left(-\frac{bc-ad}{d(a+bx)}\right) \log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{193(bc - ad)^4g^4} + \frac{B^2d^3 \log(a + bx) \log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{193(bc - ad)^4g^4} \\
&= -\frac{2B^2n^2}{5211(bc - ad)g^4(a + bx)^3} + \frac{19B^2dn^2}{6948(bc - ad)^2g^4(a + bx)^2} - \frac{85B^2d^2n^2}{3474(bc - ad)^3g^4(a + bx)} \\
&= -\frac{2B^2n^2}{5211(bc - ad)g^4(a + bx)^3} + \frac{19B^2dn^2}{6948(bc - ad)^2g^4(a + bx)^2} - \frac{85B^2d^2n^2}{3474(bc - ad)^3g^4(a + bx)}
\end{aligned}$$

Mathematica [B] time = 1.92, size = 1295, normalized size = 2.38

$$4 \left(9A^2 + 6BnA + 2B^2n^2 + 9B^2 \log^2 \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + 9B^2n^2 \log^2 \left(\frac{a+bx}{c+dx} \right) - 6Bn(3A + Bn) \log \left(\frac{a+bx}{c+dx} \right) + 6B \log \left(e \left(\frac{a}{c} \right)^n \right) \right)$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)^4*(c*i + d*i*x)), x]

[Out] -1/108*(36*B^2*d^3*n^2*(a + b*x)^3*Log[(a + b*x)/(c + d*x)]^3 + 18*B*n*Log[(a + b*x)/(c + d*x)]^2*(6*a^3*A*d^3 + 2*b^3*B*c^3*n - 9*a*b^2*B*c^2*d*n + 18*a^2*b*B*c*d^2*n + 18*a^2*A*b*d^3*x - 3*b^3*B*c^2*d*n*x + 18*a*b^2*B*c*d^2*n*x + 18*a^2*b*B*d^3*n*x + 18*a*A*b^2*d^3*x^2 + 6*b^3*B*c*d^2*n*x^2 + 27*a*b^2*B*d^3*n*x^2 + 6*A*b^3*d^3*x^3 + 11*b^3*B*d^3*n*x^3 + 6*B*d^3*(a + b*x)^3*Log[e*((a + b*x)/(c + d*x))^n] - 6*B*d^3*n*(a + b*x)^3*Log[(a + b*x)/(c + d*x)]) - 3*d*(b*c - a*d)^2*(a + b*x)*(18*A^2 + 30*A*B*n + 19*B^2*n^2 + 18*B^2*Log[e*((a + b*x)/(c + d*x))^n]^2 - 6*B*n*(6*A + 5*B*n)*Log[(a + b*x)/(c + d*x)] + 18*B^2*n^2*Log[(a + b*x)/(c + d*x)]^2 + 6*B*Log[e*((a + b*x)/(c + d*x))^n]*(6*A + 5*B*n - 6*B*n*Log[(a + b*x)/(c + d*x]))) + 6*d^2*(b*c - a*d)*(a + b*x)^2*(18*A^2 + 66*A*B*n + 85*B^2*n^2 + 18*B^2*Log[e*((a + b*x)/(c + d*x))^n]^2 - 6*B*n*(6*A + 11*B*n)*Log[(a + b*x)/(c + d*x)] + 18*B^2*n^2*Log[(a + b*x)/(c + d*x)]^2 + 6*B*Log[e*((a + b*x)/(c + d*x))^n]*(6*A + 11*B*n - 6*B*n*Log[(a + b*x)/(c + d*x]))) + 6*d^3*(a + b*x)^3*Log[a + b*x]*(18*A^2 + 66*A*B*n + 85*B^2*n^2 + 18*B^2*Log[e*((a + b*x)/(c + d*x))^n]^2 - 6*B*n*(6*A + 11*B*n)*Log[(a + b*x)/(c + d*x)] + 18*B^2*n^2*Log[(a + b*x)/(c + d*x)]^2 + 6*B*Log[e*((a + b*x)/(c + d*x))^n]*(6*A + 11*B*n - 6*B*n*Log[(a + b*x)/(c + d*x]))) + 4*(b*c - a*d)^3*(9*A^2 + 6*A*B*n + 2*B^2*n^2 + 9*B^2*Log[e*((a + b*x)/(c + d*x))^n]^2 - 6*B*n*(3*A + B*n)*Log[(a + b*x)/(c + d*x)] + 9*B^2*n^2*Log[(a + b*x)/(c + d*x)]^2 + 6*B*Log[e*((a + b*x)/(c + d*x))^n]*(3*A + B*n - 3*B*n*Log[(a + b*x)/(c + d*x]))) + 6*B*(b*c - a*d)*n*Log[(a + b*x)/(c + d*x)]*(3*d*(-(b*c) + a*d)*(a + b*x)*(6*A + 5*B*n + 6*B*Log[e*((a + b*x)/(c + d*x))^n] - 6*B*n*Log[(a + b*x)/(c + d*x)]) + 6*d^2*(a + b*x)^2*(6*A + 11*B*n + 6*B*Log[e*((a + b*x)/(c + d*x))^n] - 6*B*n*Log[(a + b*x)/(c + d*x)]) + 4*(b*c - a*d)^2*(3*A + B*n + 3*B*Log[e*((a + b*x)/(c + d*x))^n] - 3*B*n*Log[(a + b*x)/(c + d*x]))) - 6*d^3*(a + b*x)^3*(18*A^2 + 66*A*B*n + 85*B^2*n^2 + 18*B^2*Log[e*((a + b*x)/(c + d*x))^n]^2 - 6*B*n*(6*A + 11*B*n)*Log[(a + b*x)/(c + d*x)] + 18*B^2*n^2*Log[(a + b*x)/(c + d*x)]^2 + 6*B*Log[e*((a + b*x)/(c + d*x))^n]*(6*A + 11*B*n - 6*B*n*Log[(a + b*x)/(c + d*x]))) * Log[c + d*x]/((b*c - a*d)^4*g^4*i*(a + b*x)^3)

fricas [B] time = 0.88, size = 1910, normalized size = 3.52

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^4/(d*i*x+c*i),x, algorithm="fricas")

[Out]
$$-1/108*(36*A^2*b^3*c^3 - 162*A^2*a*b^2*c^2*d + 324*A^2*a^2*b*c*d^2 - 198*A^2*a^3*d^3 + 36*(B^2*b^3*d^3*n^2*x^3 + 3*B^2*a*b^2*d^3*n^2*x^2 + 3*B^2*a^2*b*d^3*n^2*x + B^2*a^3*d^3*n^2)*\log((b*x + a)/(d*x + c))^3 + (8*B^2*b^3*c^3 - 81*B^2*a*b^2*c^2*d + 648*B^2*a^2*b*c*d^2 - 575*B^2*a^3*d^3)*n^2 + 6*(18*A^2*b^3*c*d^2 - 18*A^2*a*b^2*d^3 + 85*(B^2*b^3*c*d^2 - B^2*a*b^2*d^3)*n^2 + 6*6*(A*B*b^3*c*d^2 - A*B*a*b^2*d^3)*n)*x^2 + 18*(2*B^2*b^3*c^3 - 9*B^2*a*b^2*c^2*d + 18*B^2*a^2*b*c*d^2 - 11*B^2*a^3*d^3 + 6*(B^2*b^3*c*d^2 - B^2*a*b^2*d^3)*x^2 - 3*(B^2*b^3*c^2*d - 6*B^2*a*b^2*c*d^2 + 5*B^2*a^2*b*d^3)*x + 6*(B^2*b^3*d^3*x^3 + 3*B^2*a*b^2*d^3*x^2 + 3*B^2*a^2*b*d^3*x + B^2*a^3*d^3)*\log((b*x + a)/(d*x + c))*\log(e)^2 + 18*(6*A*B*a^3*d^3*n + (11*B^2*b^3*d^3*n^2 + 6*A*B*b^3*d^3*n)*x^3 + (2*B^2*b^3*c^3 - 9*B^2*a*b^2*c^2*d + 18*B^2*a^2*b*c*d^2)*n^2 + 3*(6*A*B*a*b^2*d^3*n + (2*B^2*b^3*c*d^2 + 9*B^2*a*b^2*d^3)*n^2)*x^2 + 3*(6*A*B*a^2*b*d^3*n - (B^2*b^3*c^2*d - 6*B^2*a*b^2*c*d^2 - 6*B^2*a^2*b*d^3)*n^2)*x)*\log((b*x + a)/(d*x + c))^2 + 6*(4*A*B*b^3*c^3 - 27*A*B*a*b^2*c^2*d + 108*A*B*a^2*b*c*d^2 - 85*A*B*a^3*d^3)*n - 3*(18*A^2*b^3*c^2*d - 108*A^2*a*b^2*c*d^2 + 90*A^2*a^2*b*d^3 + (19*B^2*b^3*c^2*d - 378*B^2*a*b^2*c*d^2 + 359*B^2*a^2*b*d^3)*n^2 + 6*(5*A*B*b^3*c^2*d - 54*A*B*a*b^2*c*d^2 + 49*A*B*a^2*b*d^3)*n)*x + 6*(12*A*B*b^3*c^3 - 54*A*B*a*b^2*c^2*d + 108*A*B*a^2*b*c*d^2 - 66*A*B*a^3*d^3 + 6*(6*A*B*b^3*c*d^2 - 6*A*B*a*b^2*d^3 + 11*(B^2*b^3*c*d^2 - B^2*a*b^2*d^3)*n)*x^2 + 18*(B^2*b^3*d^3*n*x^3 + 3*B^2*a*b^2*d^3*n*x^2 + 3*B^2*a^2*b*d^3*n*x + B^2*a^3*d^3*n)*\log((b*x + a)/(d*x + c))^2 + (4*B^2*b^3*c^3 - 27*B^2*a*b^2*c^2*d + 108*B^2*a^2*b*c*d^2 - 85*B^2*a^3*d^3)*n - 3*(6*A*B*b^3*c^2*d - 36*A*B*a*b^2*c*d^2 + 30*A*B*a^2*b*d^3 + (5*B^2*b^3*c^2*d - 54*B^2*a*b^2*c*d^2 + 49*B^2*a^2*b*d^3)*n)*x + 6*(6*A*B*a^3*d^3 + (11*B^2*b^3*d^3*n + 6*A*B*b^3*d^3)*x^3 + 3*(6*A*B*a*b^2*d^3 + (2*B^2*b^3*c*d^2 + 9*B^2*a*b^2*d^3)*n)*x^2 + (2*B^2*b^3*c^3 - 9*B^2*a*b^2*c^2*d + 18*B^2*a^2*b*c*d^2)*n + 3*(6*A*B*a^2*b*d^3 - (B^2*b^3*c^2*d - 6*B^2*a*b^2*c*d^2 - 6*B^2*a^2*b*d^3)*n)*x)*\log((b*x + a)/(d*x + c))*\log(e) + 6*(18*A^2*a^3*d^3 + (85*B^2*b^3*d^3*n^2 + 66*A*B*b^3*d^3*n + 18*A^2*b^3*d^3)*x^3 + (4*B^2*b^3*c^3 - 27*B^2*a*b^2*c^2*d + 108*B^2*a^2*b*c*d^2)*n^2 + 3*(18*A^2*a*b^2*d^3 + (22*B^2*b^3*c*d^2 + 63*B^2*a*b^2*d^3)*n^2 + 6*(2*A*B*b^3*c*d^2 + 9*A*B*a*b^2*d^3)*n)*x^2 + 6*(2*A*B*b^3*c^3 - 9*A*B*a*b^2*c^2*d + 18*A*B*a^2*b*c*d^2)*n + 3*(18*A^2*a^2*b*d^3 - (5*B^2*b^3*c^2*d - 54*B^2*a*b^2*c*d^2 - 3*6*B^2*a^2*b*d^3)*n^2 - 6*(A*B*b^3*c^2*d - 6*A*B*a*b^2*c*d^2 - 6*A*B*a^2*b*d^3)*n)*x)*\log((b*x + a)/(d*x + c)))/((b^7*c^4 - 4*a*b^6*c^3*d + 6*a^2*b^5*c^2*d^2 - 4*a^3*b^4*c*d^3 + a^4*b^3*d^4)*g^4*i*x^3 + 3*(a*b^6*c^4 - 4*a^2*b^5*c^3*d + 6*a^3*b^4*c^2*d^2 - 4*a^4*b^3*c*d^3 + a^5*b^2*d^4)*g^4*i*x^2 + 3*(a^2*b^5*c^4 - 4*a^3*b^4*c^3*d + 6*a^4*b^3*c^2*d^2 - 4*a^5*b^2*c*d^3 + a^6*b*d^4)*g^4*i*x + (a^3*b^4*c^4 - 4*a^4*b^3*c^3*d + 6*a^5*b^2*c^2*d^2 - 4*a^6*b*c*d^3 + a^7*d^4)*g^4*i)$$

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^4/(d*i*x+c*i),x, algorithm="giac")

[Out] Timed out

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{\left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)^2}{(bgx + ag)^4 (dix + ci)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^4/(d*i*x+c*i),x)

[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^4/(d*i*x+c*i),x)

maxima [B] time = 2.98, size = 3445, normalized size = 6.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^4/(d*i*x+c*i),x, algorithm="maxima")

[Out]
$$\begin{aligned} & -1/6*B^2*((6*b^2*d^2*x^2 + 2*b^2*c^2 - 7*a*b*c*d + 11*a^2*d^2 - 3*(b^2*c*d \\ & - 5*a*b*d^2)*x)/((b^6*c^3 - 3*a*b^5*c^2*d + 3*a^2*b^4*c*d^2 - a^3*b^3*d^3)* \\ & g^4*i*x^3 + 3*(a*b^5*c^3 - 3*a^2*b^4*c^2*d + 3*a^3*b^3*c*d^2 - a^4*b^2*d^3) \\ & *g^4*i*x^2 + 3*(a^2*b^4*c^3 - 3*a^3*b^3*c^2*d + 3*a^4*b^2*c*d^2 - a^5*b*d^3) \\ &)*g^4*i*x + (a^3*b^3*c^3 - 3*a^4*b^2*c^2*d + 3*a^5*b*c*d^2 - a^6*d^3)*g^4*i \\ &) + 6*d^3*log(b*x + a)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^ \\ & 3*b*c*d^3 + a^4*d^4)*g^4*i) - 6*d^3*log(d*x + c)/((b^4*c^4 - 4*a*b^3*c^3*d \\ & + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^4*i))*log(e*(b*x/(d*x + c) \\ & + a/(d*x + c))^n)^2 - 1/3*A*B*((6*b^2*d^2*x^2 + 2*b^2*c^2 - 7*a*b*c*d + 11 \\ & *a^2*d^2 - 3*(b^2*c*d - 5*a*b*d^2)*x)/((b^6*c^3 - 3*a*b^5*c^2*d + 3*a^2*b^4 \\ & *c*d^2 - a^3*b^3*d^3)*g^4*i*x^3 + 3*(a*b^5*c^3 - 3*a^2*b^4*c^2*d + 3*a^3*b^ \\ & 3*c*d^2 - a^4*b^2*d^3)*g^4*i*x^2 + 3*(a^2*b^4*c^3 - 3*a^3*b^3*c^2*d + 3*a^4 \\ & *b^2*c*d^2 - a^5*b*d^3)*g^4*i*x + (a^3*b^3*c^3 - 3*a^4*b^2*c^2*d + 3*a^5*b* \\ & c*d^2 - a^6*d^3)*g^4*i) + 6*d^3*log(b*x + a)/((b^4*c^4 - 4*a*b^3*c^3*d + 6* \end{aligned}$$

$$\begin{aligned}
& a^2 b^2 c^2 d^2 - 4 a^3 b c d^3 + a^4 d^4) g^{4i}) - 6 d^3 \log(dx + c) / ((b^4 c^4 - 4 a b^3 c^3 d + 6 a^2 b^2 c^2 d^2 - 4 a^3 b c d^3 + a^4 d^4) g^{4i}) \\
&) \log(e(bx/(dx + c) + a/(dx + c))^n) - 1/108 * ((8 b^3 c^3 - 81 a b^2 c^2 \\
& * d + 648 a^2 b c d^2 - 575 a^3 d^3 + 36 (b^3 d^3 x^3 + 3 a b^2 d^3 x^2 + 3 a^2 b d^3 x + a^3 d^3) * \log(bx + a)^3 - 36 (b^3 d^3 x^3 + 3 a b^2 d^3 x^2 + \\
& 3 a^2 b d^3 x + a^3 d^3) * \log(dx + c)^3 + 510 (b^3 c d^2 - a b^2 d^3) * x^2 \\
& - 198 (b^3 d^3 x^3 + 3 a b^2 d^3 x^2 + 3 a^2 b d^3 x + a^3 d^3) * \log(bx + a) \\
&)^2 - 18 * (11 b^3 d^3 x^3 + 33 a b^2 d^3 x^2 + 33 a^2 b d^3 x + 11 a^3 d^3 - \\
& 6 (b^3 d^3 x^3 + 3 a b^2 d^3 x^2 + 3 a^2 b d^3 x + a^3 d^3) * \log(bx + a)) * \\
& \log(dx + c)^2 - 3 * (19 b^3 c^2 d - 378 a b^2 c d^2 + 359 a^2 b d^3) * x + 510 \\
& * (b^3 d^3 x^3 + 3 a b^2 d^3 x^2 + 3 a^2 b d^3 x + a^3 d^3) * \log(bx + a) - 6 \\
& * (85 b^3 d^3 x^3 + 255 a b^2 d^3 x^2 + 255 a^2 b d^3 x + 85 a^3 d^3 + 18 (b \\
& ^3 d^3 x^3 + 3 a b^2 d^3 x^2 + 3 a^2 b d^3 x + a^3 d^3) * \log(bx + a)^2 - 66 \\
& * (b^3 d^3 x^3 + 3 a b^2 d^3 x^2 + 3 a^2 b d^3 x + a^3 d^3) * \log(bx + a)) * \log \\
& (dx + c)) * n^2 / (a^3 b^4 c^4 g^{4i} - 4 a^4 b^3 c^3 d g^{4i} + 6 a^5 b^2 c^2 d^2 g^{4i} \\
& - 4 a^6 b c d^3 g^{4i} + a^7 d^4 g^{4i} + (b^7 c^4 g^{4i} - 4 a b^6 c^3 d g^{4i} + 6 a^2 b^5 c^2 d^2 g^{4i} \\
& - 4 a^3 b^4 c d^3 g^{4i} + a^4 b^3 d^4 g^{4i}) * x^3 + 3 * (a b^6 c^4 g^{4i} - 4 a^2 b^5 c^3 d g^{4i} + 6 a^3 b^4 c^2 d^2 g^{4i} \\
& - 4 a^4 b^3 c d^3 g^{4i} + a^5 b^2 d^4 g^{4i}) * x^2 + 3 * (a^2 b^5 c^4 g^{4i} - 4 a^3 b^4 c^3 d g^{4i} + 6 a^4 b^3 c^2 d^2 g^{4i} \\
& - 4 a^5 b^2 c d^3 g^{4i} + a^6 b d^4 g^{4i}) * x) + 6 * (4 b^3 c^3 - 27 a b^2 c^2 d + 108 a^2 b c d^2 \\
& - 85 a^3 d^3 + 66 (b^3 c d^2 - a b^2 d^3) * x^2 - 18 (b^3 d^3 x^3 + 3 a b^2 d^3 x^2 + 3 a^2 b d^3 x + a^3 d^3) * \log(bx + a)^2 - 18 (b^3 d^3 x^3 + 3 a b^2 d^3 x^2 + 3 a^2 b d^3 x + a^3 d^3) * \log(dx + c)^2 - 3 * (5 b^3 c^2 d - 54 a b^2 c d^2 + 49 a^2 b d^3) * x + 66 * (b^3 d^3 x^3 + 3 a b^2 d^3 x^2 + 3 a^2 b d^3 x + a^3 d^3) * \log(bx + a) - 6 * (11 b^3 d^3 x^3 + 33 a b^2 d^3 x^2 + 33 a^2 b d^3 x + 11 a^3 d^3 - 6 * (b^3 d^3 x^3 + 3 a b^2 d^3 x^2 + 3 a^2 b d^3 x + a^3 d^3) * \log(bx + a)) * \log(dx + c)) * n * \log(e(bx/(dx + c) + a/(dx + c))^n) / (a^3 b^4 c^4 g^{4i} - 4 a^4 b^3 c^3 d g^{4i} + 6 a^5 b^2 c^2 d^2 g^{4i} - 4 a^6 b c d^3 g^{4i} + a^7 d^4 g^{4i} + (b^7 c^4 g^{4i} - 4 a b^6 c^3 d g^{4i} + 6 a^2 b^5 c^2 d^2 g^{4i} - 4 a^3 b^4 c d^3 g^{4i} + a^4 b^3 d^4 g^{4i}) * x^3 + 3 * (a b^6 c^4 g^{4i} - 4 a^2 b^5 c^3 d g^{4i} + 6 a^3 b^4 c^2 d^2 g^{4i} - 4 a^4 b^3 c d^3 g^{4i} + a^5 b^2 d^4 g^{4i}) * x^2 + 3 * (a^2 b^5 c^4 g^{4i} - 4 a^3 b^4 c^3 d g^{4i} + 6 a^4 b^3 c^2 d^2 g^{4i} - 4 a^5 b^2 c d^3 g^{4i} + a^6 b d^4 g^{4i}) * x) * B^2 - 1/18 * (4 b^3 c^3 - 27 a b^2 c^2 d + 108 a^2 b c d^2 - 85 a^3 d^3 + 66 (b^3 c d^2 - a b^2 d^3) * x^2 - 18 (b^3 d^3 x^3 + 3 a b^2 d^3 x^2 + 3 a^2 b d^3 x + a^3 d^3) * \log(bx + a)^2 - 18 (b^3 d^3 x^3 + 3 a b^2 d^3 x^2 + 3 a^2 b d^3 x + a^3 d^3) * \log(dx + c)^2 - 3 * (5 b^3 c^2 d - 54 a b^2 c d^2 + 49 a^2 b d^3) * x + 66 * (b^3 d^3 x^3 + 3 a b^2 d^3 x^2 + 3 a^2 b d^3 x + a^3 d^3) * \log(bx + a) - 6 * (11 b^3 d^3 x^3 + 33 a b^2 d^3 x^2 + 33 a^2 b d^3 x + 11 a^3 d^3 - 6 * (b^3 d^3 x^3 + 3 a b^2 d^3 x^2 + 3 a^2 b d^3 x + a^3 d^3) * \log(bx + a)) * \log(dx + c)) * A * B * n / (a^3 b^4 c^4 g^{4i} - 4 a^4 b^3 c^3 d g^{4i} + 6 a^5 b^2 c^2 d^2 g^{4i} - 4 a^6 b c d^3 g^{4i} + a^7 d^4 g^{4i} + (b^7 c^4 g^{4i} - 4 a b^6 c^3 d g^{4i} + 6 a^2 b^5 c^2 d^2 g^{4i} - 4 a^3 b^4 c d^3 g^{4i} + a^4 b^3 d^4 g^{4i}) * x^3 + 3 * (a b^6 c^4 g^{4i} - 4 a^2 b^5 c^3 d g^{4i} + 6 a^3 b^4 c^2 d^2 g^{4i} - 4 a^4 b^3 c d^3 g^{4i} + a^5 b^2 d^4 g^{4i}) * x^2 + 3 * (a^2 b^5 c^4 g^{4i} - 4 a^3 b^4 c^3 d g^{4i} + 6 a^4 b^3 c^2 d^2 g^{4i} - 4 a^5 b^2 c d^3 g^{4i} + a^6 b d^4 g^{4i}) * x)
\end{aligned}$$

$$3*d*g^{4*i} + 6*a^3*b^4*c^2*d^2*g^{4*i} - 4*a^4*b^3*c*d^3*g^{4*i} + a^5*b^2*d^4*g^{4*i})x^2 + 3*(a^2*b^5*c^4*g^{4*i} - 4*a^3*b^4*c^3*d*g^{4*i} + 6*a^4*b^3*c^2*d^2*g^{4*i} - 4*a^5*b^2*c*d^3*g^{4*i} + a^6*b*d^4*g^{4*i})x - 1/6*A^2*((6*b^2*d^2*x^2 + 2*b^2*c^2 - 7*a*b*c*d + 11*a^2*d^2 - 3*(b^2*c*d - 5*a*b*d^2)*x)/((b^6*c^3 - 3*a*b^5*c^2*d + 3*a^2*b^4*c*d^2 - a^3*b^3*d^3)*g^{4*i}*x^3 + 3*(a*b^5*c^3 - 3*a^2*b^4*c^2*d + 3*a^3*b^3*c*d^2 - a^4*b^2*d^3)*g^{4*i}*x^2 + 3*(a^2*b^4*c^3 - 3*a^3*b^3*c^2*d + 3*a^4*b^2*c*d^2 - a^5*b*d^3)*g^{4*i}*x + (a^3*b^3*c^3 - 3*a^4*b^2*c^2*d + 3*a^5*b*c*d^2 - a^6*d^3)*g^{4*i}) + 6*d^3*log(b*x + a)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^{4*i}) - 6*d^3*log(d*x + c)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^{4*i}))$$

mupad [B] time = 10.34, size = 1921, normalized size = 3.54

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{int}((A + B \cdot \log(e((a + b \cdot x)/(c + d \cdot x))^n))^2 / ((a \cdot g + b \cdot g \cdot x)^4 \cdot (c \cdot i + d \cdot i \cdot x)), x)$

[Out] $((198 \cdot A^2 \cdot a^2 \cdot d^2 + 36 \cdot A^2 \cdot b^2 \cdot c^2 + 575 \cdot B^2 \cdot a^2 \cdot d^2 \cdot n^2 + 8 \cdot B^2 \cdot b^2 \cdot c^2 \cdot n^2 - 126 \cdot A^2 \cdot a \cdot b \cdot c \cdot d + 510 \cdot A \cdot B \cdot a^2 \cdot d^2 \cdot n + 24 \cdot A \cdot B \cdot b^2 \cdot c^2 \cdot n - 73 \cdot B^2 \cdot a \cdot b \cdot c \cdot d \cdot n^2 - 138 \cdot A \cdot B \cdot a \cdot b \cdot c \cdot d \cdot n) / (6 \cdot (a \cdot d - b \cdot c)) + (x^2 \cdot (18 \cdot A^2 \cdot b^2 \cdot d^2 + 85 \cdot B^2 \cdot b^2 \cdot d^2 \cdot n^2 + 66 \cdot A \cdot B \cdot b^2 \cdot d^2 \cdot n)) / (a \cdot d - b \cdot c) + (x \cdot (90 \cdot A^2 \cdot a \cdot b \cdot d^2 - 18 \cdot A^2 \cdot b^2 \cdot c \cdot d + 359 \cdot B^2 \cdot a \cdot b \cdot d^2 \cdot n^2 - 19 \cdot B^2 \cdot b^2 \cdot c \cdot d \cdot n^2 + 294 \cdot A \cdot B \cdot a \cdot b \cdot d^2 \cdot n - 30 \cdot A \cdot B \cdot b^2 \cdot c \cdot d \cdot n)) / (2 \cdot (a \cdot d - b \cdot c)) / (x \cdot (54 \cdot a^4 \cdot b \cdot d^2 \cdot g^{4 \cdot i} + 54 \cdot a^2 \cdot b^3 \cdot c^2 \cdot g^{4 \cdot i} - 108 \cdot a^3 \cdot b^2 \cdot c \cdot d \cdot g^{4 \cdot i}) + x^2 \cdot (54 \cdot a \cdot b^4 \cdot c^2 \cdot g^{4 \cdot i} + 54 \cdot a^3 \cdot b^2 \cdot d^2 \cdot g^{4 \cdot i} - 108 \cdot a^2 \cdot b^3 \cdot c \cdot d \cdot g^{4 \cdot i}) + x^3 \cdot (18 \cdot b^5 \cdot c^2 \cdot g^{4 \cdot i} + 18 \cdot a^2 \cdot b^3 \cdot d^2 \cdot g^{4 \cdot i} - 36 \cdot a \cdot b^4 \cdot c \cdot d \cdot g^{4 \cdot i}) + 18 \cdot a^5 \cdot d^2 \cdot g^{4 \cdot i} + 18 \cdot a^3 \cdot b^2 \cdot c^2 \cdot g^{4 \cdot i} - 36 \cdot a^4 \cdot b \cdot c \cdot d \cdot g^{4 \cdot i} - \log(e((a + b \cdot x)/(c + d \cdot x))^n)^2 \cdot ((d^3 \cdot (11 \cdot B^2 \cdot n + 6 \cdot A \cdot B)) / (6 \cdot g^{4 \cdot i} \cdot n \cdot (a \cdot d - b \cdot c) \cdot (a^3 \cdot d^3 - b^3 \cdot c^3 + 3 \cdot a \cdot b^2 \cdot c^2 \cdot d - 3 \cdot a^2 \cdot b \cdot c \cdot d^2)) - (B^2 \cdot d^3 \cdot (x \cdot (b \cdot ((g^{4 \cdot i} \cdot n \cdot (a \cdot d - b \cdot c) \cdot (3 \cdot a \cdot d - b \cdot c)) / (6 \cdot d^2) + (a \cdot g^{4 \cdot i} \cdot n \cdot (a \cdot d - b \cdot c)) / (3 \cdot d)) + (2 \cdot a \cdot b \cdot g^{4 \cdot i} \cdot n \cdot (a \cdot d - b \cdot c)) / (3 \cdot d) + (b \cdot g^{4 \cdot i} \cdot n \cdot (a \cdot d - b \cdot c) \cdot (3 \cdot a \cdot d - b \cdot c)) / (3 \cdot d^2)) + a \cdot ((g^{4 \cdot i} \cdot n \cdot (a \cdot d - b \cdot c) \cdot (3 \cdot a \cdot d - b \cdot c)) / (6 \cdot d^2) + (a \cdot g^{4 \cdot i} \cdot n \cdot (a \cdot d - b \cdot c)) / (3 \cdot d)) + (g^{4 \cdot i} \cdot n \cdot (a \cdot d - b \cdot c) \cdot (3 \cdot a^2 \cdot d^2 + b^2 \cdot c^2 - 3 \cdot a \cdot b \cdot c \cdot d)) / (3 \cdot d^3) + (b^2 \cdot g^{4 \cdot i} \cdot n \cdot x^2 \cdot (a \cdot d - b \cdot c)) / d) / (g^{4 \cdot i} \cdot n \cdot (a \cdot d - b \cdot c) \cdot (a^3 \cdot d^3 - b^3 \cdot c^3 + 3 \cdot a \cdot b^2 \cdot c^2 \cdot d - 3 \cdot a^2 \cdot b \cdot c \cdot d^2) \cdot (a^3 \cdot g^{4 \cdot i} + b^3 \cdot g^{4 \cdot i} \cdot x^3 + 3 \cdot a^2 \cdot b \cdot g^{4 \cdot i} \cdot x + 3 \cdot a \cdot b^2 \cdot g^{4 \cdot i} \cdot x^2))) - \log(e((a + b \cdot x)/(c + d \cdot x))^n) \cdot ((6 \cdot B^2 \cdot a \cdot d \cdot n - 3 \cdot B^2 \cdot b \cdot c \cdot n + 3 \cdot B^2 \cdot b \cdot d \cdot n \cdot x) / (x \cdot (9 \cdot a^4 \cdot b \cdot d^2 \cdot g^{4 \cdot i} + 9 \cdot a^2 \cdot b^3 \cdot c^2 \cdot g^{4 \cdot i} - 18 \cdot a^3 \cdot b^2 \cdot c \cdot d \cdot g^{4 \cdot i}) + x^2 \cdot (9 \cdot a \cdot b^4 \cdot c^2 \cdot g^{4 \cdot i} + 9 \cdot a^3 \cdot b^2 \cdot d^2 \cdot g^{4 \cdot i} - 18 \cdot a^2 \cdot b^3 \cdot c \cdot d \cdot g^{4 \cdot i}) + x^3 \cdot (3 \cdot b^5 \cdot c^2 \cdot g^{4 \cdot i} + 3 \cdot a^2 \cdot b^3 \cdot d^2 \cdot g^{4 \cdot i} - 6 \cdot a \cdot b^4 \cdot c \cdot d \cdot g^{4 \cdot i}) + 3 \cdot a^5 \cdot d^2 \cdot g^{4 \cdot i} + 3 \cdot a^3 \cdot b^2 \cdot c^2 \cdot g^{4 \cdot i} - 6 \cdot a^4 \cdot b \cdot c \cdot d \cdot g^{4 \cdot i}) - (d^3 \cdot (11 \cdot B^2 \cdot n + 6 \cdot A \cdot B)) \cdot (x \cdot (b \cdot ((a \cdot g^{4 \cdot i} \cdot n \cdot (a \cdot d - b \cdot c))^3) / d + (g^{4 \cdot i} \cdot n \cdot (a \cdot d - b \cdot c))^3 \cdot (3 \cdot a \cdot d - b \cdot c)) / (2 \cdot d^2)) + (2 \cdot a \cdot b \cdot g^{4 \cdot i} \cdot n \cdot (a \cdot d - b \cdot c)^3) / d + (b \cdot g^{4 \cdot i} \cdot n \cdot (a \cdot d - b \cdot c)^3 \cdot (3 \cdot a \cdot d - b \cdot c)) / d^2 + a \cdot ((a \cdot g^{4 \cdot i}$

$$i^n*(a*d - b*c)^3/d + (g^{4*i}*n*(a*d - b*c)^3*(3*a*d - b*c)/(2*d^2)) + (g^{4*i}*n*(a*d - b*c)^3*(3*a^2*d^2 + b^2*c^2 - 3*a*b*c*d)/d^3 + (3*b^2*g^{4*i}*n*x^2*(a*d - b*c)^3/d)/(3*g^{4*i}*n*(a*d - b*c)*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2))*(x*(9*a^4*b*d^2*g^{4*i} + 9*a^2*b^3*c^2*g^{4*i} - 18*a^3*b^2*c*d*g^{4*i}) + x^2*(9*a*b^4*c^2*g^{4*i} + 9*a^3*b^2*d^2*g^{4*i} - 18*a^2*b^3*c*d*g^{4*i}) + x^3*(3*b^5*c^2*g^{4*i} + 3*a^2*b^3*d^2*g^{4*i} - 6*a*b^4*c*d*g^{4*i}) + 3*a^5*d^2*g^{4*i} + 3*a^3*b^2*c^2*g^{4*i} - 6*a^4*b*c*d*g^{4*i})) + (d^3*a*\tan((d^3*(A^2 + (85*B^2*n^2)/18 + (11*A*B*n)/3)*(18*a^4*d^4*g^{4*i} - 18*b^4*c^4*g^{4*i} + 36*a*b^3*c^3*d*g^{4*i} - 36*a^3*b*c*d^3*g^{4*i})*1i)/(g^{4*i}*(a*d - b*c)^4*(18*A^2*d^3 + 85*B^2*d^3*n^2 + 66*A*B*d^3*n)) + (b*d^4*x*(A^2 + (85*B^2*n^2)/18 + (11*A*B*n)/3)*(a^3*d^3*g^{4*i} - b^3*c^3*g^{4*i} + 3*a*b^2*c^2*d*g^{4*i} - 3*a^2*b*c*d^2*g^{4*i})*36i)/(g^{4*i}*(a*d - b*c)^4*(18*A^2*d^3 + 85*B^2*d^3*n^2 + 66*A*B*d^3*n)))*(A^2 + (85*B^2*n^2)/18 + (11*A*B*n)/3)*2i)/(g^{4*i}*(a*d - b*c)^4) - (B^2*d^3*\log(e*((a + b*x)/(c + d*x))^n)^3)/(3*g^{4*i}*n*(a*d - b*c)*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2))$$

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(b*g*x+a*g)**4/(d*i*x+c*i),x)

[Out] Timed out

$$3.194 \quad \int \frac{(ag+bgx)^3 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ci+dix)^2} dx$$

Optimal. Leaf size=770

$$\frac{b^3 g^3 (c+dx)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)^2}{2d^4 i^2} - \frac{6bB g^3 n (bc-ad)^2 \text{Li}_2 \left(\frac{d(a+bx)}{b(c+dx)} \right) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{d^4 i^2} - \frac{3b g^3 (bc-ad)^2}{d^4 i^2}$$

[Out] $2*A*B*(-a*d+b*c)^2*g^3*n*(b*x+a)/d^3/i^2/(d*x+c)-2*B^2*(-a*d+b*c)^2*g^3*n^2*(b*x+a)/d^3/i^2/(d*x+c)+2*B^2*(-a*d+b*c)^2*g^3*n*(b*x+a)*\ln(e*((b*x+a)/(d*x+c))^n)/d^3/i^2/(d*x+c)-b*B*(-a*d+b*c)*g^3*n*(b*x+a)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/d^3/i^2-3*b*(-a*d+b*c)*g^3*(b*x+a)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/d^3/i^2-(-a*d+b*c)^2*g^3*(b*x+a)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/d^3/i^2/(d*x+c)+1/2*b^3*g^3*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/d^4/i^2-6*b*B*(-a*d+b*c)^2*g^3*n*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))*\ln((-a*d+b*c)/b/(d*x+c))/d^4/i^2-3*b*(-a*d+b*c)^2*g^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2*\ln((-a*d+b*c)/b/(d*x+c))/d^4/i^2+b*B^2*(-a*d+b*c)^2*g^3*n^2*\ln(d*x+c)/d^4/i^2+b*B*(-a*d+b*c)^2*g^3*n*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))*\ln(1-b*(d*x+c)/d/(b*x+a))/d^4/i^2-6*b*B^2*(-a*d+b*c)^2*g^3*n^2*\text{polylog}(2,d*(b*x+a)/b/(d*x+c))/d^4/i^2-6*b*B*(-a*d+b*c)^2*g^3*n*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))*\text{polylog}(2,d*(b*x+a)/b/(d*x+c))/d^4/i^2-b*B^2*(-a*d+b*c)^2*g^3*n^2*\text{polylog}(2,b*(d*x+c)/d/(b*x+a))/d^4/i^2+6*b*B^2*(-a*d+b*c)^2*g^3*n^2*\text{polylog}(3,d*(b*x+a)/b/(d*x+c))/d^4/i^2$

Rubi [B] time = 6.01, antiderivative size = 2384, normalized size of antiderivative = 3.10, number of steps used = 112, number of rules used = 28, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}} = 0.622$, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 2486, 31, 44, 6688, 6742, 2500, 2433, 2375, 2317, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

[In] Int[((a*g + b*g*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(c*i + d*i*x)^2,x]

[Out] $-((A*b^2*B*(b*c - a*d)*g^3*n*x)/(d^3*i^2)) + (2*B^2*(b*c - a*d)^3*g^3*n^2)/(d^4*i^2*(c + d*x)) + (2*b*B^2*(b*c - a*d)^2*g^3*n^2*\text{Log}[a + b*x])/(d^4*i^2) + (a^2*b*B^2*g^3*n^2*\text{Log}[a + b*x]^2)/(2*d^2*i^2) + (a*b*B^2*(2*b*c - 3*a*d)*g^3*n^2*\text{Log}[a + b*x]^2)/(d^3*i^2) + (b*B^2*(b*c - a*d)^2*g^3*n^2*\text{Log}[a + b*x]^2)/(d^4*i^2) - (b*B^2*(b*c - a*d)*g^3*n*(a + b*x)*\text{Log}[e*((a + b*x)/(c + d*x))^n])/(d^3*i^2) - (2*B*(b*c - a*d)^3*g^3*n*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])/(d^3*i^2)$

$$\begin{aligned}
& (c + dx)^n) / (d^{4i^2}(c + dx)) - (a^2 b B g^{3n} \text{Log}[a + bx] (A + B \text{Log}[e((a + bx)/(c + dx))^n])) / (d^{2i^2}) - (2 a b B (2 b c - 3 a d) g^{3n} \text{Log}[a + bx] (A + B \text{Log}[e((a + bx)/(c + dx))^n])) / (d^{3i^2}) - (2 b B (b c - a d)^2 g^{3n} \text{Log}[a + bx] (A + B \text{Log}[e((a + bx)/(c + dx))^n])) / (d^{4i^2}) - (b^2 (2 b c - 3 a d) g^{3n} (A + B \text{Log}[e((a + bx)/(c + dx))^n])^2) / (d^{3i^2}) + (b^3 g^{3n} x^2 (A + B \text{Log}[e((a + bx)/(c + dx))^n])^2) / (2 d^{2i^2}) + ((b c - a d)^3 g^3 (A + B \text{Log}[e((a + bx)/(c + dx))^n])^2) / (d^{4i^2} (c + dx)) - (b B^2 (b c - a d)^2 g^{3n^2} \text{Log}[c + dx]) / (d^{4i^2}) - (6 A b B (b c - a d)^2 g^{3n} \text{Log}[-((d(a + bx))/(b c - a d))] \text{Log}[c + dx]) / (d^{4i^2}) - (b^3 B^2 c^2 g^{3n^2} \text{Log}[-((d(a + bx))/(b c - a d))] \text{Log}[c + dx]) / (d^{4i^2}) - (2 b^2 B^2 c (2 b c - 3 a d) g^{3n^2} \text{Log}[-((d(a + bx))/(b c - a d))] \text{Log}[c + dx]) / (d^{4i^2}) - (2 b B^2 (b c - a d)^2 g^{3n^2} \text{Log}[-((d(a + bx))/(b c - a d))] \text{Log}[c + dx]) / (d^{4i^2}) - (3 b B^2 (b c - a d)^2 g^3 \text{Log}[(a + bx)^n]^2 \text{Log}[c + dx]) / (d^{4i^2}) + (b^3 B c^2 g^{3n} (A + B \text{Log}[e((a + bx)/(c + dx))^n]) \text{Log}[c + dx]) / (d^{4i^2}) + (2 b^2 B c (2 b c - 3 a d) g^{3n} (A + B \text{Log}[e((a + bx)/(c + dx))^n]) \text{Log}[c + dx]) / (d^{4i^2}) + (2 b B (b c - a d)^2 g^{3n} (A + B \text{Log}[e((a + bx)/(c + dx))^n]) \text{Log}[c + dx]) / (d^{4i^2}) + (3 b (b c - a d)^2 g^3 (A + B \text{Log}[e((a + bx)/(c + dx))^n])^2 \text{Log}[c + dx]) / (d^{4i^2}) + (3 A b B (b c - a d)^2 g^{3n} \text{Log}[c + dx]^2) / (d^{4i^2}) + (b^3 B^2 c^2 g^{3n^2} \text{Log}[c + dx]^2) / (2 d^{4i^2}) + (b^2 B^2 c (2 b c - 3 a d) g^{3n^2} \text{Log}[c + dx]^2) / (d^{4i^2}) - (3 b B^2 (b c - a d)^2 g^{3n^2} \text{Log}[a + bx] \text{Log}[c + dx]^2) / (d^{4i^2}) + (3 b B^2 (b c - a d)^2 g^{3n} \text{Log}[e((a + bx)/(c + dx))^n] \text{Log}[c + dx]^2) / (d^{4i^2}) + (b B^2 (b c - a d)^2 g^{3n^2} \text{Log}[c + dx]^3) / (d^{4i^2}) - (a^2 b B^2 g^{3n^2} \text{Log}[a + bx] \text{Log}[(b(c + dx))/(b c - a d)]) / (d^{2i^2}) - (2 a b B^2 (2 b c - 3 a d) g^{3n^2} \text{Log}[a + bx] \text{Log}[(b(c + dx))/(b c - a d)]) / (d^{3i^2}) - (2 b B^2 (b c - a d)^2 g^{3n^2} \text{Log}[a + bx] \text{Log}[(b(c + dx))/(b c - a d)]) / (d^{4i^2}) + (3 b B^2 (b c - a d)^2 g^3 \text{Log}[(a + bx)^n]^2 \text{Log}[(b(c + dx))/(b c - a d)]) / (d^{4i^2}) - (6 b B^2 (b c - a d)^2 g^{3n} \text{Log}[a + bx] \text{Log}[c + dx] \text{Log}[(c + dx)^{-n}]) / (d^{4i^2}) - (3 b B^2 (b c - a d)^2 g^3 \text{Log}[a + bx] \text{Log}[(c + dx)^{-n}]^2) / (d^{4i^2}) + (3 b B^2 (b c - a d)^2 g^3 \text{Log}[-((d(a + bx))/(b c - a d))] \text{Log}[(c + dx)^{-n}]^2) / (d^{4i^2}) + (6 b B^2 (b c - a d)^2 g^{3n} \text{Log}[-((d(a + bx))/(b c - a d))] \text{Log}[c + dx] (\text{Log}[(a + bx)^n] - \text{Log}[e((a + bx)/(c + dx))^n] + \text{Log}[(c + dx)^{-n}]]) / (d^{4i^2}) - (a^2 b B^2 g^{3n^2} \text{PolyLog}[2, -((d(a + bx))/(b c - a d))]) / (d^{2i^2}) - (2 a b B^2 (2 b c - 3 a d) g^{3n^2} \text{PolyLog}[2, -((d(a + bx))/(b c - a d))]) / (d^{3i^2}) - (2 b B^2 (b c - a d)^2 g^{3n^2} \text{PolyLog}[2, -((d(a + bx))/(b c - a d))]) / (d^{4i^2}) + (6 b B^2 (b c - a d)^2 g^{3n} \text{Log}[(a + bx)^n] \text{PolyLog}[2, -((d(a + bx))/(b c - a d))]) / (d^{4i^2}) - (6 A b B (b c - a d)^2 g^{3n} \text{PolyLog}[2, (b(c + dx))/(b c - a d)]) / (d^{4i^2}) - (b^3 B^2 c^2 g^{3n^2} \text{PolyLog}[2, (b(c + dx))/(b c - a d)]) / (d^{4i^2}) - (2 b^2 B^2 c (2 b c - 3 a d) g^{3n^2} \text{PolyLog}[2, (b(c + dx))/(b c - a d)]) / (d^{4i^2}) - (2 b B^2 (b c - a d)^2 g^{3n^2} \text{PolyLog}[2, (b(c + dx))/(b c - a d)]) / (d^{4i^2}) - (6 b B^2 (b c - a d)^2 g^{3n} \text{Log}[(c + dx)^{-n}] \text{PolyLog}[2, (b(c + dx))/(b c - a d)]) / (d^{4i^2}) + (6 b B^2
\end{aligned}$$

$$\frac{(b*c - a*d)^2 * g^{3*n} * (\text{Log}[(a + b*x)^n] - \text{Log}[e*((a + b*x)/(c + d*x))^n] + \text{Log}[(c + d*x)^{-n}]) * \text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)] / (d^{4*i^2}) - (6*b * B^2 * (b*c - a*d)^2 * g^{3*n}^2 * \text{PolyLog}[3, -((d*(a + b*x))/(b*c - a*d))]) / (d^{4*i^2}) - (6*b * B^2 * (b*c - a*d)^2 * g^{3*n}^2 * \text{PolyLog}[3, (b*(c + d*x))/(b*c - a*d)]) / (d^{4*i^2})}{1}$$
Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 30

```
Int[(x_)^(m_), x_Symbol] := Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && NeQ[m, -1]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(n_), x_Symbol] := Simp[Log[RemoveContent[a + b*x, x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] := Dist[1/(b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e, Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2374

Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.))/(x_), x_Symbol] := -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0] && EqQ[d*e, 1]

Rule 2375

Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*(a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] := Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m - 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d, e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*((f_.) + (g_.)*(x_)))/(x_), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2396

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.

```
)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^p*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^p*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] := Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(e*i - d*j)/e + (j*x)/e]^m), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] := Simp[Log[x]*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Log[x]*(a + b*Log[c*(d + e*x)^n])]/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x]*(f + g*Log[h*(i + j*x)^m])]/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] := Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f + g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.))^r*(s_.), x_Symbol] := Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r)^s/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q]^r)/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2523

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a +
b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*
RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, p}, x] && Rat
ionalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[ {u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x] }, Int[u, x] /; SumQ[u
] ] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6688

```
Int[u_, x_Symbol] := With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] := With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\begin{aligned}
\int \frac{(ag + bgx)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(194c + 194dx)^2} dx &= \int \left(-\frac{b^2(2bc - 3ad)g^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{37636d^3} + \frac{b^3g^3x \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{37636d^3} \right) dx \\
&= \frac{(b^3g^3) \int x \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx}{37636d^2} - \frac{(b^2(2bc - 3ad)g^3) \int \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx}{37636d^3} \\
&= -\frac{b^2(2bc - 3ad)g^3x \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{37636d^3} + \frac{b^3g^3x^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{75272d^3} \\
&= -\frac{b^2(2bc - 3ad)g^3x \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{37636d^3} + \frac{b^3g^3x^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{75272d^3} \\
&= -\frac{b^2(2bc - 3ad)g^3x \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{37636d^3} + \frac{b^3g^3x^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{75272d^3} \\
&= -\frac{b^2(2bc - 3ad)g^3x \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{37636d^3} + \frac{b^3g^3x^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{75272d^3} \\
&= -\frac{Ab^2B(bc - ad)g^3nx}{37636d^3} - \frac{B(bc - ad)^3g^3n \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{18818d^4(c + dx)} \\
&= -\frac{Ab^2B(bc - ad)g^3nx}{37636d^3} - \frac{bB^2(bc - ad)g^3n(a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{37636d^3} \\
&= -\frac{Ab^2B(bc - ad)g^3nx}{37636d^3} - \frac{bB^2(bc - ad)g^3n(a + bx) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{37636d^3} \\
&= -\frac{Ab^2B(bc - ad)g^3nx}{37636d^3} + \frac{B^2(bc - ad)^3g^3n^2}{18818d^4(c + dx)} + \frac{bB^2(bc - ad)^2g^3n^2 \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{18818d^4} \\
&= -\frac{Ab^2B(bc - ad)g^3nx}{37636d^3} + \frac{B^2(bc - ad)^3g^3n^2}{18818d^4(c + dx)} + \frac{bB^2(bc - ad)^2g^3n^2 \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{18818d^4}
\end{aligned}$$

Mathematica [B] time = 8.91, size = 4312, normalized size = 5.60

Result too large to show

Antiderivative was successfully verified.

[In] Integrate[((a*g + b*g*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(c*i + d*i*x)^2,x]

[Out]
$$-\left(\frac{b^2(2bc - 3ad)g^3x(A + B(\log[e((a + b*x)/(c + d*x))^n] - n\log[(a + b*x)/(c + d*x)])^2)}{d^3i^2} + \frac{b^3g^3x^2(A + B(\log[e((a + b*x)/(c + d*x))^n] - n\log[(a + b*x)/(c + d*x)])^2)}{2d^2i^2} + \frac{A^2b^3c^3g^3 - 3aA^2b^2c^2dg^3 + 3a^2A^2b^2c^2dg^3 - a^3A^2d^3g^3 + 2Ab^3Bc^3g^3(\log[e((a + b*x)/(c + d*x))^n] - n\log[(a + b*x)/(c + d*x)]) - 6aA^2b^2Bc^2dg^3(\log[e((a + b*x)/(c + d*x))^n] - n\log[(a + b*x)/(c + d*x)]) + 6a^2Ab^2Bc^2dg^3(\log[e((a + b*x)/(c + d*x))^n] - n\log[(a + b*x)/(c + d*x)]) - 2a^3ABd^3g^3(\log[e((a + b*x)/(c + d*x))^n] - n\log[(a + b*x)/(c + d*x)]) + b^3B^2c^3g^3(\log[e((a + b*x)/(c + d*x))^n] - n\log[(a + b*x)/(c + d*x)])^2 - 3ab^2B^2c^2dg^3(\log[e((a + b*x)/(c + d*x))^n] - n\log[(a + b*x)/(c + d*x)])^2 + 3a^2bB^2c^2dg^3(\log[e((a + b*x)/(c + d*x))^n] - n\log[(a + b*x)/(c + d*x)])^2 - a^3B^2d^3g^3(\log[e((a + b*x)/(c + d*x))^n] - n\log[(a + b*x)/(c + d*x)])^2}{d^4i^2(c + d*x)} + \frac{3b(bc - ad)^2g^3(A + B(\log[e((a + b*x)/(c + d*x))^n] - n\log[(a + b*x)/(c + d*x)])^2 \log[c + d*x]}{d^4i^2} + \frac{2a^3B^2g^3n(A + B(\log[e((a + b*x)/(c + d*x))^n] - n\log[(a + b*x)/(c + d*x)])^2 \log[c/d + x]}{(c/d + x)(\log[c/d + x] + \log[c/d + x]^2)} + \frac{((c/d + x)\log[a/b + x])}{(-c + (ad)/b)^2(1 - (d(a/b + x))/(-c + (ad)/b))} + \frac{\log[1 - (d(a/b + x))/(-c + (ad)/b)]}{(-c + (ad)/b)/d} - \frac{(-\log[a/b + x] + \log[c/d + x] + \log[a/(c + d*x) + (b*x)/(c + d*x)])}{d(c + d*x)} + \frac{((2b^3B^2g^3n(A + B(\log[e((a + b*x)/(c + d*x))^n] - n\log[(a + b*x)/(c + d*x)])^2 \log[c/d + x]) - (-2c(a/b + x)(-1 + \log[a/b + x]))}{d^3} + \frac{2c(c/d + x)(-1 + \log[c/d + x])}{d^3} - \frac{3c^2 \log[c/d + x]^2}{2d^4} - \frac{c^3(1 + \log[c/d + x])}{d^4(c + d*x)} + \frac{((ax)/(2b) - x^2/4 + (x^2 \log[a/b + x])/2 - (a^2 \log[a + b*x])/(2b^2))/d^2 - ((cx)/(2d) - x^2/4 + (x^2 \log[c/d + x])/2 - (c^2 \log[c + d*x])/(2d^2))/d^2 - (c^3(-\log[a/b + x])/(d(c + d*x)))}{d} + \frac{b(\log[a + b*x]/(bc - ad) - \log[c + d*x]/(bc - ad))}{d}/d^3 + \frac{(-4cdx + d^2x^2 + (2c^3)/(c + d*x) + 6c^2 \log[c + d*x])(-\log[a/b + x] + \log[c/d + x] + \log[a/(c + d*x) + (b*x)/(c + d*x)])}{2d^4} + \frac{3c^2(\log[a/b + x] \log[(c + d*x)/(c - (ad)/b])}{d} + \frac{\text{PolyLog}[2, (b*d*(a/b + x))/(-b*c + ad)]}{d}/d^3 + \frac{(6ab^2B^2g^3n(A + B(\log[e((a + b*x)/(c + d*x))^n] - n\log[(a + b*x)/(c + d*x)])^2 \log[a/b + x]) - n\log[(a + b*x)/(c + d*x)])^2 \log[a/b + x]}{d^2} - \frac{((c/d + x)(-1 + \log[c/d + x]))}{d^2} + \frac{c \log[c/d + x]^2}{d^3} + \frac{c^2(1 + \log[c/d + x])}{d^3(c + d*x)} + \frac{c^2(-\log[a/b + x])}{d(c + d*x)} + \frac{b(\log[a + b*x]/(bc - ad) - \log[c + d*x]/(bc - ad))}{d}/d^2 + \frac{(dx - c^2/(c + d*x) - 2c \log[c + d*x])(-\log[a/b + x] + \log[c/d + x] + \log[a/(c + d*x)])}{d^2}$$

$$\begin{aligned}
& + d*x) + (b*x)/(c + d*x)))/d^3 - (2*c*((\text{Log}[a/b + x]*\text{Log}[(c + d*x)/(c - (a \\
& *d)/b]))/d + \text{PolyLog}[2, (b*d*(a/b + x))/(-b*c) + a*d]/d))/d^2)/i^2 + (6* \\
& a^2*b*B*g^3*n*(A + B*(\text{Log}[e*((a + b*x)/(c + d*x))^n] - n*\text{Log}[(a + b*x)/(c + \\
& d*x)])))*(-1/2*\text{Log}[c/d + x]^2/d^2 - (c*(1 + \text{Log}[c/d + x]))/(d^2*(c + d*x)) \\
& - (c*(-\text{Log}[a/b + x]/(d*(c + d*x))) + (b*(\text{Log}[a + b*x]/(b*c - a*d) - \text{Log}[c \\
& + d*x]/(b*c - a*d)))/d))/d + ((c/(c + d*x) + \text{Log}[c + d*x])*(-\text{Log}[a/b + x] + \\
& \text{Log}[c/d + x] + \text{Log}[a/(c + d*x) + (b*x)/(c + d*x)]))/d^2 + ((\text{Log}[a/b + x]*\text{L} \\
& \text{og}[(c + d*x)/(c - (a*d)/b]))/d + \text{PolyLog}[2, (b*d*(a/b + x))/(-b*c) + a*d] \\
& /d)/d))/i^2 - (a^3*B^2*g^3*n^2*(2*b*c - 2*a*d + 2*b*(c + d*x)*\text{Log}[a + b*x] \\
& - 2*(b*c - a*d)*\text{Log}[(a + b*x)/(c + d*x)] - 2*b*(c + d*x)*\text{Log}[a + b*x]*\text{Log}[(\\
& a + b*x)/(c + d*x)] + (b*c - a*d)*\text{Log}[(a + b*x)/(c + d*x)]^2 - 2*b*(c + d*x) \\
&)*\text{Log}[c + d*x] - 2*b*(c + d*x)*\text{Log}[(a + b*x)/(c + d*x)]*\text{Log}[(b*c - a*d)/(b* \\
& c + b*d*x)] + b*(c + d*x)*(\text{Log}[a + b*x]*(\text{Log}[a + b*x] - 2*\text{Log}[(b*(c + d*x)) \\
& / (b*c - a*d)])) - 2*\text{PolyLog}[2, (d*(a + b*x))/(-b*c) + a*d]) + b*(c + d*x)* \\
& (\text{Log}[(b*c - a*d)/(b*c + b*d*x)]*(2*\text{Log}[(d*(a + b*x))/(-b*c) + a*d]) + \text{Log}[\\
& (b*c - a*d)/(b*c + b*d*x)]) - 2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])))/(d \\
& *(b*c - a*d)*i^2*(c + d*x) + (3*a*b^2*B^2*g^3*n^2*((d*(a + b*x)*\text{Log}[(a + b \\
& *x)/(c + d*x)]^2)/b - (c^2*\text{Log}[(a + b*x)/(c + d*x)]^2)/(c + d*x) + 2*c*\text{Log}[\\
& (a + b*x)/(c + d*x)]^2*\text{Log}[(b*c - a*d)/(b*c + b*d*x)] - (c^2*(2*b*c - 2*a*d \\
& + 2*b*(c + d*x)*\text{Log}[a + b*x] - 2*(b*c - a*d)*\text{Log}[(a + b*x)/(c + d*x)] - 2* \\
& b*(c + d*x)*\text{Log}[a + b*x]*\text{Log}[(a + b*x)/(c + d*x)] - 2*b*(c + d*x)*\text{Log}[c + d \\
& *x] - 2*b*(c + d*x)*\text{Log}[(a + b*x)/(c + d*x)]*\text{Log}[(b*c - a*d)/(b*c + b*d*x)] \\
& + b*(c + d*x)*(\text{Log}[a + b*x]*(\text{Log}[a + b*x] - 2*\text{Log}[(b*(c + d*x))/(b*c - a*d \\
&)]) - 2*\text{PolyLog}[2, (d*(a + b*x))/(-b*c) + a*d]) + b*(c + d*x)*(\text{Log}[(b*c - \\
& a*d)/(b*c + b*d*x)]*(2*\text{Log}[(d*(a + b*x))/(-b*c) + a*d]) + \text{Log}[(b*c - a*d) \\
& / (b*c + b*d*x)]) - 2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])))/((b*c - a*d)* \\
& (c + d*x)) - ((b*c - a*d)*(\text{Log}[(b*c - a*d)/(b*c + b*d*x)]*(2*\text{Log}[(d*(a + b* \\
& x))/(-b*c) + a*d]) - 2*\text{Log}[(a + b*x)/(c + d*x)] + \text{Log}[(b*c - a*d)/(b*c + b \\
& *d*x)]) - 2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]))/b + 4*c*(\text{Log}[(a + b*x)/ \\
& (c + d*x)]*\text{PolyLog}[2, (d*(a + b*x))/(b*(c + d*x))] - \text{PolyLog}[3, (d*(a + b*x) \\
&)/(b*(c + d*x))]))/(d^3*i^2) + (b^3*B^2*g^3*n^2*(d^2*x^2*\text{Log}[(a + b*x)/(c \\
& + d*x)]^2 - (4*c*d*(a + b*x)*\text{Log}[(a + b*x)/(c + d*x)]^2)/b + (2*c^3*\text{Log}[(a \\
& + b*x)/(c + d*x)]^2)/(c + d*x) - 6*c^2*\text{Log}[(a + b*x)/(c + d*x)]^2*\text{Log}[(b*c \\
& - a*d)/(b*c + b*d*x)] - (2*d*(b*c - a*d)*(a + b*x)*\text{Log}[(a + b*x)/(c + d*x) \\
&] + 2*a^2*d^2*\text{Log}[a + b*x]*\text{Log}[(a + b*x)/(c + d*x)] - 2*(b*c - a*d)^2*\text{Log}[c \\
& + d*x] + 2*b^2*c^2*\text{Log}[(a + b*x)/(c + d*x)]*\text{Log}[(b*c - a*d)/(b*c + b*d*x)] \\
& - a^2*d^2*(\text{Log}[a + b*x]*(\text{Log}[a + b*x] - 2*\text{Log}[(b*(c + d*x))/(b*c - a*d)])) \\
& - 2*\text{PolyLog}[2, (d*(a + b*x))/(-b*c) + a*d]) - b^2*c^2*(\text{Log}[(b*c - a*d)/(b \\
& *c + b*d*x)]*(2*\text{Log}[(d*(a + b*x))/(-b*c) + a*d]) + \text{Log}[(b*c - a*d)/(b*c + \\
& b*d*x)]) - 2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]))/b^2 + (2*c^3*(2*b*c - \\
& 2*a*d + 2*b*(c + d*x)*\text{Log}[a + b*x] - 2*(b*c - a*d)*\text{Log}[(a + b*x)/(c + d*x)] \\
& - 2*b*(c + d*x)*\text{Log}[a + b*x]*\text{Log}[(a + b*x)/(c + d*x)] - 2*b*(c + d*x)*\text{Log}[\\
& c + d*x] - 2*b*(c + d*x)*\text{Log}[(a + b*x)/(c + d*x)]*\text{Log}[(b*c - a*d)/(b*c + b* \\
& d*x)] + b*(c + d*x)*(\text{Log}[a + b*x]*(\text{Log}[a + b*x] - 2*\text{Log}[(b*(c + d*x))/(b*c \\
& - a*d)])) - 2*\text{PolyLog}[2, (d*(a + b*x))/(-b*c) + a*d]) + b*(c + d*x)*(\text{Log}[(
\end{aligned}$$

$$\begin{aligned} & b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b*c) + a*d)] + Log[(b*c - \\ & a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/((b*c - \\ & a*d)*(c + d*x)) + (4*c*(b*c - a*d)*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d \\ & *(a + b*x))/(-(b*c) + a*d)] - 2*Log[(a + b*x)/(c + d*x)] + Log[(b*c - a*d) \\ & / (b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))/b - 12*c^2*(Lo \\ & g[(a + b*x)/(c + d*x)]*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))] - PolyLog[3, \\ & (d*(a + b*x))/(b*(c + d*x))])))/(2*d^4*i^2) + (3*a^2*b*B^2*g^3*n^2*((c*Log \\ & [(a + b*x)/(c + d*x)]^2)/(c + d*x) - Log[(a + b*x)/(c + d*x)]^2*Log[(b*c - \\ & a*d)/(b*c + b*d*x)] - 2*Log[(a + b*x)/(c + d*x)]*PolyLog[2, (d*(a + b*x))/(\\ & b*(c + d*x))] + (c*(2*b*c - 2*a*d + 2*b*(c + d*x)*Log[a + b*x] - 2*(b*c - a \\ & *d)*Log[(a + b*x)/(c + d*x)] - 2*b*(c + d*x)*Log[a + b*x]*Log[(a + b*x)/(c \\ & + d*x)] - 2*b*(c + d*x)*Log[c + d*x] - 2*b*(c + d*x)*Log[(a + b*x)/(c + d*x \\ &)]*Log[(b*c - a*d)/(b*c + b*d*x)] + b*(c + d*x)*(Log[a + b*x]*(Log[a + b*x] \\ & - 2*Log[(b*(c + d*x))/(b*c - a*d)])) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + \\ & a*d)]) + b*(c + d*x)*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/ \\ & (-(b*c) + a*d)] + Log[(b*c - a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d \\ & x))/(b*c - a*d)])))/((b*c - a*d)*(c + d*x)) + 2*PolyLog[3, (d*(a + b*x))/(b \\ & *(c + d*x))])))/(d^2*i^2) \end{aligned}$$

fricas [F] time = 0.94, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{A^2 b^3 g^3 x^3 + 3 A^2 a b^2 g^3 x^2 + 3 A^2 a^2 b g^3 x + A^2 a^3 g^3 + (B^2 b^3 g^3 x^3 + 3 B^2 a b^2 g^3 x^2 + 3 B^2 a^2 b g^3 x + B^2 a^3 g^3)}{d^2 i^2 x^2 + 2 c d i^2 x + \dots} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^2,x,
algorithm="fricas")
```

```
[Out] integral((A^2*b^3*g^3*x^3 + 3*A^2*a*b^2*g^3*x^2 + 3*A^2*a^2*b*g^3*x + A^2*a
^3*g^3 + (B^2*b^3*g^3*x^3 + 3*B^2*a*b^2*g^3*x^2 + 3*B^2*a^2*b*g^3*x + B^2*a
^3*g^3)*log(e*((b*x + a)/(d*x + c))^n))^2 + 2*(A*B*b^3*g^3*x^3 + 3*A*B*a*b^2
*g^3*x^2 + 3*A*B*a^2*b*g^3*x + A*B*a^3*g^3)*log(e*((b*x + a)/(d*x + c))^n))
/(d^2*i^2*x^2 + 2*c*d*i^2*x + c^2*i^2), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^2,x,
algorithm="giac")
```

[Out] Timed out

maple [F] time = 0.44, size = 0, normalized size = 0.00

$$\int \frac{(bgx + ag)^3 \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)^2}{(dix + ci)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(d*i*x+c*i)^2,x)

[Out] int((b*g*x+a*g)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(d*i*x+c*i)^2,x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^2,x,
algorithm="maxima")

[Out] 2*A*B*a^3*g^3*n*(1/(d^2*i^2*x + c*d*i^2) + b*log(b*x + a)/((b*c*d - a*d^2)*i^2) - b*log(d*x + c)/((b*c*d - a*d^2)*i^2)) + 1/2*(2*c^3/(d^5*i^2*x + c*d^4*i^2) + 6*c^2*log(d*x + c)/(d^4*i^2) + (d*x^2 - 4*c*x)/(d^3*i^2))*A^2*b^3*g^3 - 3*A^2*a*b^2*(c^2/(d^4*i^2*x + c*d^3*i^2) - x/(d^2*i^2) + 2*c*log(d*x + c)/(d^3*i^2))*g^3 + 3*A^2*a^2*b*g^3*(c/(d^3*i^2*x + c*d^2*i^2) + log(d*x + c)/(d^2*i^2)) - 2*A*B*a^3*g^3*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(d^2*i^2*x + c*d*i^2) - A^2*a^3*g^3/(d^2*i^2*x + c*d*i^2) + 1/2*(B^2*b^3*d^3*g^3*x^3 - 3*(b^3*c*d^2*g^3 - 2*a*b^2*d^3*g^3)*B^2*x^2 - 2*(2*b^3*c^2*d*g^3 - 3*a*b^2*c*d^2*g^3)*B^2*x + 2*(b^3*c^3*g^3 - 3*a*b^2*c^2*d*g^3 + 3*a^2*b*c*d^2*g^3 - a^3*d^3*g^3)*B^2 + 6*((b^3*c^2*d*g^3 - 2*a*b^2*c*d^2*g^3 + a^2*b*d^3*g^3)*B^2*x + (b^3*c^3*g^3 - 2*a*b^2*c^2*d*g^3 + a^2*b*c*d^2*g^3)*B^2)*log(d*x + c)*log((d*x + c)^n)^2/(d^5*i^2*x + c*d^4*i^2) - integrate(-(B^2*a^3*d^3*g^3*log(e)^2 + (B^2*b^3*d^3*g^3*log(e)^2 + 2*A*B*b^3*d^3*g^3*log(e))*x^3 + 3*(B^2*a*b^2*d^3*g^3*log(e)^2 + 2*A*B*a*b^2*d^3*g^3*log(e))*x^2 + (B^2*b^3*d^3*g^3*x^3 + 3*B^2*a*b^2*d^3*g^3*x^2 + 3*B^2*a^2*b*d^3*g^3*x + B^2*a^3*d^3*g^3)*log((b*x + a)^n)^2 + 3*(B^2*a^2*b*d^3*g^3*log(e)^2 + 2*A*B*a^2*b*d^3*g^3*log(e))*x + 2*(B^2*a^3*d^3*g^3*log(e) + (B^2*b^3*d^3*g^3*log(e) + A*B*b^3*d^3*g^3))*x^3 + 3*(B^2*a*b^2*d^3*g^3*log(e) + A*B*a*b^2*d^3*g^3))*x^2 + 3*(B^2*a^2*b*d^3*g^3*log(e) + A*B*a^2*b*d^3*g^3)*x)*log((b*x + a)^n) - ((2*A*B*b^3*d^3*g^3 + (g^3*n + 2*g^3*log(e))*B^2*b^3*d^3)*x^3 + 2*(b^3*c^3*g^3*n - 3*a*b^2*c^2*d*g^3*n + 3*a^2*b*c*d^2*g^3*n - (g^3*n - g^3*log(e))*a^3*d^3)*B^2 + 3*(2*A*B*a*b^2*d^3*g^3 - (b^3*c*d^2*g^3*n - 2*(g^3*n + g^3*log(e))*a*b^2*d^3)*B^2)*x^2 + 2*(3*A*B*a^2*b*d^3*g^3 - (2*b^3*c^2*d*g^3*n - 3*

$a*b^2*c*d^2*g^3*n - 3*a^2*b*d^3*g^3*\log(e)*B^2)*x + 6*((b^3*c^2*d*g^3*n - 2*a*b^2*c*d^2*g^3*n + a^2*b*d^3*g^3*n)*B^2*x + (b^3*c^3*g^3*n - 2*a*b^2*c^2*d*g^3*n + a^2*b*c*d^2*g^3*n)*B^2)*\log(d*x + c) + 2*(B^2*b^3*d^3*g^3*x^3 + 3*B^2*a*b^2*d^3*g^3*x^2 + 3*B^2*a^2*b*d^3*g^3*x + B^2*a^3*d^3*g^3)*\log((b*x + a)^n)*\log((d*x + c)^n))/(d^5*i^2*x^2 + 2*c*d^4*i^2*x + c^2*d^3*i^2), x$

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ag + bgx)^3 \left(A + B \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ci + dix)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((a*g + b*g*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(c*i + d*i*x)^2, x)

[Out] int(((a*g + b*g*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(c*i + d*i*x)^2, x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)**3*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(d*i*x+c*i)**2, x)

[Out] Timed out

$$3.195 \quad \int \frac{(ag+bgx)^2 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ci+dix)^2} dx$$

Optimal. Leaf size=500

$$\frac{4bBg^2n(bc-ad)\text{Li}_2\left(\frac{d(a+bx)}{b(c+dx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{d^3i^2} + \frac{2bg^2(bc-ad)\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{d^3i^2} + \dots$$

[Out] $-2AB(-ad+bc)g^{2n}(bx+a)/d^2/i^2/(dx+c)+2B^2(-ad+bc)g^{2n}^2(bx+a)/d^2/i^2/(dx+c)-2B^2(-ad+bc)g^{2n}(bx+a)\ln(e((bx+a)/(dx+c))^n)/d^2/i^2/(dx+c)+bg^{2n}(bx+a)(A+B\ln(e((bx+a)/(dx+c))^n))^2/d^2/i^2+(-ad+bc)g^{2n}(bx+a)(A+B\ln(e((bx+a)/(dx+c))^n))^2/d^2/i^2/(dx+c)+2bB(-ad+bc)g^{2n}(A+B\ln(e((bx+a)/(dx+c))^n))\ln(-ad+bc)/b/(dx+c))/d^3/i^2+2b(-ad+bc)g^{2n}(A+B\ln(e((bx+a)/(dx+c))^n))^2\ln(-ad+bc)/b/(dx+c))/d^3/i^2+2bB^2(-ad+bc)g^{2n}^2\text{polylog}(2,d(bx+a)/b/(dx+c))/d^3/i^2+4bB(-ad+bc)g^{2n}(A+B\ln(e((bx+a)/(dx+c))^n))\text{polylog}(2,d(bx+a)/b/(dx+c))/d^3/i^2-4bB^2(-ad+bc)g^{2n}^2\text{polylog}(3,d(bx+a)/b/(dx+c))/d^3/i^2$

Rubi [B] time = 4.98, antiderivative size = 1807, normalized size of antiderivative = 3.61, number of steps used = 89, number of rules used = 26, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}} = 0.578$, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 44, 6688, 6742, 2500, 2433, 2375, 2317, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

[In] Int[((a*g + b*g*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(c*i + d*i*x)^2,x]

[Out] $(-2B^2(bc-ad)^2g^{2n}^2)/(d^3i^2(c+dx)) - (2bB^2(bc-ad)g^{2n}^2\text{Log}[a+bx])/(d^3i^2) - (abB^2g^{2n}^2\text{Log}[a+bx]^2)/(d^2i^2) - (bB^2(bc-ad)g^{2n}^2\text{Log}[a+bx]^2)/(d^3i^2) + (2B(bc-ad)^2g^{2n}(A+B\text{Log}[e((a+bx)/(c+dx))^n]))/(d^3i^2(c+dx)) + (2abB^2g^{2n}\text{Log}[a+bx](A+B\text{Log}[e((a+bx)/(c+dx))^n]))/(d^2i^2) + (2bB(bc-ad)g^{2n}\text{Log}[a+bx](A+B\text{Log}[e((a+bx)/(c+dx))^n]))/(d^3i^2) + (b^2g^{2n}(A+B\text{Log}[e((a+bx)/(c+dx))^n])^2)/(d^2i^2) - ((bc-ad)^2g^{2n}(A+B\text{Log}[e((a+bx)/(c+dx))^n])^2)/(d^3i^2(c+dx)) + (2bB^2(bc-ad)g^{2n}^2\text{Log}[c+dx])/(d^3i^2) + (4abB(bc-ad)g^{2n}\text{Log}[-((d(a+bx))/(bc-ad))] * \text{Log}[c+dx])/(d^3i^2) + (2b^2B^2c^2g^{2n}^2\text{Log}[-((d(a+bx))/(bc-ad))] * \text{Log}[c+dx])/(d^3i^2)$

$$\begin{aligned}
& d^3 i^2) + (2*b*B^2*(b*c - a*d)*g^2*n^2*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c + d*x])/(d^3*i^2) + (2*b*B^2*(b*c - a*d)*g^2*\text{Log}[(a + b*x)^n]^2*\text{Log}[c + d*x])/(d^3*i^2) - (2*b^2*B*c*g^2*n*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])*\text{Log}[c + d*x])/(d^3*i^2) - (2*b*B*(b*c - a*d)*g^2*n*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])*\text{Log}[c + d*x])/(d^3*i^2) - (2*b*(b*c - a*d)*g^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2*\text{Log}[c + d*x])/(d^3*i^2) - (2*A*b*B*(b*c - a*d)*g^2*n*\text{Log}[c + d*x]^2)/(d^3*i^2) - (b^2*B^2*c*g^2*n^2*\text{Log}[c + d*x]^2)/(d^3*i^2) - (b*B^2*(b*c - a*d)*g^2*n^2*\text{Log}[c + d*x]^2)/(d^3*i^2) + (2*b*B^2*(b*c - a*d)*g^2*n^2*\text{Log}[a + b*x]*\text{Log}[c + d*x]^2)/(d^3*i^2) - (2*b*B^2*(b*c - a*d)*g^2*n*\text{Log}[e*((a + b*x)/(c + d*x))^n]*\text{Log}[c + d*x]^2)/(d^3*i^2) - (2*b*B^2*(b*c - a*d)*g^2*n^2*\text{Log}[c + d*x]^3)/(3*d^3*i^2) + (2*a*b*B^2*g^2*n^2*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)])/(d^2*i^2) + (2*b*B^2*(b*c - a*d)*g^2*n^2*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)])/(d^3*i^2) - (2*b*B^2*(b*c - a*d)*g^2*\text{Log}[(a + b*x)^n]^2*\text{Log}[(b*(c + d*x))/(b*c - a*d)])/(d^3*i^2) + (4*b*B^2*(b*c - a*d)*g^2*n*\text{Log}[a + b*x]*\text{Log}[c + d*x]*\text{Log}[(c + d*x)^(-n)])/(d^3*i^2) + (2*b*B^2*(b*c - a*d)*g^2*\text{Log}[a + b*x]*\text{Log}[(c + d*x)^(-n)]^2)/(d^3*i^2) - (2*b*B^2*(b*c - a*d)*g^2*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[(c + d*x)^(-n)]^2)/(d^3*i^2) - (4*b*B^2*(b*c - a*d)*g^2*n*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c + d*x]*(\text{Log}[(a + b*x)^n] - \text{Log}[e*((a + b*x)/(c + d*x))^n] + \text{Log}[(c + d*x)^(-n)]))/(d^3*i^2) + (2*a*b*B^2*g^2*n^2*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))])/(d^2*i^2) + (2*b*B^2*(b*c - a*d)*g^2*n^2*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))])/(d^3*i^2) - (4*b*B^2*(b*c - a*d)*g^2*n*\text{Log}[(a + b*x)^n]*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))])/(d^3*i^2) + (4*A*b*B*(b*c - a*d)*g^2*n*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/(d^3*i^2) + (2*b^2*B^2*c*g^2*n^2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/(d^3*i^2) + (2*b*B^2*(b*c - a*d)*g^2*n^2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/(d^3*i^2) + (4*b*B^2*(b*c - a*d)*g^2*n*\text{Log}[(c + d*x)^(-n)]*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/(d^3*i^2) - (4*b*B^2*(b*c - a*d)*g^2*n*(\text{Log}[(a + b*x)^n] - \text{Log}[e*((a + b*x)/(c + d*x))^n] + \text{Log}[(c + d*x)^(-n)])*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/(d^3*i^2) + (4*b*B^2*(b*c - a*d)*g^2*n^2*\text{PolyLog}[3, -((d*(a + b*x))/(b*c - a*d))])/(d^3*i^2) + (4*b*B^2*(b*c - a*d)*g^2*n^2*\text{PolyLog}[3, (b*(c + d*x))/(b*c - a*d)])/(d^3*i^2)
\end{aligned}$$

Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 30

```
Int[(x_)^(m_), x_Symbol] := Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && NeQ[m, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[
```

ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])

Rule 2301

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2302

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] := Dist[1/(b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p}, x]

Rule 2317

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol] := Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e, Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]

Rule 2374

Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.))/(x_), x_Symbol] := -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0] && EqQ[d*e, 1]

Rule 2375

Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.))/(x_), x_Symbol] := Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m - 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d, e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.)]*(b_.))^(p_.)*((f_) + (g_.)*(x_)^(q_.))/(x_), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e^n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])^p/g, x] - Dist[(b*e^n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*(RFX_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFX, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFX, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_)^(m_.))]*(g_.))*((k_.) + (l_.)*(x_)^(r_.)), x_Symbol] := Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(e*i - d*j)/e + (j*x)/e]^m), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))*((f_.) + Log[(h_.
```



```

)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] := Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m)))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]

```

Rule 2440

```

Int[((a_.) + Log[(c_.)*((d_.) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] :=
Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]

```

Rule 2499

```

Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] := Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q]^r)/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]

```

Rule 2500

```

Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))/((j_.) + (k
_.)*(x_)), x_Symbol] := Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]

```

Rule 2523

```

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] := Simp[x*(a +
b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*
RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, p}, x] && Rat
ionalFunctionQ[RFx, x] && IGtQ[n, 0]

```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6688

```
Int[u_, x_Symbol] := With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; SimplifyIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] := With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]]
```

Rubi steps

$$\begin{aligned}
\int \frac{(ag + bgx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(195c + 195dx)^2} dx &= \int \left[\frac{b^2 g^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{38025d^2} + \frac{(-bc + ad)^2 g^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{38025d^2(c + dx)^2} \right] dx \\
&= \frac{(b^2 g^2) \int \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx}{38025d^2} - \frac{(2b(bc - ad)g^2) \int \frac{(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right))^2}{c+dx} dx}{38025d^2} \\
&= \frac{b^2 g^2 x \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{38025d^2} - \frac{(bc - ad)^2 g^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{38025d^3(c + dx)} \\
&= \frac{b^2 g^2 x \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{38025d^2} - \frac{(bc - ad)^2 g^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{38025d^3(c + dx)} \\
&= \frac{b^2 g^2 x \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{38025d^2} - \frac{(bc - ad)^2 g^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{38025d^3(c + dx)} \\
&= \frac{b^2 g^2 x \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{38025d^2} - \frac{(bc - ad)^2 g^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{38025d^3(c + dx)} \\
&= \frac{2B(bc - ad)^2 g^2 n \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{38025d^3(c + dx)} + \frac{2abBg^2 n \log(a + bx)}{38025d^3} \\
&= \frac{2B(bc - ad)^2 g^2 n \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{38025d^3(c + dx)} + \frac{2abBg^2 n \log(a + bx)}{38025d^3} \\
&= \frac{2B(bc - ad)^2 g^2 n \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{38025d^3(c + dx)} + \frac{2abBg^2 n \log(a + bx)}{38025d^3} \\
&= -\frac{2B^2(bc - ad)^2 g^2 n^2}{38025d^3(c + dx)} - \frac{2bB^2(bc - ad)g^2 n^2 \log(a + bx)}{38025d^3} + \frac{2B(bc - ad)g^2 n^2}{38025d^3} \\
&= -\frac{2B^2(bc - ad)^2 g^2 n^2}{38025d^3(c + dx)} - \frac{2bB^2(bc - ad)g^2 n^2 \log(a + bx)}{38025d^3} - \frac{abB^2 g^2 n^2}{38025d^3}
\end{aligned}$$

Mathematica [B] time = 5.03, size = 2196, normalized size = 4.39

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((a*g + b*g*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(c*i + d*i*x)^2,x]
```

```
[Out] (g^2*(b^2*d*x*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])^2 - ((b*c - a*d)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])^2)/(c + d*x) - 2*b*(b*c - a*d)*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])^2*Log[c + d*x] + (2*a^2*B*d^2*n*(-A - B*Log[e*((a + b*x)/(c + d*x))^n] + B*n*Log[(a + b*x)/(c + d*x)])*(b*c - a*d + b*(c + d*x)*Log[a/b + x] + (-b*c) + a*d)*Log[(a + b*x)/(c + d*x)] - b*c*Log[(b*(c + d*x))/(b*c - a*d)] - b*d*x*Log[(b*(c + d*x))/(b*c - a*d)))/((-b*c) + a*d)*(c + d*x) + 2*a*b*B*d*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])*(-Log[c/d + x]^2 + 2*Log[c/d + x]*Log[c + d*x] + 2*(-c/(c + d*x)) + (b*c*Log[a + b*x])/(-b*c) + a*d) + (b*c*Log[c + d*x])/b*c - a*d - Log[a/b + x]*Log[c + d*x] + Log[(a + b*x)/(c + d*x)]*(c/(c + d*x) + Log[c + d*x]) + Log[a/b + x]*Log[(b*(c + d*x))/(b*c - a*d)] + 2*PolyLog[2, (d*(a + b*x))/(-b*c) + a*d]) + 2*b^2*B*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])*(d*(a/b + x)*(-1 + Log[a/b + x]) - (c^2*Log[a/b + x])/(c + d*x) - (c + d*x)*(-1 + Log[c/d + x]) + c*Log[c/d + x]^2 + (c^2*(1 + Log[c/d + x]))/(c + d*x) + (b*c^2*(Log[a + b*x] - Log[c + d*x]))/(b*c - a*d) + (-Log[a/b + x] + Log[c/d + x] + Log[(a + b*x)/(c + d*x)])*(d*x - c^2/(c + d*x) - 2*c*Log[c + d*x]) - 2*c*(Log[a/b + x]*Log[(b*(c + d*x))/(b*c - a*d)] + PolyLog[2, (d*(a + b*x))/(-b*c) + a*d])) - (a^2*B^2*d^2*n^2*(2*b*c - 2*a*d + 2*b*(c + d*x)*Log[a + b*x] - 2*(b*c - a*d)*Log[(a + b*x)/(c + d*x)] - 2*b*(c + d*x)*Log[a + b*x]*Log[(a + b*x)/(c + d*x)] + (b*c - a*d)*Log[(a + b*x)/(c + d*x)]^2 - 2*b*(c + d*x)*Log[c + d*x] - 2*b*(c + d*x)*Log[(a + b*x)/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] + b*(c + d*x)*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-b*c) + a*d]) + b*(c + d*x)*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-b*c) + a*d]) + Log[(b*c - a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))/((b*c - a*d)*(c + d*x)) + b^2*B^2*n^2*((d*(a + b*x)*Log[(a + b*x)/(c + d*x)]^2)/b - (c^2*Log[(a + b*x)/(c + d*x)]^2)/(c + d*x) + 2*c*Log[(a + b*x)/(c + d*x)]^2*Log[(b*c - a*d)/(b*c + b*d*x)] - (c^2*(2*b*c - 2*a*d + 2*b*(c + d*x)*Log[a + b*x] - 2*(b*c - a*d)*Log[(a + b*x)/(c + d*x)] - 2*b*(c + d*x)*Log[a + b*x]*Log[(a + b*x)/(c + d*x)] - 2*b*(c + d*x)*Log[c + d*x] - 2*b*(c + d*x)*Log[(a + b*x)/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] + b*(c + d*x)*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-b*c) + a*d]) + b*(c + d*x)*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-b*c) + a*d]) + Log[(b*c - a*d)/(b*c + b
```

$d*x)) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/((b*c - a*d)*(c + d*x))$
 $- ((b*c - a*d)*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-b*c$
 $) + a*d]) - 2*Log[(a + b*x)/(c + d*x)] + Log[(b*c - a*d)/(b*c + b*d*x)]) -$
 $2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))/b + 4*c*(Log[(a + b*x)/(c + d*x)]$
 $*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))] - PolyLog[3, (d*(a + b*x))/(b*(c +$
 $d*x))])) + 2*a*b*B^2*d^n^2*((c*Log[(a + b*x)/(c + d*x)]^2)/(c + d*x) - Log$
 $[(a + b*x)/(c + d*x)]^2*Log[(b*c - a*d)/(b*c + b*d*x)] - 2*Log[(a + b*x)/(c$
 $+ d*x)]*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))] + (c*(2*b*c - 2*a*d + 2*b*$
 $(c + d*x)*Log[a + b*x] - 2*(b*c - a*d)*Log[(a + b*x)/(c + d*x)] - 2*b*(c +$
 $d*x)*Log[a + b*x]*Log[(a + b*x)/(c + d*x)] - 2*b*(c + d*x)*Log[c + d*x] - 2$
 $*b*(c + d*x)*Log[(a + b*x)/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] + b*(c$
 $+ d*x)*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2$
 $*PolyLog[2, (d*(a + b*x))/(-b*c) + a*d])) + b*(c + d*x)*(Log[(b*c - a*d)/($
 $b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-b*c) + a*d]) + Log[(b*c - a*d)/(b*c +$
 $b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/((b*c - a*d)*(c + d*$
 $x)) + 2*PolyLog[3, (d*(a + b*x))/(b*(c + d*x)))])))/(d^3*i^2)$

fricas [F] time = 0.55, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{A^2 b^2 g^2 x^2 + 2 A^2 a b g^2 x + A^2 a^2 g^2 + (B^2 b^2 g^2 x^2 + 2 B^2 a b g^2 x + B^2 a^2 g^2) \log \left(e \left(\frac{b x + a}{d x + c} \right)^n \right)^2 + 2 (A B b^2 g^2 x^2}{d^2 i^2 x^2 + 2 c d i^2 x + c^2 i^2} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^2,x,
algorithm="fricas")

[Out] integral((A^2*b^2*g^2*x^2 + 2*A^2*a*b*g^2*x + A^2*a^2*g^2 + (B^2*b^2*g^2*x^2 + 2*B^2*a*b*g^2*x + B^2*a^2*g^2)*log(e*((b*x + a)/(d*x + c))^n))^2 + 2*(A*B*b^2*g^2*x^2 + 2*A*B*a*b*g^2*x + A*B*a^2*g^2)*log(e*((b*x + a)/(d*x + c))^n))/(d^2*i^2*x^2 + 2*c*d*i^2*x + c^2*i^2), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^2,x,
algorithm="giac")

[Out] Timed out

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{(bgx + ag)^2 \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)^2}{(dix + ci)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(d*i*x+c*i)^2,x)

[Out] int((b*g*x+a*g)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(d*i*x+c*i)^2,x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$2ABa^2g^2n \left(\frac{1}{d^2i^2x + cdi^2} + \frac{b \log(bx + a)}{(bcd - ad^2)i^2} - \frac{b \log(dx + c)}{(bcd - ad^2)i^2} \right) - A^2b^2 \left(\frac{c^2}{d^4i^2x + cd^3i^2} - \frac{x}{d^2i^2} + \frac{2c \log(dx + c)}{d^3i^2} \right) g^2 + 2A$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^2,x,
algorithm="maxima")

[Out] 2*A*B*a^2*g^2*n*(1/(d^2*i^2*x + c*d*i^2) + b*log(b*x + a)/((b*c*d - a*d^2)*i^2) - b*log(d*x + c)/((b*c*d - a*d^2)*i^2)) - A^2*b^2*(c^2/(d^4*i^2*x + c*d^3*i^2) - x/(d^2*i^2) + 2*c*log(d*x + c)/(d^3*i^2))*g^2 + 2*A^2*a*b*g^2*(c/(d^3*i^2*x + c*d^2*i^2) + log(d*x + c)/(d^2*i^2)) - 2*A*B*a^2*g^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(d^2*i^2*x + c*d*i^2) - A^2*a^2*g^2/(d^2*i^2*x + c*d*i^2) + (B^2*b^2*d^2*g^2*x^2 + B^2*b^2*c*d*g^2*x - (b^2*c^2*g^2 - 2*a*b*c*d*g^2 + a^2*d^2*g^2)*B^2 - 2*((b^2*c*d*g^2 - a*b*d^2*g^2)*B^2*x + (b^2*c^2*g^2 - a*b*c*d*g^2)*B^2)*log(d*x + c))*log((d*x + c)^n)^2/(d^4*i^2*x + c*d^3*i^2) - integrate(-(B^2*a^2*d^2*g^2*log(e)^2 + (B^2*b^2*d^2*g^2*log(e)^2 + 2*A*B*b^2*d^2*g^2*log(e))*x^2 + (B^2*b^2*d^2*g^2*x^2 + 2*B^2*a*b*d^2*g^2*x + B^2*a^2*d^2*g^2)*log((b*x + a)^n))^2 + 2*(B^2*a*b*d^2*g^2*log(e)^2 + 2*A*B*a*b*d^2*g^2*log(e))*x + 2*(B^2*a^2*d^2*g^2*log(e) + (B^2*b^2*d^2*g^2*log(e) + A*B*b^2*d^2*g^2)*x^2 + 2*(B^2*a*b*d^2*g^2*log(e) + A*B*a*b*d^2*g^2)*x)*log((b*x + a)^n) + 2*((b^2*c^2*g^2*n - 2*a*b*c*d*g^2*n + (g^2*n - g^2*log(e))*a^2*d^2)*B^2 - (A*B*b^2*d^2*g^2 + (g^2*n + g^2*log(e))*B^2*b^2*d^2)*x^2 - (2*A*B*a*b*d^2*g^2 + (b^2*c*d*g^2*n + 2*a*b*d^2*g^2*log(e))*B^2)*x + 2*((b^2*c*d*g^2*n - a*b*d^2*g^2*n)*B^2*x + (b^2*c^2*g^2*n - a*b*c*d*g^2*n)*B^2)*log(d*x + c) - (B^2*b^2*d^2*g^2*x^2 + 2*B^2*a*b*d^2*g^2*x + B^2*a^2*d^2*g^2)*log((b*x + a)^n))*log((d*x + c)^n))/(d^4*i^2*x^2 + 2*c*d^3*i^2*x + c^2*d^2*i^2), x)

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ag + bgx)^2 \left(A + B \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ci + dix)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((a*g + b*g*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(c*i + d*i*x)^2,x)

[Out] int(((a*g + b*g*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(c*i + d*i*x)^2, x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)**2*(A+B*ln(e*((b*x+a)/(d*x+c)**n))**2/(d*i*x+c*i)**2,x)

[Out] Timed out

$$3.196 \quad \int \frac{(ag+bgx) \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ci+dx)^2} dx$$

Optimal. Leaf size=282

$$\frac{2bBgnLi_2 \left(\frac{d(a+bx)}{b(c+dx)} \right) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right) - bg \log \left(\frac{bc-ad}{b(c+dx)} \right) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)^2}{d^2i^2} - \frac{g(a+bx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)^2}{d^2i^2(c+dx)}$$

[Out] $2*A*B*g*n*(b*x+a)/d/i^2/(d*x+c)-2*B^2*g*n^2*(b*x+a)/d/i^2/(d*x+c)+2*B^2*g*n*(b*x+a)*\ln(e*((b*x+a)/(d*x+c))^n)/d/i^2/(d*x+c)-g*(b*x+a)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/d/i^2/(d*x+c)-b*g*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2*\ln((-a*d+b*c)/b/(d*x+c))/d^2/i^2-2*b*B*g*n*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))*\text{polylog}(2,d*(b*x+a)/b/(d*x+c))/d^2/i^2+2*b*B^2*g*n^2*\text{polylog}(3,d*(b*x+a)/b/(d*x+c))/d^2/i^2$

Rubi [B] time = 4.17, antiderivative size = 1157, normalized size of antiderivative = 4.10, number of steps used = 69, number of rules used = 25, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.581$, Rules used = {2528, 2525, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 44, 6688, 6742, 2500, 2433, 2375, 2317, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

$$\frac{bB^2gn^2 \log^3(c+dx)}{3d^2i^2} + \frac{bB^2gn^2 \log^2(c+dx)}{d^2i^2} + \frac{AbBgn \log^2(c+dx)}{d^2i^2} - \frac{bB^2gn^2 \log(a+bx) \log^2(c+dx)}{d^2i^2} + \frac{bB^2gn \log}{d^2i^2}$$

Antiderivative was successfully verified.

[In] Int[((a*g + b*g*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(c*i + d*i*x)^2, x]

[Out] $(2*B^2*(b*c - a*d)*g*n^2)/(d^2*i^2*(c + d*x)) + (2*b*B^2*g*n^2*\text{Log}[a + b*x])/(d^2*i^2) + (b*B^2*g*n^2*\text{Log}[a + b*x]^2)/(d^2*i^2) - (2*B*(b*c - a*d)*g*n*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(d^2*i^2*(c + d*x)) - (2*b*B*g*n*\text{Log}[a + b*x]*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(d^2*i^2) + ((b*c - a*d)*g*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2)/(d^2*i^2*(c + d*x)) - (2*b*B^2*g*n^2*\text{Log}[c + d*x])/(d^2*i^2) - (2*A*b*B*g*n*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c + d*x])/(d^2*i^2) - (2*b*B^2*g*n^2*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c + d*x])/(d^2*i^2) - (b*B^2*g*\text{Log}[(a + b*x)^n]^2*\text{Log}[c + d*x])/(d^2*i^2) + (2*b*B*g*n*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])*\text{Log}[c + d*x])/(d^2*i^2) + (b*g*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2*\text{Log}[c + d*x])/(d^2*i^2) + (A*b*B*g*n*\text{Log}[c + d*x]^2)/(d^2*i^2) + (b*B^2*g*n^2*\text{Log}[c + d*x]^2)/(d^2*i^2) - (b*B^2*g*n^2*\text{Log}[a + b*x]*\text{Log}[c + d*x]^2)/(d^2*i^2) + (b*B^2*g*n*\text{Log}[e*((a + b*x)/(c + d*x))^n]*\text{Log}[c + d*x]^2)/(d^2*i^2) + (b*B^2*g*n^2$

$$\begin{aligned} & * \text{Log}[c + d*x]^3 / (3*d^2*i^2) - (2*b*B^2*g*n^2 * \text{Log}[a + b*x] * \text{Log}[(b*(c + d*x)) / (b*c - a*d)] / (d^2*i^2) + (b*B^2*g * \text{Log}[(a + b*x)^n]^2 * \text{Log}[(b*(c + d*x)) / (b*c - a*d)] / (d^2*i^2) - (2*b*B^2*g*n * \text{Log}[a + b*x] * \text{Log}[c + d*x] * \text{Log}[(c + d*x)^{-n}] / (d^2*i^2) - (b*B^2*g * \text{Log}[a + b*x] * \text{Log}[(c + d*x)^{-n}]^2 / (d^2*i^2) + (b*B^2*g * \text{Log}[-((d*(a + b*x)) / (b*c - a*d))] * \text{Log}[(c + d*x)^{-n}]^2 / (d^2*i^2) + (2*b*B^2*g*n * \text{Log}[-((d*(a + b*x)) / (b*c - a*d))] * \text{Log}[c + d*x] * (\text{Log}[(a + b*x)^n] - \text{Log}[e*((a + b*x)/(c + d*x))^n] + \text{Log}[(c + d*x)^{-n}])) / (d^2*i^2) - (2*b*B^2*g*n^2 * \text{PolyLog}[2, -((d*(a + b*x)) / (b*c - a*d))]) / (d^2*i^2) + (2*b*B^2*g*n * \text{Log}[(a + b*x)^n] * \text{PolyLog}[2, -((d*(a + b*x)) / (b*c - a*d))]) / (d^2*i^2) - (2*A*b*B*g*n * \text{PolyLog}[2, (b*(c + d*x)) / (b*c - a*d)] / (d^2*i^2) - (2*b*B^2*g*n^2 * \text{PolyLog}[2, (b*(c + d*x)) / (b*c - a*d)] / (d^2*i^2) - (2*b*B^2*g*n * \text{Log}[(c + d*x)^{-n}] * \text{PolyLog}[2, (b*(c + d*x)) / (b*c - a*d)] / (d^2*i^2) + (2*b*B^2*g*n * (\text{Log}[(a + b*x)^n] - \text{Log}[e*((a + b*x)/(c + d*x))^n] + \text{Log}[(c + d*x)^{-n}])) * \text{PolyLog}[2, (b*(c + d*x)) / (b*c - a*d)] / (d^2*i^2) - (2*b*B^2*g*n^2 * \text{PolyLog}[3, -((d*(a + b*x)) / (b*c - a*d))]) / (d^2*i^2) - (2*b*B^2*g*n^2 * \text{PolyLog}[3, (b*(c + d*x)) / (b*c - a*d)] / (d^2*i^2) \end{aligned}$$

Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 30

```
Int[(x_)^(m_), x_Symbol] := Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && NeQ[m, -1]
```

Rule 44

```
Int[((a_) + (b_)*(x_))^(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)^(p_)/(x_), x_Symbol] := Dist[1/(b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol]
:= Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
  Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b,
  c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*(a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol]
:= -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0] && EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]^(r_.))*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol]
:= Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m - 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d, e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*((f_) + (g_.)*(x_)^(q_.)), x_Symbol]
:= Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol]
:= Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))/((f_.) + (g_.)*(x_
```

)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2396

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^p_)/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])^p/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]

Rule 2418

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^p_)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]

Rule 2433

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^p_)*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] := Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(e*i - d*j)/e + (j*x)/e]^m)], x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]

Rule 2434

Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] := Simp[Log[x]*(a + b*Log[c*(d + e*x)^n]*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Log[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x]*(f + g*Log[h*(i + j*x)^m))]/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]

Rule 2440

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] := Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n]*(f + g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m)], x], x, k + l*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] := Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q]^r)/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] := Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunci
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_Symbol]
:> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d, e, n, p}, x]
&& EqQ[b*d, a*e]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; SimplifyIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]]
```

Rubi steps

$$\begin{aligned}
\int \frac{(ag + bgx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(196c + 196dx)^2} dx &= \int \left(\frac{(-bc + ad)g \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{38416d(c + dx)^2} + \frac{bg \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{38416d(c + dx)} \right) dx \\
&= \frac{(bg) \int \frac{\left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{c+dx} dx}{38416d} - \frac{((bc - ad)g) \int \frac{\left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(c+dx)^2} dx}{38416d} \\
&= \frac{(bc - ad)g \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{38416d^2(c + dx)} + \frac{bg \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{38416d^2} \\
&= \frac{(bc - ad)g \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{38416d^2(c + dx)} + \frac{bg \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{38416d^2} \\
&= \frac{(bc - ad)g \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{38416d^2(c + dx)} + \frac{bg \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{38416d^2} \\
&= \frac{(bc - ad)g \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{38416d^2(c + dx)} + \frac{bg \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{38416d^2} \\
&= \frac{(bc - ad)g \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{38416d^2(c + dx)} + \frac{bg \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{38416d^2} \\
&= -\frac{B(bc - ad)gn \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{19208d^2(c + dx)} - \frac{bBgn \log(a + bx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{19208d^2} \\
&= -\frac{B(bc - ad)gn \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{19208d^2(c + dx)} - \frac{bBgn \log(a + bx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{19208d^2} \\
&= -\frac{B(bc - ad)gn \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{19208d^2(c + dx)} - \frac{bBgn \log(a + bx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{19208d^2} \\
&= \frac{B^2(bc - ad)gn^2}{19208d^2(c + dx)} + \frac{bB^2gn^2 \log(a + bx)}{19208d^2} - \frac{B(bc - ad)gn \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{19208d^2(c + dx)} \\
&= \frac{B^2(bc - ad)gn^2}{19208d^2(c + dx)} + \frac{bB^2gn^2 \log(a + bx)}{19208d^2} + \frac{bB^2gn^2 \log^2(a + bx)}{38416d^2} - \frac{B(bc - ad)gn \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{19208d^2(c + dx)}
\end{aligned}$$

Mathematica [B] time = 1.99, size = 1261, normalized size = 4.47

$$g \left(\frac{aB^2d \left((bc-ad) \log^2 \left(\frac{a+bx}{c+dx} \right) - 2(bc-ad) \log \left(\frac{a+bx}{c+dx} \right) - 2b(c+dx) \log(a+bx) \log \left(\frac{a+bx}{c+dx} \right) - 2b(c+dx) \log \left(\frac{bc-ad}{bc+bdx} \right) \log \left(\frac{a+bx}{c+dx} \right) + 2bc - 2ad + 2b(c+dx) \log(a+bx) \right)}{\dots} \right)$$

Antiderivative was successfully verified.

[In] Integrate[((a*g + b*g*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(c*i + d*i*x)^2,x]

[Out] (g*(((b*c - a*d)*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])^2)/(c + d*x) + b*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])^2*Log[c + d*x] + (2*a*B*d*n*(-A - B*Log[e*((a + b*x)/(c + d*x))^n] + B*n*Log[(a + b*x)/(c + d*x)])*(b*c - a*d + b*(c + d*x)*Log[a/b + x] + (-b*c) + a*d)*Log[(a + b*x)/(c + d*x)] - b*c*Log[(b*(c + d*x))/(b*c - a*d)] - b*d*x*Log[(b*(c + d*x))/(b*c - a*d)])))/((-b*c) + a*d)*(c + d*x) + b*B*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])*(-Log[c/d + x]^2 + 2*Log[c/d + x]*Log[c + d*x] + 2*(-c/(c + d*x)) + (b*c*Log[a + b*x])/(-b*c) + a*d) + (b*c*Log[c + d*x))/(b*c - a*d) - Log[a/b + x]*Log[c + d*x] + Log[(a + b*x)/(c + d*x)]*(c/(c + d*x) + Log[c + d*x]) + Log[a/b + x]*Log[(b*(c + d*x))/(b*c - a*d)] + 2*PolyLog[2, (d*(a + b*x))/(-b*c) + a*d]) - (a*B^2*d*n^2*(2*b*c - 2*a*d + 2*b*(c + d*x)*Log[a + b*x] - 2*(b*c - a*d)*Log[(a + b*x)/(c + d*x)] - 2*b*(c + d*x)*Log[a + b*x]*Log[(a + b*x)/(c + d*x)] + (b*c - a*d)*Log[(a + b*x)/(c + d*x)]^2 - 2*b*(c + d*x)*Log[c + d*x] - 2*b*(c + d*x)*Log[(a + b*x)/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] + b*(c + d*x)*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-b*c) + a*d]) + b*(c + d*x)*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-b*c) + a*d]) + Log[(b*c - a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/((b*c - a*d)*(c + d*x)) + b*B^2*n^2*((c*Log[(a + b*x)/(c + d*x)]^2)/(c + d*x) - Log[(a + b*x)/(c + d*x)]^2*Log[(b*c - a*d)/(b*c + b*d*x)] - 2*Log[(a + b*x)/(c + d*x)]*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))] + (c*(2*b*c - 2*a*d + 2*b*(c + d*x)*Log[a + b*x] - 2*(b*c - a*d)*Log[(a + b*x)/(c + d*x)]) - 2*b*(c + d*x)*Log[a + b*x]*Log[(a + b*x)/(c + d*x)] - 2*b*(c + d*x)*Log[c + d*x] - 2*b*(c + d*x)*Log[(a + b*x)/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] + b*(c + d*x)*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-b*c) + a*d]) + b*(c + d*x)*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-b*c) + a*d]) + Log[(b*c - a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/((b*c - a*d)*(c + d*x)) + 2*PolyLog[3, (d*(a + b*x))/(b*(c + d*x))])/(d^2*i^2)

fricas [F] time = 0.87, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{A^2 b g x + A^2 a g + (B^2 b g x + B^2 a g) \log \left(e \left(\frac{b x + a}{d x + c} \right)^n \right)^2 + 2 (A B b g x + A B a g) \log \left(e \left(\frac{b x + a}{d x + c} \right)^n \right)}{d^2 i^2 x^2 + 2 c d i^2 x + c^2 i^2}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^2,x, algorithm="fricas")

[Out] integral((A^2*b*g*x + A^2*a*g + (B^2*b*g*x + B^2*a*g)*log(e*((b*x + a)/(d*x + c))^n))^2 + 2*(A*B*b*g*x + A*B*a*g)*log(e*((b*x + a)/(d*x + c))^n))/(d^2*i^2*x^2 + 2*c*d*i^2*x + c^2*i^2), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^2,x, algorithm="giac")

[Out] Timed out

maple [F] time = 0.32, size = 0, normalized size = 0.00

$$\int \frac{(b g x + a g) \left(B \ln \left(e \left(\frac{b x + a}{d x + c} \right)^n \right) + A \right)^2}{(d i x + c i)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(d*i*x+c*i)^2,x)

[Out] int((b*g*x+a*g)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(d*i*x+c*i)^2,x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$2 A B a g n \left(\frac{1}{d^2 i^2 x + c d i^2} + \frac{b \log(b x + a)}{(b c d - a d^2) i^2} - \frac{b \log(d x + c)}{(b c d - a d^2) i^2} \right) + A^2 b g \left(\frac{c}{d^3 i^2 x + c d^2 i^2} + \frac{\log(d x + c)}{d^2 i^2} \right) - \frac{2 A B a g \log \left(e \left(\frac{b}{d x} \right)^n \right)}{d^2 i^2 x + c d i^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^2,x, algorithm="maxima")

[Out] 2*A*B*a*g*n*(1/(d^2*i^2*x + c*d*i^2) + b*log(b*x + a)/((b*c*d - a*d^2)*i^2) - b*log(d*x + c)/((b*c*d - a*d^2)*i^2)) + A^2*b*g*(c/(d^3*i^2*x + c*d^2*i^2) + log(d*x + c)/(d^2*i^2)) - 2*A*B*a*g*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(d^2*i^2*x + c*d*i^2) - A^2*a*g/(d^2*i^2*x + c*d*i^2) + ((b*c*g - a*d*g)*B^2 + (B^2*b*d*g*x + B^2*b*c*g)*log(d*x + c))*log((d*x + c)^n)^2/(d^3*i^2*x + c*d^2*i^2) - integrate(-(B^2*a*d*g*log(e)^2 + (B^2*b*d*g*x + B^2*a*d*g)*log((b*x + a)^n)^2 + (B^2*b*d*g*log(e)^2 + 2*A*B*b*d*g*log(e))*x + 2*(B^2*a*d*g*log(e) + (B^2*b*d*g*log(e) + A*B*b*d*g)*x)*log((b*x + a)^n) - 2*((b*c*g*n - (g*n - g*log(e))*a*d)*B^2 + (B^2*b*d*g*log(e) + A*B*b*d*g)*x + (B^2*b*d*g*n*x + B^2*b*c*g*n)*log(d*x + c) + (B^2*b*d*g*x + B^2*a*d*g)*log((b*x + a)^n))*log((d*x + c)^n))/(d^3*i^2*x^2 + 2*c*d^2*i^2*x + c^2*d*i^2), x)

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ag + bgx) \left(A + B \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ci + dix)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((a*g + b*g*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(c*i + d*i*x)^2,x)

[Out] int(((a*g + b*g*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(c*i + d*i*x)^2, x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^2,x)

[Out] Timed out

$$3.197 \quad \int \frac{\left(A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ci+dx)^2} dx$$

Optimal. Leaf size=163

$$\frac{(a+bx)\left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{i^2(c+dx)(bc-ad)} - \frac{2ABn(a+bx)}{i^2(c+dx)(bc-ad)} - \frac{2B^2n(a+bx) \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{i^2(c+dx)(bc-ad)} + \frac{2B^2n^2(a+bx)}{i^2(c+dx)(bc-ad)}$$

[Out] $-2*A*B*n*(b*x+a)/(-a*d+b*c)/i^2/(d*x+c)+2*B^2*n^2*(b*x+a)/(-a*d+b*c)/i^2/(d*x+c)-2*B^2*n*(b*x+a)*\ln(e*((b*x+a)/(d*x+c))^n)/(-a*d+b*c)/i^2/(d*x+c)+(b*x+a)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)/i^2/(d*x+c)$

Rubi [C] time = 0.76, antiderivative size = 514, normalized size of antiderivative = 3.15, number of steps used = 24, number of rules used = 11, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.314$, Rules used = {2525, 12, 2528, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 44}

$$\frac{2bB^2n^2 \text{PolyLog}\left(2, -\frac{d(a+bx)}{bc-ad}\right)}{di^2(bc-ad)} + \frac{2bB^2n^2 \text{PolyLog}\left(2, \frac{b(c+dx)}{bc-ad}\right)}{di^2(bc-ad)} + \frac{2bBn \log(a+bx)\left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{di^2(bc-ad)} + \frac{2Bn\left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{di^2(bc-ad)}$$

Antiderivative was successfully verified.

[In] $\text{Int}[(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2/(c*i + d*i*x)^2, x]$

[Out] $(-2*B^2*n^2)/(d*i^2*(c + d*x)) - (2*b*B^2*n^2*\text{Log}[a + b*x])/(d*(b*c - a*d)*i^2) - (b*B^2*n^2*\text{Log}[a + b*x]^2)/(d*(b*c - a*d)*i^2) + (2*B*n*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(d*i^2*(c + d*x)) + (2*b*B*n*\text{Log}[a + b*x]*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(d*(b*c - a*d)*i^2) - (A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2/(d*i^2*(c + d*x)) + (2*b*B^2*n^2*\text{Log}[c + d*x])/(d*(b*c - a*d)*i^2) + (2*b*B^2*n^2*\text{Log}[-(d*(a + b*x))/(b*c - a*d)])*\text{Log}[c + d*x]/(d*(b*c - a*d)*i^2) - (2*b*B*n*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])*\text{Log}[c + d*x])/(d*(b*c - a*d)*i^2) - (b*B^2*n^2*\text{Log}[c + d*x]^2)/(d*(b*c - a*d)*i^2) + (2*b*B^2*n^2*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)])/(d*(b*c - a*d)*i^2) + (2*b*B^2*n^2*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))])/(d*(b*c - a*d)*i^2) + (2*b*B^2*n^2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/(d*(b*c - a*d)*i^2)$

Rule 12

$\text{Int}[(a_*)(u_), x_Symbol] := \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \&\& !\text{MatchQ}[u, (b_*)(v_)] /; \text{FreeQ}[b, x]$

Rule 44

```
Int[((a_) + (b_)*(x_)^(m_))*((c_) + (d_)*(x_)^(n_)), x_Symbol] := Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)/(x_), x_Symbol] := Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_)^(n_))])*(b_)^(p_)*((f_) + (g_
)*(x_)^(q_)), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_)*((d_) + (e_)*(x_)^(n_))]/(x_), x_Symbol] := -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))])*(b_)/((f_) + (g_)*(x_)), x_
Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_)^(n_))])*(b_)/((f_) + (g_)*(x_
)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n])/g, x] - Dist[(b*e^n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_)^(n_))])*(b_)^(p_)*(RFx_), x_Sy
mbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol]
:> Simp[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol]
:> With[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(197c + 197dx)^2} dx &= -\frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{38809d(c + dx)} + \frac{(2Bn) \int \frac{(bc-ad)\left(A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{197(a+bx)(c+dx)^2} dx}{197d} \\
&= -\frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{38809d(c + dx)} + \frac{(2B(bc - ad)n) \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(a+bx)(c+dx)^2} dx}{38809d} \\
&= -\frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{38809d(c + dx)} + \frac{(2B(bc - ad)n) \int \left(\frac{b^2\left(A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(bc-ad)^2(a+bx)} - \frac{d\left(A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(bc-ad)(c+dx)}\right) dx}{38809d} \\
&= -\frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{38809d(c + dx)} - \frac{(2Bn) \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(c+dx)^2} dx}{38809} - \frac{(2bBn) \int \frac{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{c+dx} dx}{38809(bc - ad)} \\
&= \frac{2Bn\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{38809d(c + dx)} + \frac{2bBn \log(a + bx)\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{38809d(bc - ad)} - \frac{2Bn\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{38809d(c + dx)} \\
&= \frac{2Bn\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{38809d(c + dx)} + \frac{2bBn \log(a + bx)\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{38809d(bc - ad)} - \frac{2Bn\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{38809d(c + dx)} \\
&= \frac{2Bn\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{38809d(c + dx)} + \frac{2bBn \log(a + bx)\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{38809d(bc - ad)} - \frac{2Bn\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{38809d(c + dx)} \\
&= -\frac{2B^2n^2}{38809d(c + dx)} - \frac{2bB^2n^2 \log(a + bx)}{38809d(bc - ad)} + \frac{2Bn\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{38809d(c + dx)} + \frac{2bBn \log(a + bx)\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{38809d(bc - ad)} \\
&= -\frac{2B^2n^2}{38809d(c + dx)} - \frac{2bB^2n^2 \log(a + bx)}{38809d(bc - ad)} - \frac{bB^2n^2 \log^2(a + bx)}{38809d(bc - ad)} + \frac{2Bn\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{38809d(c + dx)} + \frac{2bBn \log(a + bx)\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{38809d(bc - ad)} \\
&= -\frac{2B^2n^2}{38809d(c + dx)} - \frac{2bB^2n^2 \log(a + bx)}{38809d(bc - ad)} - \frac{bB^2n^2 \log^2(a + bx)}{38809d(bc - ad)} + \frac{2Bn\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{38809d(c + dx)} + \frac{2bBn \log(a + bx)\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{38809d(bc - ad)}
\end{aligned}$$

Mathematica [C] time = 0.45, size = 331, normalized size = 2.03

$$Bn \left(2(bc-ad) \left(B \log \left(e^{\left(\frac{a+bx}{c+dx} \right)^n} \right) + A \right) + 2b(c+dx) \log(a+bx) \left(B \log \left(e^{\left(\frac{a+bx}{c+dx} \right)^n} \right) + A \right) - 2b(c+dx) \log(c+dx) \left(B \log \left(e^{\left(\frac{a+bx}{c+dx} \right)^n} \right) + A \right) - bBn(c+dx) \left(\log(a+bx) \left(\log \left(e^{\left(\frac{a+bx}{c+dx} \right)^n} \right) + A \right) + \log(c+dx) \right) \right)$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/(c*i + d*i*x)^2,x]

[Out]
$$\begin{aligned} & -(A + B \operatorname{Log}[e((a + b*x)/(c + d*x))^n])^2 + (B*n*(2*(b*c - a*d)*(A + B \operatorname{Log}[e((a + b*x)/(c + d*x))^n]) + 2*b*(c + d*x)*\operatorname{Log}[a + b*x]*(A + B \operatorname{Log}[e((a + b*x)/(c + d*x))^n]) - 2*b*(c + d*x)*(A + B \operatorname{Log}[e((a + b*x)/(c + d*x))^n]) * \operatorname{Log}[c + d*x] - 2*B*n*(b*c - a*d + b*(c + d*x)*\operatorname{Log}[a + b*x] - b*(c + d*x)* \operatorname{Log}[c + d*x]) - b*B*n*(c + d*x)*(\operatorname{Log}[a + b*x]*(\operatorname{Log}[a + b*x] - 2*\operatorname{Log}[(b*(c + d*x))/(b*c - a*d)]) - 2*\operatorname{PolyLog}[2, (d*(a + b*x))/(-b*c + a*d)]) + b*B*n*(c + d*x)*((2*\operatorname{Log}[(d*(a + b*x))/(-b*c + a*d)] - \operatorname{Log}[c + d*x])* \operatorname{Log}[c + d*x] + 2*\operatorname{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])))/(b*c - a*d)/(d*i^2*(c + d*x)) \end{aligned}$$

fricas [A] time = 0.75, size = 263, normalized size = 1.61

$$\frac{A^2bc - A^2ad + 2(B^2bc - B^2ad)n^2 + (B^2bc - B^2ad) \log(e)^2 - (B^2bdn^2x + B^2adn^2) \log\left(\frac{bx+a}{dx+c}\right)^2 - 2(ABbc - ABad) \log\left(\frac{bx+a}{dx+c}\right) + (b^2c^2 - a^2d^2) \log(e)^2}{(b^2c^2 - a^2d^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^2,x, algorithm="fricas")

[Out]
$$\begin{aligned} & -(A^2*b*c - A^2*a*d + 2*(B^2*b*c - B^2*a*d)*n^2 + (B^2*b*c - B^2*a*d)*\log(e)^2 - (B^2*b*d*n^2*x + B^2*a*d*n^2)*\log((b*x + a)/(d*x + c))^2 - 2*(A*B*b*c - A*B*a*d)*n + 2*(A*B*b*c - A*B*a*d - (B^2*b*c - B^2*a*d)*n - (B^2*b*d*n*x + B^2*a*d*n)*\log((b*x + a)/(d*x + c)))*\log(e) + 2*(B^2*a*d*n^2 - A*B*a*d*n + (B^2*b*d*n^2 - A*B*b*d*n)*x)*\log((b*x + a)/(d*x + c)))/((b*c*d^2 - a*d^3)*i^2*x + (b*c^2*d - a*c*d^2)*i^2) \end{aligned}$$

giac [A] time = 4.78, size = 156, normalized size = 0.96

$$-\left[\frac{(bx+a)B^2n^2 \log\left(\frac{bx+a}{dx+c}\right)^2}{dx+c} - \frac{2(B^2n^2 - ABn - B^2n)(bx+a) \log\left(\frac{bx+a}{dx+c}\right)}{dx+c} + \frac{(2B^2n^2 - 2ABn - 2B^2n + A^2 + 2ABn)}{dx+c} \right]$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^2,x, algorithm="giac")

[Out] -((b*x + a)*B^2*n^2*log((b*x + a)/(d*x + c))^2/(d*x + c) - 2*(B^2*n^2 - A*B*n - B^2*n)*(b*x + a)*log((b*x + a)/(d*x + c))/(d*x + c) + (2*B^2*n^2 - 2*A*B*n - 2*B^2*n + A^2 + 2*A*B + B^2)*(b*x + a)/(d*x + c))*(b*c/(b*c - a*d)^2 - a*d/(b*c - a*d)^2)

maple [F] time = 0.32, size = 0, normalized size = 0.00

$$\int \frac{\left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)^2}{(dix + ci)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(d*i*x+c*i)^2,x)

[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(d*i*x+c*i)^2,x)

maxima [B] time = 0.92, size = 428, normalized size = 2.63

$$2 ABn \left(\frac{1}{d^2 i^2 x + c d i^2} + \frac{b \log(bx + a)}{(bcd - ad^2) i^2} - \frac{b \log(dx + c)}{(bcd - ad^2) i^2} \right) + \left(2n \left(\frac{1}{d^2 i^2 x + c d i^2} + \frac{b \log(bx + a)}{(bcd - ad^2) i^2} - \frac{b \log(dx + c)}{(bcd - ad^2) i^2} \right) \right) \log$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^2,x, algorithm="maxima")

[Out] 2*A*B*n*(1/(d^2*i^2*x + c*d*i^2) + b*log(b*x + a)/((b*c*d - a*d^2)*i^2) - b*log(d*x + c)/((b*c*d - a*d^2)*i^2)) + (2*n*(1/(d^2*i^2*x + c*d*i^2) + b*log(b*x + a)/((b*c*d - a*d^2)*i^2) - b*log(d*x + c)/((b*c*d - a*d^2)*i^2))*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) - ((b*d*x + b*c)*log(b*x + a)^2 + (b*d*x + b*c)*log(d*x + c)^2 + 2*b*c - 2*a*d + 2*(b*d*x + b*c)*log(b*x + a) - 2*(b*d*x + b*c + (b*d*x + b*c)*log(b*x + a))*log(d*x + c))*n^2/(b*c^2*d*i^2 - a*c*d^2*i^2 + (b*c*d^2*i^2 - a*d^3*i^2)*x)*B^2 - B^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)^2/(d^2*i^2*x + c*d*i^2) - 2*A*B*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(d^2*i^2*x + c*d*i^2) - A^2/(d^2*i^2*x + c*d*i^2)

mupad [B] time = 6.27, size = 237, normalized size = 1.45

$$\ln \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \left(\frac{2 B^2 n}{x d^2 i^2 + c d i^2} - \frac{2 A B}{x d^2 i^2 + c d i^2} \right) - \ln \left(e \left(\frac{a + bx}{c + dx} \right)^n \right)^2 \left(\frac{B^2}{d (c i^2 + d i^2 x)} + \frac{B^2 b}{d i^2 (a d - b c)} \right) - \frac{A^2}{d^2 i^2 x + c d i^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((A + B*log(e*((a + b*x)/(c + d*x))^n))^2/(c*i + d*i*x)^2,x)`

[Out] $\log(e*((a + b*x)/(c + d*x))^n)*((2*B^2*n)/(d^2*i^2*x + c*d*i^2) - (2*A*B)/(d^2*i^2*x + c*d*i^2)) - \log(e*((a + b*x)/(c + d*x))^n)^2*(B^2/(d*(c*i^2 + d*i^2*x)) + (B^2*b)/(d*i^2*(a*d - b*c))) - (A^2 + 2*B^2*n^2 - 2*A*B*n)/(d^2*i^2*x + c*d*i^2) + (B*b*n*atan(((2*b*d*x + (a*d^2*i^2 + b*c*d*i^2)/(d*i^2))*1i)/(a*d - b*c))*(A - B*n)*4i)/(d*i^2*(a*d - b*c))$

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{A^2}{c^2+2cdx+d^2x^2} dx + \int \frac{B^2 \log\left(e\left(\frac{a}{c+dx} + \frac{bx}{c+dx}\right)^n\right)^2}{c^2+2cdx+d^2x^2} dx + \int \frac{2AB \log\left(e\left(\frac{a}{c+dx} + \frac{bx}{c+dx}\right)^n\right)}{c^2+2cdx+d^2x^2} dx}{i^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^2,x)`

[Out] $(\text{Integral}(A^2/(c^2 + 2*c*d*x + d^2*x^2), x) + \text{Integral}(B^2*\log(e*(a/(c + d*x) + b*x/(c + d*x))^n))^2/(c^2 + 2*c*d*x + d^2*x^2), x) + \text{Integral}(2*A*B*\log(e*(a/(c + d*x) + b*x/(c + d*x))^n)/(c^2 + 2*c*d*x + d^2*x^2), x))/i^2$

$$3.198 \quad \int \frac{\left(A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ag+bgx)(ci+dix)^2} dx$$

Optimal. Leaf size=231

$$\frac{b\left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^3}{3Bgi^2n(bc-ad)^2} - \frac{d(a+bx)\left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{gi^2(c+dx)(bc-ad)^2} + \frac{2ABdn(a+bx)}{gi^2(c+dx)(bc-ad)^2} + \frac{2B^2dn(a+bx) \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{gi^2(c+dx)(bc-ad)^2}$$

[Out] $2*A*B*d*n*(b*x+a)/(-a*d+b*c)^2/g/i^2/(d*x+c)-2*B^2*d*n^2*(b*x+a)/(-a*d+b*c)^2/g/i^2/(d*x+c)+2*B^2*d*n*(b*x+a)*\ln(e*((b*x+a)/(d*x+c))^n)/(-a*d+b*c)^2/g/i^2/(d*x+c)-d*(b*x+a)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^2/g/i^2/(d*x+c)+1/3*b*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^3/B/(-a*d+b*c)^2/g/i^2/n$

Rubi [C] time = 6.11, antiderivative size = 1803, normalized size of antiderivative = 7.81, number of steps used = 83, number of rules used = 31, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}} = 0.689$, Rules used = {2528, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 12, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2525, 44, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)*(c*i + d*i*x)^2), x]

[Out] $(2*B^2*n^2)/((b*c - a*d)*g*i^2*(c + d*x)) + (2*b*B^2*n^2*Log[a + b*x])/((b*c - a*d)^2*g*i^2) - (A*b*B*n*Log[a + b*x]^2)/((b*c - a*d)^2*g*i^2) + (b*B^2*n^2*Log[a + b*x]^2)/((b*c - a*d)^2*g*i^2) - (b*B^2*Log[-((b*c - a*d)/(d*(a + b*x))])*Log[e*((a + b*x)/(c + d*x))^n]^2)/((b*c - a*d)^2*g*i^2) - (b*B^2*Log[a + b*x]*Log[e*((a + b*x)/(c + d*x))^n]^2)/((b*c - a*d)^2*g*i^2) - (2*B*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((b*c - a*d)*g*i^2*(c + d*x)) - (2*b*B*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((b*c - a*d)^2*g*i^2) + (A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((b*c - a*d)*g*i^2*(c + d*x)) + (b*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/((b*c - a*d)^2*g*i^2) - (2*b*B^2*n^2*Log[c + d*x])/((b*c - a*d)^2*g*i^2) + (2*A*b*B*n*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/((b*c - a*d)^2*g*i^2) - (2*b*B^2*n^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/((b*c - a*d)^2*g*i^2) + (b*B^2*Log[(a + b*x)^n]^2*Log[c + d*x])/((b*c - a*d)^2*g*i^2) + (2*b*B*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x])/((b*c - a*d)^2*g*i^2) - (b*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2*Log[c + d*x])/((b*c - a*d)^2*g*i^2) - (A*b*B*n*Log[c + d*x]^2)/((b*c - a*d)^2*g*i^2) + (b*B^2*n$

$$\begin{aligned} & ^2 \text{Log}[c + d*x]^2 / ((b*c - a*d)^2 * g*i^2) + (b*B^2 * n^2 * \text{Log}[a + b*x] * \text{Log}[c + \\ & d*x]^2) / ((b*c - a*d)^2 * g*i^2) - (b*B^2 * n * \text{Log}[e*((a + b*x)/(c + d*x))^n] * \text{Log} \\ & [c + d*x]^2) / ((b*c - a*d)^2 * g*i^2) - (b*B^2 * n^2 * \text{Log}[c + d*x]^3) / (3 * (b*c - a \\ & *d)^2 * g*i^2) + (2 * A * b * B * n * \text{Log}[a + b*x] * \text{Log}[(b*(c + d*x))/(b*c - a*d)]) / ((b*c \\ & - a*d)^2 * g*i^2) - (2 * b * B^2 * n^2 * \text{Log}[a + b*x] * \text{Log}[(b*(c + d*x))/(b*c - a*d) \\ &]) / ((b*c - a*d)^2 * g*i^2) - (b*B^2 * \text{Log}[(a + b*x)^n]^2 * \text{Log}[(b*(c + d*x))/(b*c \\ & - a*d)]) / ((b*c - a*d)^2 * g*i^2) + (2 * b * B^2 * n * \text{Log}[a + b*x] * \text{Log}[c + d*x] * \text{Log} \\ & [(c + d*x)^{-n}]) / ((b*c - a*d)^2 * g*i^2) + (b*B^2 * \text{Log}[a + b*x] * \text{Log}[(c + d*x)^{-n}]^2) / ((b*c - a*d)^2 * g*i^2) - (b*B^2 * \text{Log}[-((d*(a + b*x))/(b*c - a*d))] * \text{L} \\ & \text{og}[(c + d*x)^{-n}]^2) / ((b*c - a*d)^2 * g*i^2) - (2 * b * B^2 * n * \text{Log}[-((d*(a + b*x) \\ &)/(b*c - a*d))] * \text{Log}[c + d*x] * (\text{Log}[(a + b*x)^n] - \text{Log}[e*((a + b*x)/(c + d*x) \\ &)^n] + \text{Log}[(c + d*x)^{-n}]]) / ((b*c - a*d)^2 * g*i^2) + (2 * A * b * B * n * \text{PolyLog}[2, \\ & -((d*(a + b*x))/(b*c - a*d))]) / ((b*c - a*d)^2 * g*i^2) - (2 * b * B^2 * n^2 * \text{PolyLog} \\ & [2, -((d*(a + b*x))/(b*c - a*d))]) / ((b*c - a*d)^2 * g*i^2) - (2 * b * B^2 * n * \text{Log}[(\\ & a + b*x)^n] * \text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))]) / ((b*c - a*d)^2 * g*i^2) \\ & + (2 * A * b * B * n * \text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]) / ((b*c - a*d)^2 * g*i^2) \\ & - (2 * b * B^2 * n^2 * \text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]) / ((b*c - a*d)^2 * g*i^2) \\ & + (2 * b * B^2 * n * \text{Log}[(c + d*x)^{-n}] * \text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]) / ((\\ & b*c - a*d)^2 * g*i^2) - (2 * b * B^2 * n * (\text{Log}[(a + b*x)^n] - \text{Log}[e*((a + b*x)/(c + \\ & d*x))^n] + \text{Log}[(c + d*x)^{-n}]) * \text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]) / ((b*c \\ & - a*d)^2 * g*i^2) + (2 * b * B^2 * n * \text{Log}[e*((a + b*x)/(c + d*x))^n] * \text{PolyLog}[2, 1 \\ & + (b*c - a*d)/(d*(a + b*x))]) / ((b*c - a*d)^2 * g*i^2) + (2 * b * B^2 * n^2 * \text{PolyLog} \\ & [3, -((d*(a + b*x))/(b*c - a*d))]) / ((b*c - a*d)^2 * g*i^2) + (2 * b * B^2 * n^2 * \text{Poly} \\ & \text{Log}[3, (b*(c + d*x))/(b*c - a*d)]) / ((b*c - a*d)^2 * g*i^2) + (2 * b * B^2 * n^2 * \text{Pol} \\ & \text{yLog}[3, 1 + (b*c - a*d)/(d*(a + b*x))]) / ((b*c - a*d)^2 * g*i^2) \end{aligned}$$

Rule 12

`Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]`

Rule 30

`Int[(x_)^(m_.), x_Symbol] := Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && NeQ[m, -1]`

Rule 44

`Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])`

Rule 2301

`Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Lo`

$g[c*x^n]^2/(2*b*n), x] /; \text{FreeQ}\{a, b, c, n\}, x]$

Rule 2302

$\text{Int}[(a_.) + \text{Log}[(c_.)*(x_)^{(n_.)}]*(b_.))^{(p_.)}/(x_), x_Symbol] \rightarrow \text{Dist}[1/(b*n), \text{Subst}[\text{Int}[x^p, x], x, a + b*\text{Log}[c*x^n]], x] /; \text{FreeQ}\{a, b, c, n, p\}, x]$

Rule 2317

$\text{Int}[(a_.) + \text{Log}[(c_.)*(x_)^{(n_.)}]*(b_.))^{(p_.)}/((d_.) + (e_.)*(x_)), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[1 + (e*x)/d]*(a + b*\text{Log}[c*x^n])^p)/e, x] - \text{Dist}[(b*n*p)/e, \text{Int}[(\text{Log}[1 + (e*x)/d]*(a + b*\text{Log}[c*x^n])^{(p-1)})/x, x], x] /; \text{FreeQ}\{a, b, c, d, e, n\}, x] \&\& \text{IGtQ}[p, 0]$

Rule 2344

$\text{Int}[(a_.) + \text{Log}[(c_.)*(x_)^{(n_.)}]*(b_.))^{(p_.)}/((x_)*((d_.) + (e_.)*(x_))), x_Symbol] \rightarrow \text{Dist}[1/d, \text{Int}[(a + b*\text{Log}[c*x^n])^p/x, x], x] - \text{Dist}[e/d, \text{Int}[(a + b*\text{Log}[c*x^n])^p/(d + e*x), x], x] /; \text{FreeQ}\{a, b, c, d, e, n\}, x] \&\& \text{IGtQ}[p, 0]$

Rule 2374

$\text{Int}[(\text{Log}[(d_.)*((e_.) + (f_.)*(x_)^{(m_.)})])*(a_.) + \text{Log}[(c_.)*(x_)^{(n_.)}]*(b_.))^{(p_.)}/(x_), x_Symbol] \rightarrow -\text{Simp}[(\text{PolyLog}[2, -(d*f*x^m)]*(a + b*\text{Log}[c*x^n])^p)/m, x] + \text{Dist}[(b*n*p)/m, \text{Int}[(\text{PolyLog}[2, -(d*f*x^m)]*(a + b*\text{Log}[c*x^n])^{(p-1)})/x, x], x] /; \text{FreeQ}\{a, b, c, d, e, f, m, n\}, x] \&\& \text{IGtQ}[p, 0] \&\& \text{EqQ}[d*e, 1]$

Rule 2375

$\text{Int}[(\text{Log}[(d_.)*((e_.) + (f_.)*(x_)^{(m_.)})]^{(r_.)}*(a_.) + \text{Log}[(c_.)*(x_)^{(n_.)}]*(b_.))^{(p_.)}/(x_), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[d*(e + f*x^m)^r]*(a + b*\text{Log}[c*x^n])^{(p+1)})/(b*n*(p+1)), x] - \text{Dist}[(f*m*r)/(b*n*(p+1)), \text{Int}[(x^{(m-1)}*(a + b*\text{Log}[c*x^n])^{(p+1)})/(e + f*x^m), x], x] /; \text{FreeQ}\{a, b, c, d, e, f, r, m, n\}, x] \&\& \text{IGtQ}[p, 0] \&\& \text{NeQ}[d*e, 1]$

Rule 2390

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_.) + (e_.)*(x_))^{(n_.)}]*(b_.))^{(p_.)*((f_.) + (g_.)*(x_))^{(q_.)}, x_Symbol] \rightarrow \text{Dist}[1/e, \text{Subst}[\text{Int}[(f*x)/d]^q*(a + b*\text{Log}[c*x^n])^p, x], x, d + e*x], x] /; \text{FreeQ}\{a, b, c, d, e, f, g, n, p, q\}, x] \&\& \text{EqQ}[e*f - d*g, 0]$

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])^p/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*((f_.) + (g_.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] := Dist[1/e, Subst[Int[(g*x/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*((f_.) + Log
```

$[(h_.) * ((i_.) + (j_.) * (x_.))^{(m_.)}] * (g_.) * ((k_.) + (l_.) * (x_.))^{(r_.)}, x_Symbol] \rightarrow \text{Dist}[1/e, \text{Subst}[\text{Int}[(k*x)/d]^r * (a + b * \text{Log}[c*x^n])^p * (f + g * \text{Log}[h * (e*i - d*j)/e + (j*x)/e]^m)], x], x, d + e*x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g, h, i, j, k, l, n, p, r\}, x] \&\& \text{EqQ}[e*k - d*l, 0]$

Rule 2434

$\text{Int}[(((a_.) + \text{Log}[(c_.) * ((d_.) + (e_.) * (x_.))^{(n_.)}] * (b_.)) * ((f_.) + \text{Log}[(h_.) * ((i_.) + (j_.) * (x_.))^{(m_.)}] * (g_.)))/(x_.), x_Symbol] \rightarrow \text{Simp}[\text{Log}[x] * (a + b * \text{Log}[c * (d + e*x)^n]) * (f + g * \text{Log}[h * (i + j*x)^m]), x] + (-\text{Dist}[e*g*m, \text{Int}[(\text{Log}[x] * (a + b * \text{Log}[c * (d + e*x)^n])]/(d + e*x), x], x] - \text{Dist}[b*j*n, \text{Int}[(\text{Log}[x] * (f + g * \text{Log}[h * (i + j*x)^m])]/(i + j*x), x], x)]) /; \text{FreeQ}[\{a, b, c, d, e, f, g, h, i, j, m, n\}, x] \&\& \text{EqQ}[e*i - d*j, 0]$

Rule 2440

$\text{Int}[(a_.) + \text{Log}[(c_.) * ((d_.) + (e_.) * (x_.))^{(n_.)}] * (b_.) * ((f_.) + \text{Log}[(h_.) * ((i_.) + (j_.) * (x_.))^{(m_.)}] * (g_.)) * ((k_.) + (l_.) * (x_.))^{(r_.)}, x_Symbol] \rightarrow \text{Dist}[1/l, \text{Subst}[\text{Int}[x^r * (a + b * \text{Log}[c * ((e*k - d*l)/l + (e*x)/l]^n)] * (f + g * \text{Log}[h * ((j*k - i*l)/l + (j*x)/l]^m)], x], x, k + l*x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g, h, i, j, k, l, m, n\}, x] \&\& \text{IntegerQ}[r]$

Rule 2488

$\text{Int}[\text{Log}[(e_.) * ((f_.) * ((a_.) + (b_.) * (x_.))^{(p_.)} * ((c_.) + (d_.) * (x_.))^{(q_.)})^{(r_.)} / ((g_.) + (h_.) * (x_.)), x_Symbol] \rightarrow -\text{Simp}[(\text{Log}[-((b*c - a*d)/(d*(a + b*x))]) * \text{Log}[e * (f * (a + b*x)^p * (c + d*x)^q]^r]^s)/h, x] + \text{Dist}[(p*r*s * (b*c - a*d))/h, \text{Int}[(\text{Log}[-((b*c - a*d)/(d*(a + b*x))]) * \text{Log}[e * (f * (a + b*x)^p * (c + d*x)^q]^r]^s - 1)/(a + b*x) * (c + d*x), x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g, h, p, q, r, s\}, x] \&\& \text{NeQ}[b*c - a*d, 0] \&\& \text{EqQ}[p + q, 0] \&\& \text{EqQ}[b*g - a*h, 0] \&\& \text{IGtQ}[s, 0]$

Rule 2499

$\text{Int}[(\text{Log}[(e_.) * ((f_.) * ((a_.) + (b_.) * (x_.))^{(p_.)} * ((c_.) + (d_.) * (x_.))^{(q_.)})^{(r_.)}] * ((s_.) + \text{Log}[(i_.) * ((g_.) + (h_.) * (x_.))^{(n_.)}] * (t_.))^{(m_.)}) / ((j_.) + (k_.) * (x_.)), x_Symbol] \rightarrow \text{Simp}[(s + t * \text{Log}[i * (g + h*x)^n])^{(m + 1)} * \text{Log}[e * (f * (a + b*x)^p * (c + d*x)^q]^r) / (k * n * t * (m + 1)), x] + (-\text{Dist}[(b*p*r) / (k * n * t * (m + 1)), \text{Int}[(s + t * \text{Log}[i * (g + h*x)^n])^{(m + 1)} / (a + b*x), x], x] - \text{Dist}[(d*q*r) / (k * n * t * (m + 1)), \text{Int}[(s + t * \text{Log}[i * (g + h*x)^n])^{(m + 1)} / (c + d*x), x], x]) /; \text{FreeQ}[\{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r\}, x] \&\& \text{NeQ}[b*c - a*d, 0] \&\& \text{EqQ}[h*j - g*k, 0] \&\& \text{IGtQ}[m, 0]$

Rule 2500

```

Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^((r_.))*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]

```

Rule 2506

```

Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_
)^((q_.))^(r_.))^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[(v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]

```

Rule 2507

```

Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^((r_.))^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] :> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
h*x)^t]^u)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s + 1)/(p*r*(s + 1)*(b*c
- a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q]^r]^s + 1)/(g + h*x), x], x] /; FreeQ[k, x] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
EqQ[p + q, 0] && NeQ[s, -1]

```

Rule 2524

```

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]

```

Rule 2525

```

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*
(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||

```

IntegerQ[m]) && NeQ[m, -1]

Rule 2528

Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :=> With[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]

Rule 6589

Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_Symbol] :=> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d, e, n, p}, x] && EqQ[b*d, a*e]

Rule 6610

Int[(u_)*PolyLog[n_, v_], x_Symbol] :=> With[{w = DerivativeDivides[v, u*v, x]}, Simp[w*PolyLog[n + 1, v], x] /; !FalseQ[w]] /; FreeQ[n, x]

Rule 6688

Int[u_, x_Symbol] :=> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; SimplifyIntegrandQ[v, u, x]]

Rule 6742

Int[u_, x_Symbol] :=> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]]

Rubi steps

$$\begin{aligned}
\int \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(198c + 198dx)^2(ag + bgx)} dx &= \int \left[\frac{b^2 \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39204(bc - ad)^2g(a + bx)} - \frac{d \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39204(bc - ad)g(c + dx)^2} - \frac{bd \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39204(bc - ad)g(c + dx)} \right] dx \\
&= \frac{b^2 \int \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{a+bx} dx}{39204(bc - ad)^2g} - \frac{(bd) \int \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{c+dx} dx}{39204(bc - ad)^2g} - \frac{d \int \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(c+dx)^2} dx}{39204(bc - ad)g} \\
&= \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39204(bc - ad)g(c + dx)} + \frac{b \log(a + bx) \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39204(bc - ad)^2g} - \frac{b \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39204(bc - ad)g} \\
&= \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39204(bc - ad)g(c + dx)} + \frac{b \log(a + bx) \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39204(bc - ad)^2g} - \frac{b \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39204(bc - ad)g} \\
&= \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39204(bc - ad)g(c + dx)} + \frac{b \log(a + bx) \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39204(bc - ad)^2g} - \frac{b \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39204(bc - ad)g} \\
&= \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39204(bc - ad)g(c + dx)} + \frac{b \log(a + bx) \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39204(bc - ad)^2g} - \frac{b \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39204(bc - ad)g} \\
&= -\frac{Bn \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{19602(bc - ad)g(c + dx)} - \frac{bBn \log(a + bx) \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{19602(bc - ad)^2g} + \frac{Bn \log(a + bx) \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{19602(bc - ad)g} \\
&= -\frac{bB^2 \log(a + bx) \log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{39204(bc - ad)^2g} - \frac{Bn \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{19602(bc - ad)g(c + dx)} - \frac{bBn \log(a + bx) \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{19602(bc - ad)g} \\
&= -\frac{bB^2 \log\left(-\frac{bc-ad}{d(a+bx)}\right) \log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{39204(bc - ad)^2g} - \frac{bB^2 \log(a + bx) \log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{39204(bc - ad)^2g} - \frac{Bn \log(a + bx) \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{19602(bc - ad)g} \\
&= \frac{B^2n^2}{19602(bc - ad)g(c + dx)} + \frac{bB^2n^2 \log(a + bx)}{19602(bc - ad)^2g} - \frac{AbBn \log^2(a + bx)}{39204(bc - ad)^2g} - \frac{bB^2 \log(a + bx) \log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{39204(bc - ad)^2g} \\
&= \frac{B^2n^2}{19602(bc - ad)g(c + dx)} + \frac{bB^2n^2 \log(a + bx)}{19602(bc - ad)^2g} - \frac{AbBn \log^2(a + bx)}{39204(bc - ad)^2g} + \frac{bB^2 \log(a + bx) \log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{39204(bc - ad)^2g}
\end{aligned}$$

Mathematica [B] time = 1.00, size = 789, normalized size = 3.42

$$\frac{b \log(a + bx) \left(2AB \left(\log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) - n \log \left(\frac{a+bx}{c+dx} \right) \right) + B^2 \left(\log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) - n \log \left(\frac{a+bx}{c+dx} \right) \right)^2 - 2B^2 n \left(\log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) - n \log \left(\frac{a+bx}{c+dx} \right) \right)}{gi^2(bc - ad)^2}$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)*(c*i + d*i*x)^2), x]

[Out] (b*B^2*n^2*Log[(a + b*x)/(c + d*x)]^3)/(3*(b*c - a*d)^2*gi^2) - (2*B*n*Log[(a + b*x)/(c + d*x)]*(-A + B*n - B*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)])))/((b*c - a*d)*gi^2*(c + d*x)) + (Log[(a + b*x)/(c + d*x)]^2*(A*b*B*c*n - a*B^2*d*n^2 + A*b*B*d*n*x - b*B^2*d*n^2*x + b*B^2*c*n*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)]) + b*B^2*d*n*x*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)])))/((b*c - a*d)^2*gi^2*(c + d*x)) + (A^2 - 2*A*B*n + 2*B^2*n^2 + 2*A*B*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)]) - 2*B^2*n*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)])) + B^2*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)])^2)/((b*c - a*d)*gi^2*(c + d*x)) + (b*Log[a + b*x]*(A^2 - 2*A*B*n + 2*B^2*n^2 + 2*A*B*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)]) - 2*B^2*n*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)])) + B^2*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)])^2)/((b*c - a*d)^2*gi^2) - (b*(A^2 - 2*A*B*n + 2*B^2*n^2 + 2*A*B*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)]) - 2*B^2*n*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)])) - 2*B^2*n*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)])) + B^2*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)])^2)*Log[c + d*x])/((b*c - a*d)^2*gi^2)

fricas [A] time = 0.82, size = 432, normalized size = 1.87

$$3 A^2 bc - 3 A^2 ad + \left(B^2 b d n^2 x + B^2 b c n^2 \right) \log \left(\frac{b x + a}{d x + c} \right)^3 + 6 \left(B^2 b c - B^2 a d \right) n^2 + 3 \left(B^2 b c - B^2 a d + \left(B^2 b d x + B^2 b c \right) \log \left(\frac{b x + a}{d x + c} \right) \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)/(d*i*x+c*i)^2,x, algorithm="fricas")

[Out] 1/3*(3*A^2*b*c - 3*A^2*a*d + (B^2*b*d*n^2*x + B^2*b*c*n^2)*log((b*x + a)/(d*x + c))^3 + 6*(B^2*b*c - B^2*a*d)*n^2 + 3*(B^2*b*c - B^2*a*d + (B^2*b*d*x + B^2*b*c)*log((b*x + a)/(d*x + c)))*log(e)^2 - 3*(B^2*a*d*n^2 - A*B*b*c*n + (B^2*b*d*n^2 - A*B*b*d*n)*x)*log((b*x + a)/(d*x + c))^2 - 6*(A*B*b*c - A*

$B*a*d)*n + 3*(2*A*B*b*c - 2*A*B*a*d + (B^2*b*d*n*x + B^2*b*c*n)*\log((b*x + a)/(d*x + c))^2 - 2*(B^2*b*c - B^2*a*d)*n - 2*(B^2*a*d*n - A*B*b*c + (B^2*b*d*n - A*B*b*d)*x)*\log((b*x + a)/(d*x + c)))*\log(e) + 3*(2*B^2*a*d*n^2 - 2*A*B*a*d*n + A^2*b*c + (2*B^2*b*d*n^2 - 2*A*B*b*d*n + A^2*b*d)*x)*\log((b*x + a)/(d*x + c)))/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*g*i^2*x + (b^2*c^3 - 2*a*b*c^2*d + a^2*c*d^2)*g*i^2)$

giac [A] time = 8.06, size = 314, normalized size = 1.36

$$-\frac{1}{3} \left(\frac{B^2 b n^2 \log\left(\frac{bx+a}{dx+c}\right)^3}{bcg - adg} - 3 \left(\frac{(bx+a)B^2 d n^2}{(bcg - adg)(dx+c)} - \frac{ABbn + B^2 bn}{bcg - adg} \right) \log\left(\frac{bx+a}{dx+c}\right)^2 + \frac{3(A^2 b + 2ABb + B^2 b) \log\left(\frac{bx+a}{dx+c}\right)}{bcg - adg} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)/(d*i*x+c*i)^2,x, algorithm="giac")

[Out] $-1/3*(B^2*b*n^2*\log((b*x + a)/(d*x + c))^3/(b*c*g - a*d*g) - 3*((b*x + a)*B^2*d*n^2/((b*c*g - a*d*g)*(d*x + c)) - (A*B*b*n + B^2*b*n)/(b*c*g - a*d*g))*\log((b*x + a)/(d*x + c))^2 + 3*(A^2*b + 2*A*B*b + B^2*b)*\log((b*x + a)/(d*x + c))/(b*c*g - a*d*g) + 6*(B^2*d*n^2 - A*B*d*n - B^2*d*n)*(b*x + a)*\log((b*x + a)/(d*x + c))/((b*c*g - a*d*g)*(d*x + c)) - 3*(2*B^2*d*n^2 - 2*A*B*d*n - 2*B^2*d*n + A^2*d + 2*A*B*d + B^2*d)*(b*x + a)/((b*c*g - a*d*g)*(d*x + c)))*(b*c/(b*c - a*d)^2 - a*d/(b*c - a*d)^2)$

maple [F] time = 0.48, size = 0, normalized size = 0.00

$$\int \frac{\left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)^2}{(bgx + ag)(dix + ci)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)/(d*i*x+c*i)^2,x)

[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)/(d*i*x+c*i)^2,x)

maxima [B] time = 1.29, size = 1014, normalized size = 4.39

$$B^2 \left(\frac{1}{(bcd - ad^2)gi^2x + (bc^2 - acd)gi^2} + \frac{b \log(bx + a)}{(b^2c^2 - 2abcd + a^2d^2)gi^2} - \frac{b \log(dx + c)}{(b^2c^2 - 2abcd + a^2d^2)gi^2} \right) \log \left(e \left(\frac{bx}{dx + c} + \frac{a}{d} \right) \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)/(d*i*x+c*i)^2,x, algorithm="maxima")

[Out]
$$B^2 \cdot \left(\frac{1}{(b \cdot c \cdot d - a \cdot d^2) \cdot g \cdot i^2 \cdot x + (b \cdot c^2 - a \cdot c \cdot d) \cdot g \cdot i^2} + b \cdot \log(b \cdot x + a) / \left((b^2 \cdot c^2 - 2 \cdot a \cdot b \cdot c \cdot d + a^2 \cdot d^2) \cdot g \cdot i^2 \right) - b \cdot \log(d \cdot x + c) / \left((b^2 \cdot c^2 - 2 \cdot a \cdot b \cdot c \cdot d + a^2 \cdot d^2) \cdot g \cdot i^2 \right) \right) \cdot \log(e \cdot (b \cdot x / (d \cdot x + c) + a / (d \cdot x + c))^n)^2 + 2 \cdot A \cdot B \cdot \left(\frac{1}{(b \cdot c \cdot d - a \cdot d^2) \cdot g \cdot i^2 \cdot x + (b \cdot c^2 - a \cdot c \cdot d) \cdot g \cdot i^2} + b \cdot \log(b \cdot x + a) / \left((b^2 \cdot c^2 - 2 \cdot a \cdot b \cdot c \cdot d + a^2 \cdot d^2) \cdot g \cdot i^2 \right) - b \cdot \log(d \cdot x + c) / \left((b^2 \cdot c^2 - 2 \cdot a \cdot b \cdot c \cdot d + a^2 \cdot d^2) \cdot g \cdot i^2 \right) \right) \cdot \log(e \cdot (b \cdot x / (d \cdot x + c) + a / (d \cdot x + c))^n) + \frac{1}{3} \cdot \left((b \cdot d \cdot x + b \cdot c) \cdot \log(b \cdot x + a)^3 - (b \cdot d \cdot x + b \cdot c) \cdot \log(d \cdot x + c)^3 + 3 \cdot (b \cdot d \cdot x + b \cdot c) \cdot \log(b \cdot x + a)^2 + 3 \cdot (b \cdot d \cdot x + b \cdot c + (b \cdot d \cdot x + b \cdot c) \cdot \log(b \cdot x + a)) \cdot \log(d \cdot x + c)^2 + 6 \cdot b \cdot c - 6 \cdot a \cdot d + 6 \cdot (b \cdot d \cdot x + b \cdot c) \cdot \log(b \cdot x + a) - 3 \cdot (2 \cdot b \cdot d \cdot x + (b \cdot d \cdot x + b \cdot c) \cdot \log(b \cdot x + a))^2 + 2 \cdot b \cdot c + 2 \cdot (b \cdot d \cdot x + b \cdot c) \cdot \log(b \cdot x + a)) \cdot \log(d \cdot x + c) \right) \cdot n^2 / (b^2 \cdot c^3 \cdot g \cdot i^2 - 2 \cdot a \cdot b \cdot c^2 \cdot d \cdot g \cdot i^2 + a^2 \cdot c \cdot d^2 \cdot g \cdot i^2 + (b^2 \cdot c^2 \cdot d \cdot g \cdot i^2 - 2 \cdot a \cdot b \cdot c \cdot d^2 \cdot g \cdot i^2 + a^2 \cdot d^3 \cdot g \cdot i^2) \cdot x) - 3 \cdot \left((b \cdot d \cdot x + b \cdot c) \cdot \log(b \cdot x + a)^2 + (b \cdot d \cdot x + b \cdot c) \cdot \log(d \cdot x + c)^2 + 2 \cdot b \cdot c - 2 \cdot a \cdot d + 2 \cdot (b \cdot d \cdot x + b \cdot c) \cdot \log(b \cdot x + a) - 2 \cdot (b \cdot d \cdot x + b \cdot c + (b \cdot d \cdot x + b \cdot c) \cdot \log(b \cdot x + a)) \cdot \log(d \cdot x + c) \right) \cdot n \cdot \log(e \cdot (b \cdot x / (d \cdot x + c) + a / (d \cdot x + c))^n) / (b^2 \cdot c^3 \cdot g \cdot i^2 - 2 \cdot a \cdot b \cdot c^2 \cdot d \cdot g \cdot i^2 + a^2 \cdot c \cdot d^2 \cdot g \cdot i^2 + (b^2 \cdot c^2 \cdot d \cdot g \cdot i^2 - 2 \cdot a \cdot b \cdot c \cdot d^2 \cdot g \cdot i^2 + a^2 \cdot d^3 \cdot g \cdot i^2) \cdot x) \cdot B^2 - \left((b \cdot d \cdot x + b \cdot c) \cdot \log(b \cdot x + a)^2 + (b \cdot d \cdot x + b \cdot c) \cdot \log(d \cdot x + c)^2 + 2 \cdot b \cdot c - 2 \cdot a \cdot d + 2 \cdot (b \cdot d \cdot x + b \cdot c) \cdot \log(b \cdot x + a) - 2 \cdot (b \cdot d \cdot x + b \cdot c + (b \cdot d \cdot x + b \cdot c) \cdot \log(b \cdot x + a)) \cdot \log(d \cdot x + c) \right) \cdot A \cdot B \cdot n / (b^2 \cdot c^3 \cdot g \cdot i^2 - 2 \cdot a \cdot b \cdot c^2 \cdot d \cdot g \cdot i^2 + a^2 \cdot c \cdot d^2 \cdot g \cdot i^2 + (b^2 \cdot c^2 \cdot d \cdot g \cdot i^2 - 2 \cdot a \cdot b \cdot c \cdot d^2 \cdot g \cdot i^2 + a^2 \cdot d^3 \cdot g \cdot i^2) \cdot x) + A^2 \cdot \left(\frac{1}{(b \cdot c \cdot d - a \cdot d^2) \cdot g \cdot i^2 \cdot x + (b \cdot c^2 - a \cdot c \cdot d) \cdot g \cdot i^2} + b \cdot \log(b \cdot x + a) / \left((b^2 \cdot c^2 - 2 \cdot a \cdot b \cdot c \cdot d + a^2 \cdot d^2) \cdot g \cdot i^2 \right) - b \cdot \log(d \cdot x + c) / \left((b^2 \cdot c^2 - 2 \cdot a \cdot b \cdot c \cdot d + a^2 \cdot d^2) \cdot g \cdot i^2 \right) \right)$$

mupad [B] time = 5.80, size = 365, normalized size = 1.58

$$\frac{B^2 b \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)^3}{3 g i^2 n (ad - bc)^2} - \frac{A^2 - 2 A B n + 2 B^2 n^2}{(ad - bc) (c g i^2 + d g i^2 x)} - \frac{2 B \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) (A - B n)}{(ad - bc) (c g i^2 + d g i^2 x)} - \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)^2 \left(\frac{1}{(ad - bc)} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))^2/((a*g + b*g*x)*(c*i + d*i*x)^2),x)

[Out]
$$(B^2 \cdot b \cdot \log(e \cdot ((a + b \cdot x) / (c + d \cdot x))^n)^3) / (3 \cdot g \cdot i^2 \cdot n \cdot (a \cdot d - b \cdot c)^2) - (A^2 + 2 \cdot B^2 \cdot n^2 - 2 \cdot A \cdot B \cdot n) / ((a \cdot d - b \cdot c) \cdot (c \cdot g \cdot i^2 + d \cdot g \cdot i^2 \cdot x)) - (2 \cdot B \cdot \log(e \cdot ((a + b \cdot x) / (c + d \cdot x))^n) \cdot (A - B \cdot n)) / ((a \cdot d - b \cdot c) \cdot (c \cdot g \cdot i^2 + d \cdot g \cdot i^2 \cdot x)) - (b \cdot \operatorname{atan}((b \cdot (2 \cdot b \cdot d \cdot x + (a^2 \cdot d^2 \cdot g \cdot i^2 - b^2 \cdot c^2 \cdot g \cdot i^2)) / (g \cdot i^2 \cdot (a \cdot d - b \cdot c)))) \cdot (A^2 + 2 \cdot B^2 \cdot n^2 - 2 \cdot A \cdot B \cdot n) \cdot i) / ((a \cdot d - b \cdot c) \cdot (A^2 \cdot b + 2 \cdot B^2 \cdot b \cdot n^2 - 2 \cdot A \cdot B \cdot b \cdot n))$$

$$\frac{(A^2 + 2B^2n^2 - 2ABn) \cdot 2i}{g^2(a^2d - b^2c)} - \log\left(\frac{e((a + bx)/(c + dx))^n}{(a^2d - b^2c)(c^2g^2 + d^2g^2x)}\right) - \frac{Bb(A - Bn)}{g^2n(a^2d - b^2c)}$$

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c)**n))**2/(b*g*x+a*g)/(d*i*x+c*i)**2,x)

[Out] Timed out

$$3.199 \quad \int \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ag+bgx)^2(ci+dix)^2} dx$$

Optimal. Leaf size=392

$$\frac{b^2(c+dx)\left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A\right)^2}{g^2 i^2 (a+bx)(bc-ad)^3} - \frac{2b^2 B n (c+dx)\left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A\right)}{g^2 i^2 (a+bx)(bc-ad)^3} + \frac{d^2(a+bx)\left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A\right)}{g^2 i^2 (c+dx)(bc-ad)^3}$$

[Out] $-2*A*B*d^2*n*(b*x+a)/(-a*d+b*c)^3/g^2/i^2/(d*x+c)+2*B^2*d^2*n^2*(b*x+a)/(-a*d+b*c)^3/g^2/i^2/(d*x+c)-2*b^2*B^2*n^2*(d*x+c)/(-a*d+b*c)^3/g^2/i^2/(b*x+a)-2*B^2*d^2*n*(b*x+a)*\ln(e*((b*x+a)/(d*x+c))^n)/(-a*d+b*c)^3/g^2/i^2/(d*x+c)-2*b^2*B*n*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^3/g^2/i^2/(b*x+a)+d^2*(b*x+a)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^3/g^2/i^2/(d*x+c)-b^2*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^3/g^2/i^2/(b*x+a)-2/3*b*d*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^3/B/(-a*d+b*c)^3/g^2/i^2/n$

Rubi [C] time = 6.81, antiderivative size = 1621, normalized size of antiderivative = 4.14, number of steps used = 107, number of rules used = 31, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}} = 0.689$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)^2*(c*i + d*i*x)^2), x]

[Out] $(-2*b*B^2*n^2)/((b*c - a*d)^2*g^2*i^2*(a + b*x)) - (2*B^2*d*n^2)/((b*c - a*d)^2*g^2*i^2*(c + d*x)) - (4*b*B^2*d*n^2*Log[a + b*x])/((b*c - a*d)^3*g^2*i^2) + (2*A*b*B*d*n*Log[a + b*x]^2)/((b*c - a*d)^3*g^2*i^2) + (2*b*B^2*d*Log[-((b*c - a*d)/(d*(a + b*x))])*Log[e*((a + b*x)/(c + d*x))^n]^2)/((b*c - a*d)^3*g^2*i^2) + (2*b*B^2*d*Log[a + b*x]*Log[e*((a + b*x)/(c + d*x))^n]^2)/((b*c - a*d)^3*g^2*i^2) - (2*b*B*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)^2*g^2*i^2*(a + b*x)) + (2*B*d*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)^2*g^2*i^2*(c + d*x)) - (b*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/((b*c - a*d)^2*g^2*i^2*(a + b*x)) - (d*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/((b*c - a*d)^2*g^2*i^2*(c + d*x)) - (2*b*d*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/((b*c - a*d)^3*g^2*i^2) + (4*b*B^2*d*n^2*Log[c + d*x])/((b*c - a*d)^3*g^2*i^2) - (4*A*b*B*d*n*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/((b*c - a*d)^3*g^2*i^2) - (2*b*B^2*d*Log[(a + b*x)^n]^2*Log[c + d*x])/((b*c - a*d)^3*g^2*i^2) + (2*b*d*(A + B*Log[$

$$\begin{aligned}
& e^{\left(\frac{a+bx}{c+dx}\right)^n} \int \frac{\log[c+dx]}{(bc-ad)^3 g^{2i^2}} + (2A * b * B * d * n * \log[c+dx]^2) / ((bc-ad)^3 g^{2i^2}) - (2 * b * B^2 * d * n^2 * \log[a+bx] * \log[c+dx]^2) / ((bc-ad)^3 g^{2i^2}) + (2 * b * B^2 * d * n * \log[e^{\left(\frac{a+bx}{c+dx}\right)^n} * \log[c+dx]^2]) / ((bc-ad)^3 g^{2i^2}) + (2 * b * B^2 * d * n^2 * \log[c+dx]^3) / (3 * (bc-ad)^3 g^{2i^2}) - (4 * A * b * B * d * n * \log[a+bx] * \log[(b * (c+dx)) / (bc-ad)]) / ((bc-ad)^3 g^{2i^2}) + (2 * b * B^2 * d * \log[(a+bx)^n]^2 * \log[(b * (c+dx)) / (bc-ad)]) / ((bc-ad)^3 g^{2i^2}) - (4 * b * B^2 * d * n * \log[a+bx] * \log[c+dx] * \log[(c+dx)^{-n}]) / ((bc-ad)^3 g^{2i^2}) - (2 * b * B^2 * d * \log[a+bx] * \log[(c+dx)^{-n}]^2) / ((bc-ad)^3 g^{2i^2}) + (2 * b * B^2 * d * \log[-((d * (a+bx)) / (bc-ad))] * \log[(c+dx)^{-n}]^2) / ((bc-ad)^3 g^{2i^2}) + (4 * b * B^2 * d * n * \log[-((d * (a+bx)) / (bc-ad))] * \log[c+dx] * (\log[(a+bx)^n] - \log[e^{\left(\frac{a+bx}{c+dx}\right)^n} + \log[(c+dx)^{-n}]]) / ((bc-ad)^3 g^{2i^2}) - (4 * A * b * B * d * n * \text{PolyLog}[2, -((d * (a+bx)) / (bc-ad))]) / ((bc-ad)^3 g^{2i^2}) + (4 * b * B^2 * d * n * \log[(a+bx)^n] * \text{PolyLog}[2, -((d * (a+bx)) / (bc-ad))]) / ((bc-ad)^3 g^{2i^2}) - (4 * A * b * B * d * n * \text{PolyLog}[2, (b * (c+dx)) / (bc-ad)]) / ((bc-ad)^3 g^{2i^2}) - (4 * b * B^2 * d * n * \log[(c+dx)^{-n}] * \text{PolyLog}[2, (b * (c+dx)) / (bc-ad)]) / ((bc-ad)^3 g^{2i^2}) + (4 * b * B^2 * d * n * (\log[(a+bx)^n] - \log[e^{\left(\frac{a+bx}{c+dx}\right)^n} + \log[(c+dx)^{-n}]]) * \text{PolyLog}[2, (b * (c+dx)) / (bc-ad)]) / ((bc-ad)^3 g^{2i^2}) - (4 * b * B^2 * d * n * \log[e^{\left(\frac{a+bx}{c+dx}\right)^n} * \text{PolyLog}[2, 1 + (bc-ad) / (d * (a+bx))]) / ((bc-ad)^3 g^{2i^2}) - (4 * b * B^2 * d * n^2 * \text{PolyLog}[3, -((d * (a+bx)) / (bc-ad))]) / ((bc-ad)^3 g^{2i^2}) - (4 * b * B^2 * d * n^2 * \text{PolyLog}[3, (b * (c+dx)) / (bc-ad)]) / ((bc-ad)^3 g^{2i^2}) - (4 * b * B^2 * d * n^2 * \text{PolyLog}[3, 1 + (bc-ad) / (d * (a+bx))]) / ((bc-ad)^3 g^{2i^2})
\end{aligned}$$
Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 30

```
Int[(x_)^(m_), x_Symbol] := Simp[x^(m+1)/(m+1), x] /; FreeQ[m, x] && NeQ[m, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a+bx)^m*(c+dx)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] := Dist[1/(b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p}, x]

Rule 2317

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol] := Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e, Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]

Rule 2344

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))), x_Symbol] := Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]

Rule 2374

Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*)((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] := -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0] && EqQ[d*e, 1]

Rule 2375

Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]^(r_.))*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] := Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m - 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d, e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])^p/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*((f_.) + (g_.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] := Dist[1/e, Subst[Int[(g*x/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*((f_.) + Log
```


$[(h_.) * ((i_.) + (j_.) * (x_.))^{(m_.)}] * (g_.) * ((k_.) + (l_.) * (x_.))^{(r_.)}, x_Symbol] \rightarrow \text{Dist}[1/e, \text{Subst}[\text{Int}[(k*x)/d]^r * (a + b * \text{Log}[c*x^n])^p * (f + g * \text{Log}[h * (e*i - d*j)/e + (j*x)/e]^m)], x], x, d + e*x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g, h, i, j, k, l, n, p, r\}, x] \&\& \text{EqQ}[e*k - d*l, 0]$

Rule 2434

$\text{Int}[(((a_.) + \text{Log}[(c_.) * ((d_.) + (e_.) * (x_.))^{(n_.)}] * (b_.)) * ((f_.) + \text{Log}[(h_.) * ((i_.) + (j_.) * (x_.))^{(m_.)}] * (g_.)))/(x_.), x_Symbol] \rightarrow \text{Simp}[\text{Log}[x] * (a + b * \text{Log}[c * (d + e*x)^n]) * (f + g * \text{Log}[h * (i + j*x)^m]), x] + (-\text{Dist}[e*g*m, \text{Int}[(\text{Log}[x] * (a + b * \text{Log}[c * (d + e*x)^n])]/(d + e*x), x], x] - \text{Dist}[b*j*n, \text{Int}[(\text{Log}[x] * (f + g * \text{Log}[h * (i + j*x)^m])]/(i + j*x), x], x)]) /; \text{FreeQ}[\{a, b, c, d, e, f, g, h, i, j, m, n\}, x] \&\& \text{EqQ}[e*i - d*j, 0]$

Rule 2440

$\text{Int}[(a_.) + \text{Log}[(c_.) * ((d_.) + (e_.) * (x_.))^{(n_.)}] * (b_.) * ((f_.) + \text{Log}[(h_.) * ((i_.) + (j_.) * (x_.))^{(m_.)}] * (g_.)) * ((k_.) + (l_.) * (x_.))^{(r_.)}, x_Symbol] \rightarrow \text{Dist}[1/l, \text{Subst}[\text{Int}[x^r * (a + b * \text{Log}[c * (-((e*k - d*l)/l) + (e*x)/l)^n]) * (f + g * \text{Log}[h * (-((j*k - i*l)/l) + (j*x)/l]^m)], x], x, k + l*x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g, h, i, j, k, l, m, n\}, x] \&\& \text{IntegerQ}[r]$

Rule 2488

$\text{Int}[\text{Log}[(e_.) * ((f_.) * ((a_.) + (b_.) * (x_.))^{(p_.)} * ((c_.) + (d_.) * (x_.))^{(q_.)})^{(r_.)} / ((g_.) + (h_.) * (x_.)), x_Symbol] \rightarrow -\text{Simp}[(\text{Log}[-((b*c - a*d)/(d*(a + b*x))]) * \text{Log}[e * (f * (a + b*x)^p * (c + d*x)^q)^r]^s)/h, x] + \text{Dist}[(p*r*s * (b*c - a*d))/h, \text{Int}[(\text{Log}[-((b*c - a*d)/(d*(a + b*x))]) * \text{Log}[e * (f * (a + b*x)^p * (c + d*x)^q)^r]^s - 1)/(a + b*x) * (c + d*x), x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g, h, p, q, r, s\}, x] \&\& \text{NeQ}[b*c - a*d, 0] \&\& \text{EqQ}[p + q, 0] \&\& \text{EqQ}[b*g - a*h, 0] \&\& \text{IGtQ}[s, 0]$

Rule 2499

$\text{Int}[(\text{Log}[(e_.) * ((f_.) * ((a_.) + (b_.) * (x_.))^{(p_.)} * ((c_.) + (d_.) * (x_.))^{(q_.)})^{(r_.)}] * ((s_.) + \text{Log}[(i_.) * ((g_.) + (h_.) * (x_.))^{(n_.)}] * (t_.))^{(m_.)}) / ((j_.) + (k_.) * (x_.)), x_Symbol] \rightarrow \text{Simp}[(s + t * \text{Log}[i * (g + h*x)^n])^{(m + 1)} * \text{Log}[e * (f * (a + b*x)^p * (c + d*x)^q)^r] / (k * n * t * (m + 1)), x] + (-\text{Dist}[(b * p * r) / (k * n * t * (m + 1)), \text{Int}[(s + t * \text{Log}[i * (g + h*x)^n])^{(m + 1)} / (a + b*x), x], x] - \text{Dist}[(d * q * r) / (k * n * t * (m + 1)), \text{Int}[(s + t * \text{Log}[i * (g + h*x)^n])^{(m + 1)} / (c + d*x), x], x]) /; \text{FreeQ}[\{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r\}, x] \&\& \text{NeQ}[b*c - a*d, 0] \&\& \text{EqQ}[h*j - g*k, 0] \&\& \text{IGtQ}[m, 0]$

Rule 2500

```

Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^((r_.))*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]

```

Rule 2506

```

Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_
)^((q_.))^(r_.))^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[(v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1)/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]

```

Rule 2507

```

Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^((r_.))^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] :> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
h*x)^t]^u)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s + 1)/(p*r*(s + 1)*(b*c
- a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q]^r]^s + 1)/(g + h*x), x], x] /; FreeQ[k, x] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
EqQ[p + q, 0] && NeQ[s, -1]

```

Rule 2524

```

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]

```

Rule 2525

```

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*
(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||

```

IntegerQ[m]) && NeQ[m, -1]

Rule 2528

Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]

Rule 6589

Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d, e, n, p}, x] && EqQ[b*d, a*e]

Rule 6610

Int[(u_)*PolyLog[n_, v_], x_Symbol] := With[{w = DerivativeDivides[v, u*v, x]}, Simp[w*PolyLog[n + 1, v], x] /; !FalseQ[w]] /; FreeQ[n, x]

Rule 6688

Int[u_, x_Symbol] := With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; SimplifyIntegrandQ[v, u, x]]

Rule 6742

Int[u_, x_Symbol] := With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]]

Rubi steps

$$\begin{aligned}
\int \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(199c + 199dx)^2(ag + bgx)^2} dx &= \int \left[\frac{b^2 \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39601(bc - ad)^2g^2(a + bx)^2} - \frac{2b^2d \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39601(bc - ad)^3g^2(a + bx)} + \frac{d^2 \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39601(bc - ad)^4g^2(a + bx)^2} \right. \\
&= -\frac{(2b^2d) \int \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{a+bx} dx}{39601(bc - ad)^3g^2} + \frac{(2bd^2) \int \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{c+dx} dx}{39601(bc - ad)^3g^2} + \frac{b^2 \int \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{a+bx} dx}{39601(bc - ad)^3g^2} \\
&= -\frac{b \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39601(bc - ad)^2g^2(a + bx)} - \frac{d \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39601(bc - ad)^2g^2(c + dx)} - \frac{2bd \log(a + bx) \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39601(bc - ad)^2g^2(a + bx)(c + dx)} \\
&= -\frac{b \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39601(bc - ad)^2g^2(a + bx)} - \frac{d \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39601(bc - ad)^2g^2(c + dx)} - \frac{2bd \log(a + bx) \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39601(bc - ad)^2g^2(a + bx)(c + dx)} \\
&= -\frac{b \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39601(bc - ad)^2g^2(a + bx)} - \frac{d \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39601(bc - ad)^2g^2(c + dx)} - \frac{2bd \log(a + bx) \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39601(bc - ad)^2g^2(a + bx)(c + dx)} \\
&= -\frac{b \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39601(bc - ad)^2g^2(a + bx)} - \frac{d \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39601(bc - ad)^2g^2(c + dx)} - \frac{2bd \log(a + bx) \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39601(bc - ad)^2g^2(a + bx)(c + dx)} \\
&= -\frac{2bBn \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{39601(bc - ad)^2g^2(a + bx)} + \frac{2Bdn \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{39601(bc - ad)^2g^2(c + dx)} - \frac{b \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{39601(bc - ad)^2g^2(a + bx)(c + dx)} \\
&= \frac{2bB^2d \log(a + bx) \log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{39601(bc - ad)^3g^2} - \frac{2bBn \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{39601(bc - ad)^2g^2(a + bx)} + \frac{2Bdn \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{39601(bc - ad)^2g^2(c + dx)} \\
&= \frac{2bB^2d \log\left(-\frac{bc-ad}{d(a+bx)}\right) \log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{39601(bc - ad)^3g^2} + \frac{2bB^2d \log(a + bx) \log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{39601(bc - ad)^3g^2} \\
&= \frac{2bB^2n^2}{39601(bc - ad)^2g^2(a + bx)} - \frac{2B^2dn^2}{39601(bc - ad)^2g^2(c + dx)} - \frac{4bB^2dn^2 \log(a + bx)}{39601(bc - ad)^2g^2(a + bx)(c + dx)} \\
&= \frac{2bB^2n^2}{39601(bc - ad)^2g^2(a + bx)} - \frac{2B^2dn^2}{39601(bc - ad)^2g^2(c + dx)} - \frac{4bB^2dn^2 \log(a + bx)}{39601(bc - ad)^2g^2(a + bx)(c + dx)}
\end{aligned}$$

Mathematica [B] time = 1.39, size = 870, normalized size = 2.22

$$2bB^2dn^2(a+bx)(c+dx)\log^3\left(\frac{a+bx}{c+dx}\right) + 3Bn\left(2Ad^2x^2b^2 + Bc^2nb^2 + 2Acidxb^2 + 2Bcdnxb^2 + 2aAcdb + 2aAd^2x\right)$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)^2*(c*i + d*i*x)^2), x]

[Out]
$$-1/3*(2*b*B^2*d*n^2*(a + b*x)*(c + d*x)*\text{Log}[(a + b*x)/(c + d*x)]^3 + 3*B*n*\text{Log}[(a + b*x)/(c + d*x)]^2*(2*a*A*b*c*d + b^2*B*c^2*n - a^2*B*d^2*n + 2*A*b^2*c*d*x + 2*a*A*b*d^2*x + 2*b^2*B*c*d*n*x - 2*a*b*B*d^2*n*x + 2*A*b^2*d^2*x^2 + 2*b*B*d*(a + b*x)*(c + d*x)*\text{Log}[e*((a + b*x)/(c + d*x))^n] - 2*b*B*d*n*(a + b*x)*(c + d*x)*\text{Log}[(a + b*x)/(c + d*x)]) + 6*B*(b*c - a*d)*n*\text{Log}[(a + b*x)/(c + d*x)]*(A*b*c + a*A*d + b*B*c*n - a*B*d*n + 2*A*b*d*x + B*(a*d + b*(c + 2*d*x))*\text{Log}[e*((a + b*x)/(c + d*x))^n] - B*n*(b*c + a*d + 2*b*d*x)*\text{Log}[(a + b*x)/(c + d*x)]) + 6*b*d*(a + b*x)*(c + d*x)*\text{Log}[a + b*x]*(A^2 + 2*B^2*n^2 + 2*A*B*(\text{Log}[e*((a + b*x)/(c + d*x))^n] - n*\text{Log}[(a + b*x)/(c + d*x)])) + B^2*(\text{Log}[e*((a + b*x)/(c + d*x))^n] - n*\text{Log}[(a + b*x)/(c + d*x)])^2) + 3*b*(b*c - a*d)*(c + d*x)*(A^2 + 2*A*B*n + 2*B^2*n^2 + B^2*\text{Log}[e*((a + b*x)/(c + d*x))^n]^2 - 2*B*n*(A + B*n)*\text{Log}[(a + b*x)/(c + d*x)] + B^2*n^2*\text{Log}[(a + b*x)/(c + d*x)]^2 + 2*B*\text{Log}[e*((a + b*x)/(c + d*x))^n]*(A + B*n - B*n*\text{Log}[(a + b*x)/(c + d*x)])) + 3*d*(b*c - a*d)*(a + b*x)*(A^2 - 2*A*B*n + 2*B^2*n^2 + B^2*\text{Log}[e*((a + b*x)/(c + d*x))^n]^2 + 2*B*n*(-A + B*n)*\text{Log}[(a + b*x)/(c + d*x)] + B^2*n^2*\text{Log}[(a + b*x)/(c + d*x)]^2 - 2*B*\text{Log}[e*((a + b*x)/(c + d*x))^n]*(-A + B*n + B*n*\text{Log}[(a + b*x)/(c + d*x)])) - 6*b*d*(a + b*x)*(c + d*x)*(A^2 + 2*B^2*n^2 + 2*A*B*(\text{Log}[e*((a + b*x)/(c + d*x))^n] - n*\text{Log}[(a + b*x)/(c + d*x)])) + B^2*(\text{Log}[e*((a + b*x)/(c + d*x))^n] - n*\text{Log}[(a + b*x)/(c + d*x)])^2)*\text{Log}[c + d*x])/((b*c - a*d)^3*g^2*i^2*(a + b*x)*(c + d*x))$$

fricas [B] time = 1.01, size = 983, normalized size = 2.51

$$3A^2b^2c^2 - 3A^2a^2d^2 + 2\left(B^2b^2d^2n^2x^2 + B^2abcdn^2 + (B^2b^2cd + B^2abd^2)n^2x\right)\log\left(\frac{bx+a}{dx+c}\right)^3 + 6\left(B^2b^2c^2 - B^2a^2d^2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^2/(d*i*x+c*i)^2,x, algorithm="fricas")

[Out]
$$-1/3*(3*A^2*b^2*c^2 - 3*A^2*a^2*d^2 + 2*(B^2*b^2*d^2*n^2*x^2 + B^2*a*b*c*d*n^2 + (B^2*b^2*c*d + B^2*a*b*d^2)*n^2*x)*\log((b*x + a)/(d*x + c))^3 + 6*(B^2$$

$$\begin{aligned}
& 2*b^2*c^2 - B^2*a^2*d^2)*n^2 + 3*(B^2*b^2*c^2 - B^2*a^2*d^2 + 2*(B^2*b^2*c*d - B^2*a*b*d^2)*x + 2*(B^2*b^2*d^2*x^2 + B^2*a*b*c*d + (B^2*b^2*c*d + B^2*a*b*d^2)*x)*\log((b*x + a)/(d*x + c)))*\log(e)^2 + 3*(2*A*B*b^2*d^2*n*x^2 + 2*A*B*a*b*c*d*n + (B^2*b^2*c^2 - B^2*a^2*d^2)*n^2 + 2*((B^2*b^2*c*d - B^2*a*b*d^2)*n^2 + (A*B*b^2*c*d + A*B*a*b*d^2)*n)*x)*\log((b*x + a)/(d*x + c))^2 + 6*(A*B*b^2*c^2 - 2*A*B*a*b*c*d + A*B*a^2*d^2)*n + 6*(A^2*b^2*c*d - A^2*a*b*d^2 + 2*(B^2*b^2*c*d - B^2*a*b*d^2)*n^2)*x + 6*(A*B*b^2*c^2 - A*B*a^2*d^2 + (B^2*b^2*d^2*n*x^2 + B^2*a*b*c*d*n + (B^2*b^2*c*d + B^2*a*b*d^2)*n*x)*\log((b*x + a)/(d*x + c))^2 + (B^2*b^2*c^2 - 2*B^2*a*b*c*d + B^2*a^2*d^2)*n + 2*(A*B*b^2*c*d - A*B*a*b*d^2)*x + (2*A*B*b^2*d^2*x^2 + 2*A*B*a*b*c*d + (B^2*b^2*c^2 - B^2*a^2*d^2)*n + 2*(A*B*b^2*c*d + A*B*a*b*d^2 + (B^2*b^2*c*d - B^2*a*b*d^2)*n)*x)*\log((b*x + a)/(d*x + c))*\log(e) + 6*(A^2*a*b*c*d + (B^2*b^2*c^2 + B^2*a^2*d^2)*n^2 + (2*B^2*b^2*d^2*n^2 + A^2*b^2*d^2)*x^2 + (A*B*b^2*c^2 - A*B*a^2*d^2)*n + (A^2*b^2*c*d + A^2*a*b*d^2 + 2*(B^2*b^2*c*d + B^2*a*b*d^2)*n^2 + 2*(A*B*b^2*c*d - A*B*a*b*d^2)*n)*x)*\log((b*x + a)/(d*x + c)))/(b^4*c^3*d - 3*a*b^3*c^2*d^2 + 3*a^2*b^2*c*d^3 - a^3*b*d^4)*g^2*i^2*x^2 + (b^4*c^4 - 2*a*b^3*c^3*d + 2*a^3*b*c*d^3 - a^4*d^4)*g^2*i^2*x + (a*b^3*c^4 - 3*a^2*b^2*c^3*d + 3*a^3*b*c^2*d^2 - a^4*c*d^3)*g^2*i^2)
\end{aligned}$$

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^2/(d*i*x+c*i)^2,x, algorithm="giac")

[Out] Timed out

maple [F] time = 0.48, size = 0, normalized size = 0.00

$$\int \frac{\left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)^2}{(bgx + ag)^2 (dix + ci)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^2/(d*i*x+c*i)^2,x)

[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^2/(d*i*x+c*i)^2,x)

maxima [B] time = 1.80, size = 2006, normalized size = 5.12

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^2/(d*i*x+c*i)^2,x,
algorithm="maxima")

[Out]
$$-B^2 \left(\frac{(2*b*d*x + b*c + a*d)}{(b^3*c^2*d - 2*a*b^2*c*d^2 + a^2*b*d^3)*g^2*i^2*x^2 + (b^3*c^3 - a*b^2*c^2*d - a^2*b*c*d^2 + a^3*d^3)*g^2*i^2*x + (a*b^2*c^3 - 2*a^2*b*c^2*d + a^3*c*d^2)*g^2*i^2} + 2*b*d*\log(b*x + a) / \left((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^2*i^2 \right) - 2*b*d*\log(d*x + c) / \left((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^2*i^2 \right) \right) * \log(e*(b*x/(d*x + c) + a/(d*x + c))^n)^2 - 2*A*B \left(\frac{(2*b*d*x + b*c + a*d)}{(b^3*c^2*d - 2*a*b^2*c*d^2 + a^2*b*d^3)*g^2*i^2*x^2 + (b^3*c^3 - a*b^2*c^2*d - a^2*b*c*d^2 + a^3*d^3)*g^2*i^2*x + (a*b^2*c^3 - 2*a^2*b*c^2*d + a^3*c*d^2)*g^2*i^2} + 2*b*d*\log(b*x + a) / \left((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^2*i^2 \right) - 2*b*d*\log(d*x + c) / \left((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^2*i^2 \right) \right) * \log(e*(b*x/(d*x + c) + a/(d*x + c))^n) - \frac{2}{3} \left((3*b^2*c^2 - 3*a^2*d^2 + (b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a*b*d^2)*x)*\log(b*x + a)^3 + 3*(b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a*b*d^2)*x)*\log(b*x + a)*\log(d*x + c)^2 - (b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a*b*d^2)*x)*\log(d*x + c)^3 + 6*(b^2*c*d - a*b*d^2)*x + 6*(b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a*b*d^2)*x)*\log(b*x + a) - 3*(2*b^2*d^2*x^2 + 2*a*b*c*d + (b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a*b*d^2)*x)*\log(b*x + a)^2 + 2*(b^2*c*d + a*b*d^2)*x)*\log(d*x + c) \right) * n^2 / (a*b^3*c^4*g^2*i^2 - 3*a^2*b^2*c^3*d*g^2*i^2 + 3*a^3*b*c^2*d^2*g^2*i^2 - a^4*c*d^3*g^2*i^2 + (b^4*c^3*d*g^2*i^2 - 3*a*b^3*c^2*d^2*g^2*i^2 + 3*a^2*b^2*c*d^3*g^2*i^2 - a^3*b*d^4*g^2*i^2)*x^2 + (b^4*c^4*g^2*i^2 - 2*a*b^3*c^3*d*g^2*i^2 + 2*a^3*b*c*d^3*g^2*i^2 - a^4*d^4*g^2*i^2)*x) + 3*(b^2*c^2 - 2*a*b*c*d + a^2*d^2 - (b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a*b*d^2)*x)*\log(b*x + a)^2 + 2*(b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a*b*d^2)*x)*\log(b*x + a)*\log(d*x + c) - (b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a*b*d^2)*x)*\log(d*x + c)^2) * n * \log(e*(b*x/(d*x + c) + a/(d*x + c))^n) / (a*b^3*c^4*g^2*i^2 - 3*a^2*b^2*c^3*d*g^2*i^2 + 3*a^3*b*c^2*d^2*g^2*i^2 - a^4*c*d^3*g^2*i^2 + (b^4*c^3*d*g^2*i^2 - 3*a*b^3*c^2*d^2*g^2*i^2 + 3*a^2*b^2*c*d^3*g^2*i^2 - a^3*b*d^4*g^2*i^2)*x^2 + (b^4*c^4*g^2*i^2 - 2*a*b^3*c^3*d*g^2*i^2 + 2*a^3*b*c*d^3*g^2*i^2 - a^4*d^4*g^2*i^2)*x) \right) * B^2 - 2*(b^2*c^2 - 2*a*b*c*d + a^2*d^2 - (b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a*b*d^2)*x)*\log(b*x + a)^2 + 2*(b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a*b*d^2)*x)*\log(b*x + a)*\log(d*x + c) - (b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a*b*d^2)*x)*\log(d*x + c)^2) * A*B*n / (a*b^3*c^4*g^2*i^2 - 3*a^2*b^2*c^3*d*g^2*i^2 + 3*a^3*b*c^2*d^2*g^2*i^2 - a^4*c*d^3*g^2*i^2 + (b^4*c^3*d*g^2*i^2 - 3*a*b^3*c^2*d^2*g^2*i^2 + 3*a^2*b^2*c*d^3*g^2*i^2 - a^3*b*d^4*g^2*i^2)*x^2 + (b^4*c^4*g^2*i^2 - 2*a*b^3*c^3*d*g^2*i^2 + 2*a^3*b*c*d^3*g^2*i^2 - a^4*d^4*g^2*i^2)*x) - A^2 \left(\frac{(2*b*d*x + b*c + a*d)}{(b^3*c^2*d - 2*a*b^2*c*d^2 + a^2*b*d^3)*g^2*i^2*x^2 + (b^3*c^3 - a*b^2*c^2*d - a^2*b*c*d^2 + a^3*d^3)*g^2*i^2*x + (a*b^2*c^3 - 2*a^2*b*c^2*d + a^3*c*d^2)*g^2*i^2} + 2*b*d*\log(b*x + a) / \left((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^2*i^2 \right) - 2*b*d*\log(d*x + c) / \left((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^2*i^2 \right) \right)$$

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(A + B \ln\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ag + b gx)^2 (ci + d ix)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))^2/((a*g + b*g*x)^2*(c*i + d*i*x)^2),x)

[Out] int((A + B*log(e*((a + b*x)/(c + d*x))^n))^2/((a*g + b*g*x)^2*(c*i + d*i*x)^2), x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))^n))**2/(b*g*x+a*g)**2/(d*i*x+c*i)**2, x)

[Out] Timed out

$$3.200 \quad \int \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ag+bgx)^3(ci+dix)^2} dx$$

Optimal. Leaf size=560

$$\frac{b^3(c+dx)^2 \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A\right)^2}{2g^3i^2(a+bx)^2(bc-ad)^4} - \frac{b^3Bn(c+dx)^2 \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A\right)}{2g^3i^2(a+bx)^2(bc-ad)^4} + \frac{3b^2d(c+dx) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{g^3i^2(a+bx)(bc-ad)^4}$$

```
[Out] 2*A*B*d^3*n*(b*x+a)/(-a*d+b*c)^4/g^3/i^2/(d*x+c)-2*B^2*d^3*n^2*(b*x+a)/(-a*d+b*c)^4/g^3/i^2/(d*x+c)+6*b^2*B^2*d*n^2*(d*x+c)/(-a*d+b*c)^4/g^3/i^2/(b*x+a)-1/4*b^3*B^2*n^2*(d*x+c)^2/(-a*d+b*c)^4/g^3/i^2/(b*x+a)^2+2*B^2*d^3*n*(b*x+a)*ln(e*((b*x+a)/(d*x+c))^n)/(-a*d+b*c)^4/g^3/i^2/(d*x+c)+6*b^2*B*d*n*(d*x+c)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^4/g^3/i^2/(b*x+a)-1/2*b^3*B*n*(d*x+c)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^4/g^3/i^2/(b*x+a)^2-d^3*(b*x+a)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^4/g^3/i^2/(d*x+c)+3*b^2*d*(d*x+c)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^4/g^3/i^2/(b*x+a)-1/2*b^3*(d*x+c)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^4/g^3/i^2/(b*x+a)^2+b*d^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^3/B/(-a*d+b*c)^4/g^3/i^2/n
```

Rubi [C] time = 8.15, antiderivative size = 2207, normalized size of antiderivative = 3.94, number of steps used = 135, number of rules used = 31, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}} = 0.689$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)^3*(c*i + d*i*x)^2), x]
```

```
[Out] -(b*B^2*n^2)/(4*(b*c - a*d)^2*g^3*i^2*(a + b*x)^2) + (11*b*B^2*d*n^2)/(2*(b*c - a*d)^3*g^3*i^2*(a + b*x)) + (2*B^2*d^2*n^2)/((b*c - a*d)^3*g^3*i^2*(c + d*x)) + (15*b*B^2*d^2*n^2*Log[a + b*x])/((b*c - a*d)^4*g^3*i^2) - (3*A*b*B*d^2*n*Log[a + b*x]^2)/((b*c - a*d)^4*g^3*i^2) - (3*b*B^2*d^2*n^2*Log[a + b*x]^2)/(2*(b*c - a*d)^4*g^3*i^2) - (3*b*B^2*d^2*Log[-((b*c - a*d)/(d*(a + b*x))])*Log[e*((a + b*x)/(c + d*x))^n]^2)/((b*c - a*d)^4*g^3*i^2) - (3*b*B^2*d^2*Log[a + b*x]*Log[e*((a + b*x)/(c + d*x))^n]^2)/((b*c - a*d)^4*g^3*i^2) - (b*B*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(2*(b*c - a*d)^2*g^3*i^2*(a + b*x)^2) + (5*b*B*d*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)^3*g^3*i^2*(a + b*x)) - (2*B*d^2*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)^3*g^3*i^2*(a + b*x))
```

$$\begin{aligned} & \dots) / ((b*c - a*d)^3*g^3*i^2*(c + d*x)) + (3*b*B*d^2*n*Log[a + b*x]*(A + B* \\ & Log[e*((a + b*x)/(c + d*x))^n]) / ((b*c - a*d)^4*g^3*i^2) - (b*(A + B*Log[e* \\ & ((a + b*x)/(c + d*x))^n])^2) / (2*(b*c - a*d)^2*g^3*i^2*(a + b*x)^2) + (2*b*d \\ & *(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2) / ((b*c - a*d)^3*g^3*i^2*(a + b*x) \\ &) + (d^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2) / ((b*c - a*d)^3*g^3*i^2*(\\ & c + d*x)) + (3*b*d^2*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2) \\ & / ((b*c - a*d)^4*g^3*i^2) - (15*b*B^2*d^2*n^2*Log[c + d*x]) / (2*(b*c - a*d)^4 \\ & *g^3*i^2) + (6*A*b*B*d^2*n*Log[-((d*(a + b*x))/(b*c - a*d))] * Log[c + d*x]) / \\ & ((b*c - a*d)^4*g^3*i^2) + (3*b*B^2*d^2*n^2*Log[-((d*(a + b*x))/(b*c - a*d)) \\ &] * Log[c + d*x]) / ((b*c - a*d)^4*g^3*i^2) + (3*b*B^2*d^2*Log[(a + b*x)^n]^2 * L \\ & og[c + d*x]) / ((b*c - a*d)^4*g^3*i^2) - (3*b*B*d^2*n*(A + B*Log[e*((a + b*x) \\ & / (c + d*x))^n]) * Log[c + d*x]) / ((b*c - a*d)^4*g^3*i^2) - (3*b*d^2*(A + B*Log \\ & [e*((a + b*x)/(c + d*x))^n])^2 * Log[c + d*x]) / ((b*c - a*d)^4*g^3*i^2) - (3*A \\ & *b*B*d^2*n*Log[c + d*x]^2) / ((b*c - a*d)^4*g^3*i^2) - (3*b*B^2*d^2*n^2*Log[c \\ & + d*x]^2) / (2*(b*c - a*d)^4*g^3*i^2) + (3*b*B^2*d^2*n^2*Log[a + b*x]*Log[c \\ & + d*x]^2) / ((b*c - a*d)^4*g^3*i^2) - (3*b*B^2*d^2*n*Log[e*((a + b*x)/(c + d \\ & x))^n]*Log[c + d*x]^2) / ((b*c - a*d)^4*g^3*i^2) - (b*B^2*d^2*n^2*Log[c + d*x \\ &]^3) / ((b*c - a*d)^4*g^3*i^2) + (6*A*b*B*d^2*n*Log[a + b*x]*Log[(b*(c + d*x) \\ &) / (b*c - a*d)]) / ((b*c - a*d)^4*g^3*i^2) + (3*b*B^2*d^2*n^2*Log[a + b*x]*Log \\ & [(b*(c + d*x)) / (b*c - a*d)]) / ((b*c - a*d)^4*g^3*i^2) - (3*b*B^2*d^2*Log[(a \\ & + b*x)^n]^2 * Log[(b*(c + d*x)) / (b*c - a*d)]) / ((b*c - a*d)^4*g^3*i^2) + (6*b* \\ & B^2*d^2*n*Log[a + b*x]*Log[c + d*x]*Log[(c + d*x)^(-n)]) / ((b*c - a*d)^4*g^3 \\ & *i^2) + (3*b*B^2*d^2*Log[a + b*x]*Log[(c + d*x)^(-n)]^2) / ((b*c - a*d)^4*g^3 \\ & *i^2) - (3*b*B^2*d^2*Log[-((d*(a + b*x))/(b*c - a*d))] * Log[(c + d*x)^(-n)]^ \\ & 2) / ((b*c - a*d)^4*g^3*i^2) - (6*b*B^2*d^2*n*Log[-((d*(a + b*x))/(b*c - a*d) \\ &)] * Log[c + d*x] * (Log[(a + b*x)^n] - Log[e*((a + b*x)/(c + d*x))^n] + Log[(c \\ & + d*x)^(-n)])) / ((b*c - a*d)^4*g^3*i^2) + (6*A*b*B*d^2*n*PolyLog[2, -((d*(a \\ & + b*x))/(b*c - a*d))]) / ((b*c - a*d)^4*g^3*i^2) + (3*b*B^2*d^2*n^2*PolyLog[\\ & 2, -((d*(a + b*x))/(b*c - a*d))]) / ((b*c - a*d)^4*g^3*i^2) - (6*b*B^2*d^2*n* \\ & Log[(a + b*x)^n]*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))]) / ((b*c - a*d)^4*g \\ & ^3*i^2) + (6*A*b*B*d^2*n*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]) / ((b*c - a*d) \\ & ^4*g^3*i^2) + (3*b*B^2*d^2*n^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]) / ((b* \\ & c - a*d)^4*g^3*i^2) + (6*b*B^2*d^2*n*Log[(c + d*x)^(-n)] * PolyLog[2, (b*(c + \\ & d*x)) / (b*c - a*d)]) / ((b*c - a*d)^4*g^3*i^2) - (6*b*B^2*d^2*n*(Log[(a + b*x) \\ &]^n - Log[e*((a + b*x)/(c + d*x))^n] + Log[(c + d*x)^(-n)]) * PolyLog[2, (b* \\ & (c + d*x)) / (b*c - a*d)]) / ((b*c - a*d)^4*g^3*i^2) + (6*b*B^2*d^2*n*Log[e*((a \\ & + b*x)/(c + d*x))^n] * PolyLog[2, 1 + (b*c - a*d)/(d*(a + b*x))]) / ((b*c - a* \\ & d)^4*g^3*i^2) + (6*b*B^2*d^2*n^2*PolyLog[3, -((d*(a + b*x))/(b*c - a*d))]) / \\ & ((b*c - a*d)^4*g^3*i^2) + (6*b*B^2*d^2*n^2*PolyLog[3, (b*(c + d*x))/(b*c - \\ & a*d)]) / ((b*c - a*d)^4*g^3*i^2) + (6*b*B^2*d^2*n^2*PolyLog[3, 1 + (b*c - a*d) \\ &] / (d*(a + b*x))]) / ((b*c - a*d)^4*g^3*i^2) \end{aligned}$$

Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 30

$\text{Int}[(x_)^{(m_.)}, x_Symbol] \text{ :> } \text{Simp}[x^{(m + 1)}/(m + 1), x] \text{ /; } \text{FreeQ}[m, x] \ \&\& \ \text{NeQ}[m, -1]$

Rule 44

$\text{Int}[(a_.) + (b_.)(x_)^{(m_.)}((c_.) + (d_.)(x_)^{(n_.)}), x_Symbol] \text{ :> } \text{Int}[\text{ExpandIntegrand}[(a + b*x)^m*(c + d*x)^n, x], x] \text{ /; } \text{FreeQ}[\{a, b, c, d\}, x] \ \&\& \ \text{NeQ}[b*c - a*d, 0] \ \&\& \ \text{ILtQ}[m, 0] \ \&\& \ \text{IntegerQ}[n] \ \&\& \ !(\text{IGtQ}[n, 0] \ \&\& \ \text{LtQ}[m + n + 2, 0])$

Rule 2301

$\text{Int}[(a_.) + \text{Log}[(c_.)(x_)^{(n_.)}](b_.)]/(x_), x_Symbol] \text{ :> } \text{Simp}[(a + b*\text{Log}[c*x^n])^2/(2*b*n), x] \text{ /; } \text{FreeQ}[\{a, b, c, n\}, x]$

Rule 2302

$\text{Int}[(a_.) + \text{Log}[(c_.)(x_)^{(n_.)}](b_.)]^{(p_.)}/(x_), x_Symbol] \text{ :> } \text{Dist}[1/(b*n), \text{Subst}[\text{Int}[x^p, x], x, a + b*\text{Log}[c*x^n]], x] \text{ /; } \text{FreeQ}[\{a, b, c, n, p\}, x]$

Rule 2317

$\text{Int}[(a_.) + \text{Log}[(c_.)(x_)^{(n_.)}](b_.)]^{(p_.)}/((d_.) + (e_.)(x_)), x_Symbol] \text{ :> } \text{Simp}[(\text{Log}[1 + (e*x)/d]*(a + b*\text{Log}[c*x^n])^p)/e, x] - \text{Dist}[(b*n*p)/e, \text{Int}[(\text{Log}[1 + (e*x)/d]*(a + b*\text{Log}[c*x^n])^{(p - 1)})/x, x], x] \text{ /; } \text{FreeQ}[\{a, b, c, d, e, n\}, x] \ \&\& \ \text{IGtQ}[p, 0]$

Rule 2344

$\text{Int}[(a_.) + \text{Log}[(c_.)(x_)^{(n_.)}](b_.)]^{(p_.)}/((x_)*((d_.) + (e_.)(x_))), x_Symbol] \text{ :> } \text{Dist}[1/d, \text{Int}[(a + b*\text{Log}[c*x^n])^p/x, x], x] - \text{Dist}[e/d, \text{Int}[(a + b*\text{Log}[c*x^n])^p/(d + e*x), x], x] \text{ /; } \text{FreeQ}[\{a, b, c, d, e, n\}, x] \ \&\& \ \text{IGtQ}[p, 0]$

Rule 2374

$\text{Int}[(\text{Log}[(d_.)*((e_.) + (f_.)(x_)^{(m_.)})])*(a_.) + \text{Log}[(c_.)(x_)^{(n_.)}](b_.)]^{(p_.)}/(x_), x_Symbol] \text{ :> } -\text{Simp}[(\text{PolyLog}[2, -(d*f*x^m)]*(a + b*\text{Log}[c*x^n])^p)/m, x] + \text{Dist}[(b*n*p)/m, \text{Int}[(\text{PolyLog}[2, -(d*f*x^m)]*(a + b*\text{Log}[c*x^n])^{(p - 1)})/x, x], x] \text{ /; } \text{FreeQ}[\{a, b, c, d, e, f, m, n\}, x] \ \&\& \ \text{IGtQ}[p, 0]$

&& EqQ[d*e, 1]

Rule 2375

Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.))/(x_), x_Symbol] := Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m - 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d, e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*((f_) + (g_.)*(x_)^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2396

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_)/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])^p/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] := Dist[1/e, Subst[Int[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFX_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFX, x]}, Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFX, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] := Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(e*i - d*j)/e + (j*x)/e]^m), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] := Simp[Log[x]*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Log[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x]*(f + g*Log[h*(i + j*x)^m))]/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] := Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f + g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] := -Simp[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/h, x] + Dist[(p*r*s*
```

$(b*c - a*d)/h$, $\text{Int}[(\text{Log}[-((b*c - a*d)/(d*(a + b*x)))]*\text{Log}[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^{(s - 1)})/((a + b*x)*(c + d*x)), x], x] /;$ $\text{FreeQ}\{a, b, c, d, e, f, g, h, p, q, r, s\}, x\}$ && $\text{NeQ}[b*c - a*d, 0]$ && $\text{EqQ}[p + q, 0]$ && $\text{EqQ}[b*g - a*h, 0]$ && $\text{IGtQ}[s, 0]$

Rule 2499

$\text{Int}[(\text{Log}[(e_.)*((f_.)*((a_.) + (b_.)*(x_.))^{(p_.)*((c_.) + (d_.)*(x_.))^{(q_.)})^{(r_.)}]*((s_.) + \text{Log}[(i_.)*((g_.) + (h_.)*(x_.))^{(n_.)}]*(t_.))^{(m_.)})/((j_.) + (k_.)*(x_.)), x_Symbol] :> \text{Simp}[(s + t*\text{Log}[i*(g + h*x)^n])^{(m + 1)}*\text{Log}[e*(f*(a + b*x)^p*(c + d*x)^q]^r]/(k*n*t*(m + 1)), x] + (-\text{Dist}[(b*p*r)/(k*n*t*(m + 1)), \text{Int}[(s + t*\text{Log}[i*(g + h*x)^n])^{(m + 1)}]/(a + b*x), x], x] - \text{Dist}[(d*q*r)/(k*n*t*(m + 1)), \text{Int}[(s + t*\text{Log}[i*(g + h*x)^n])^{(m + 1)}]/(c + d*x), x], x]) /;$ $\text{FreeQ}\{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r\}, x\}$ && $\text{NeQ}[b*c - a*d, 0]$ && $\text{EqQ}[h*j - g*k, 0]$ && $\text{IGtQ}[m, 0]$

Rule 2500

$\text{Int}[(\text{Log}[(e_.)*((f_.)*((a_.) + (b_.)*(x_.))^{(p_.)*((c_.) + (d_.)*(x_.))^{(q_.)})^{(r_.)}]*((s_.) + \text{Log}[(i_.)*((g_.) + (h_.)*(x_.))^{(n_.)}]*(t_.)))/((j_.) + (k_.)*(x_.)), x_Symbol] :> \text{Dist}[\text{Log}[e*(f*(a + b*x)^p*(c + d*x)^q]^r] - \text{Log}[(a + b*x)^{(p*r)}] - \text{Log}[(c + d*x)^{(q*r)}], \text{Int}[(s + t*\text{Log}[i*(g + h*x)^n])/(j + k*x), x], x] + (\text{Int}[(\text{Log}[(a + b*x)^{(p*r)}]* (s + t*\text{Log}[i*(g + h*x)^n]))/(j + k*x), x] + \text{Int}[(\text{Log}[(c + d*x)^{(q*r)}]* (s + t*\text{Log}[i*(g + h*x)^n]))/(j + k*x), x]) /;$ $\text{FreeQ}\{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r\}, x\}$ && $\text{NeQ}[b*c - a*d, 0]$

Rule 2506

$\text{Int}[\text{Log}[v]*\text{Log}[(e_.)*((f_.)*((a_.) + (b_.)*(x_.))^{(p_.)*((c_.) + (d_.)*(x_.))^{(q_.)})^{(r_.)}]^s]^{(s_.)}*(u_), x_Symbol] :> \text{With}\{g = \text{Simplify}[(v - 1)*(c + d*x)/(a + b*x)], h = \text{Simplify}[u*(a + b*x)*(c + d*x)]\}, -\text{Simp}[(h*\text{PolyLog}[2, 1 - v]*\text{Log}[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/(b*c - a*d), x] + \text{Dist}[h*p*r*s, \text{Int}[(\text{PolyLog}[2, 1 - v]*\text{Log}[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^{(s - 1)})/((a + b*x)*(c + d*x)), x], x] /;$ $\text{FreeQ}\{g, h\}, x\}$ /; $\text{FreeQ}\{a, b, c, d, e, f, p, q, r, s\}, x\}$ && $\text{NeQ}[b*c - a*d, 0]$ && $\text{IGtQ}[s, 0]$ && $\text{EqQ}[p + q, 0]$

Rule 2507

$\text{Int}[\text{Log}[(e_.)*((f_.)*((a_.) + (b_.)*(x_.))^{(p_.)*((c_.) + (d_.)*(x_.))^{(q_.)})^{(r_.)}]^s]^{(s_.)}*\text{Log}[(i_.)*((j_.)*((g_.) + (h_.)*(x_.))^{(t_.)})^{(u_.)}]*(v_), x_Symbol] :> \text{With}\{k = \text{Simplify}[v*(a + b*x)*(c + d*x)]\}, \text{Simp}[(k*\text{Log}[i*(j*(g + h*x)^t]^u)*\text{Log}[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^{(s + 1)})/(p*r*(s + 1)*(b*c - a*d)), x] - \text{Dist}[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), \text{Int}[\text{Log}[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^{(s + 1)}/(g + h*x), x], x] /;$ $\text{FreeQ}[k, x]$ /; $\text{FreeQ}\{$

a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
EqQ[p + q, 0] && NeQ[s, -1]

Rule 2524

Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0]

Rule 2525

Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]

Rule 2528

Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]

Rule 6589

Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d, e, n, p}, x] && EqQ[b*d, a*e]

Rule 6610

Int[(u_)*PolyLog[n_, v_], x_Symbol] := With[{w = DerivativeDivides[v, u*v, x]}, Simp[w*PolyLog[n + 1, v], x] /; !FalseQ[w]] /; FreeQ[n, x]

Rule 6688

Int[u_, x_Symbol] := With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; SimplifyIntegrandQ[v, u, x]]

Rule 6742

```
Int[u_, x_Symbol] := With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]  
]
```

Rubi steps

$$\begin{aligned}
\int \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(200c + 200dx)^2(ag + bgx)^3} dx &= \int \left[\frac{b^2 \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{40000(bc - ad)^2 g^3 (a + bx)^3} - \frac{b^2 d \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{20000(bc - ad)^3 g^3 (a + bx)^2} + \frac{3b^2 d^2 \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{40000(bc - ad)^4 g^3} \right] dx \\
&= \frac{(3b^2 d^2) \int \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{a+bx} dx}{40000(bc - ad)^4 g^3} - \frac{(3bd^3) \int \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{c+dx} dx}{40000(bc - ad)^4 g^3} - \frac{(b^2 d) \int \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{a+bx} dx}{40000(bc - ad)^4 g^3} \\
&= -\frac{b \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{80000(bc - ad)^2 g^3 (a + bx)^2} + \frac{bd \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{20000(bc - ad)^3 g^3 (a + bx)} + \frac{d^2 \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{40000(bc - ad)^4 g^3} \\
&= -\frac{b \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{80000(bc - ad)^2 g^3 (a + bx)^2} + \frac{bd \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{20000(bc - ad)^3 g^3 (a + bx)} + \frac{d^2 \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{40000(bc - ad)^4 g^3} \\
&= -\frac{b \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{80000(bc - ad)^2 g^3 (a + bx)^2} + \frac{bd \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{20000(bc - ad)^3 g^3 (a + bx)} + \frac{d^2 \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{40000(bc - ad)^4 g^3} \\
&= -\frac{b \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{80000(bc - ad)^2 g^3 (a + bx)^2} + \frac{bd \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{20000(bc - ad)^3 g^3 (a + bx)} + \frac{d^2 \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{40000(bc - ad)^4 g^3} \\
&= -\frac{bBn \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{80000(bc - ad)^2 g^3 (a + bx)^2} + \frac{bBdn \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{8000(bc - ad)^3 g^3 (a + bx)} - \frac{Bd^2 n \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{20000(bc - ad)^4 g^3} \\
&= -\frac{3bB^2 d^2 \log(a + bx) \log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{40000(bc - ad)^4 g^3} - \frac{bBn \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{80000(bc - ad)^2 g^3 (a + bx)^2} + \frac{bBd^2 n \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{20000(bc - ad)^4 g^3} \\
&= -\frac{3bB^2 d^2 \log\left(-\frac{bc-ad}{d(a+bx)}\right) \log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{40000(bc - ad)^4 g^3} - \frac{3bB^2 d^2 \log(a + bx) \log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{40000(bc - ad)^4 g^3} \\
&= -\frac{bB^2 n^2}{160000(bc - ad)^2 g^3 (a + bx)^2} + \frac{11bB^2 dn^2}{80000(bc - ad)^3 g^3 (a + bx)} + \frac{Bd^2 n^2}{20000(bc - ad)^4 g^3} \\
&= -\frac{bB^2 n^2}{160000(bc - ad)^2 g^3 (a + bx)^2} + \frac{11bB^2 dn^2}{80000(bc - ad)^3 g^3 (a + bx)} + \frac{Bd^2 n^2}{20000(bc - ad)^4 g^3}
\end{aligned}$$

Mathematica [B] time = 1.99, size = 1340, normalized size = 2.39

$$4bB^2d^2n^2(a+bx)^2(c+dx)\log^3\left(\frac{a+bx}{c+dx}\right)+2Bn\left(6Ad^3x^3b^3+3Bd^3nx^3b^3+6Acd^2x^2b^3+9Bcd^2nx^2b^3-Bc^3nb^3+3\right)$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)^3*(c*i + d*i*x)^2), x]

[Out] (4*b*B^2*d^2*n^2*(a + b*x)^2*(c + d*x)*Log[(a + b*x)/(c + d*x)]^3 + 2*B*n*L
og[(a + b*x)/(c + d*x)]^2*(6*a^2*A*b*c*d^2 - b^3*B*c^3*n + 6*a*b^2*B*c^2*d*
n - 2*a^3*B*d^3*n + 12*a*A*b^2*c*d^2*x + 6*a^2*A*b*d^3*x + 3*b^3*B*c^2*d*n*
x + 12*a*b^2*B*c*d^2*n*x - 6*a^2*b*B*d^3*n*x + 6*A*b^3*c*d^2*x^2 + 12*a*A*b
^2*d^3*x^2 + 9*b^3*B*c*d^2*n*x^2 + 6*A*b^3*d^3*x^3 + 3*b^3*B*d^3*n*x^3 + 6*
b*B*d^2*(a + b*x)^2*(c + d*x)*Log[e*((a + b*x)/(c + d*x))^n] - 6*b*B*d^2*n*
(a + b*x)^2*(c + d*x)*Log[(a + b*x)/(c + d*x)]) + 2*b*d*(b*c - a*d)*(a + b*
x)*(c + d*x)*(4*A^2 + 10*A*B*n + 11*B^2*n^2 + 4*B^2*Log[e*((a + b*x)/(c + d
*x))^n]^2 - 2*B*n*(4*A + 5*B*n)*Log[(a + b*x)/(c + d*x)] + 4*B^2*n^2*Log[(a
+ b*x)/(c + d*x)]^2 + 2*B*Log[e*((a + b*x)/(c + d*x))^n]*(4*A + 5*B*n - 4*
B*n*Log[(a + b*x)/(c + d*x)])) - b*(b*c - a*d)^2*(c + d*x)*(2*A^2 + 2*A*B*n
+ B^2*n^2 + 2*B^2*Log[e*((a + b*x)/(c + d*x))^n]^2 - 2*B*n*(2*A + B*n)*Log
[(a + b*x)/(c + d*x)] + 2*B^2*n^2*Log[(a + b*x)/(c + d*x)]^2 + 2*B*Log[e*((
a + b*x)/(c + d*x))^n]*(2*A + B*n - 2*B*n*Log[(a + b*x)/(c + d*x)])) + 6*b*
d^2*(a + b*x)^2*(c + d*x)*Log[a + b*x]*(2*A^2 + 2*A*B*n + 5*B^2*n^2 + 2*B^2
Log[e((a + b*x)/(c + d*x))^n]^2 - 2*B*n*(2*A + B*n)*Log[(a + b*x)/(c + d
x)] + 2*B^2*n^2*Log[(a + b*x)/(c + d*x)]^2 + 2*B*Log[e*((a + b*x)/(c + d*x)
)^n]*(2*A + B*n - 2*B*n*Log[(a + b*x)/(c + d*x)])) + 2*B*(b*c - a*d)*n*Log[
(a + b*x)/(c + d*x)]*(2*b*d*(a + b*x)*(c + d*x)*(4*A + 5*B*n + 4*B*Log[e*((
a + b*x)/(c + d*x))^n] - 4*B*n*Log[(a + b*x)/(c + d*x)]) - b*(b*c - a*d)*(c
+ d*x)*(2*A + B*n + 2*B*Log[e*((a + b*x)/(c + d*x))^n] - 2*B*n*Log[(a + b*
x)/(c + d*x)]) + 4*d^2*(a + b*x)^2*(A - B*n + B*Log[e*((a + b*x)/(c + d*x))
^n] - B*n*Log[(a + b*x)/(c + d*x)])) + 4*d^2*(b*c - a*d)*(a + b*x)^2*(A^2 -
2*A*B*n + 2*B^2*n^2 + B^2*Log[e*((a + b*x)/(c + d*x))^n]^2 + 2*B*n*(-A + B
*n)*Log[(a + b*x)/(c + d*x)] + B^2*n^2*Log[(a + b*x)/(c + d*x)]^2 - 2*B*Log
[e*((a + b*x)/(c + d*x))^n]*(-A + B*n + B*n*Log[(a + b*x)/(c + d*x)])) - 6*
b*d^2*(a + b*x)^2*(c + d*x)*(2*A^2 + 2*A*B*n + 5*B^2*n^2 + 2*B^2*Log[e*((a
+ b*x)/(c + d*x))^n]^2 - 2*B*n*(2*A + B*n)*Log[(a + b*x)/(c + d*x)] + 2*B^2
*n^2*Log[(a + b*x)/(c + d*x)]^2 + 2*B*Log[e*((a + b*x)/(c + d*x))^n]*(2*A +
B*n - 2*B*n*Log[(a + b*x)/(c + d*x)]))*Log[c + d*x]/(4*(b*c - a*d)^4*g^3*
i^2*(a + b*x)^2*(c + d*x))

fricas [B] time = 1.07, size = 2052, normalized size = 3.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^3/(d*i*x+c*i)^2,x,
algorithm="fricas")

[Out]
$$\begin{aligned} & -1/4*(2*A^2*b^3*c^3 - 12*A^2*a*b^2*c^2*d + 6*A^2*a^2*b*c*d^2 + 4*A^2*a^3*d^3 \\ & - 4*(B^2*b^3*d^3*n^2*x^3 + B^2*a^2*b*c*d^2*n^2 + (B^2*b^3*c*d^2 + 2*B^2*a \\ & *b^2*d^3)*n^2*x^2 + (2*B^2*a*b^2*c*d^2 + B^2*a^2*b*d^3)*n^2*x)*\log((b*x + a) \\ &)/(d*x + c))^3 + (B^2*b^3*c^3 - 24*B^2*a*b^2*c^2*d + 15*B^2*a^2*b*c*d^2 + 8 \\ & *B^2*a^3*d^3)*n^2 - 6*(2*A^2*b^3*c*d^2 - 2*A^2*a*b^2*d^3 + 5*(B^2*b^3*c*d^2 \\ & - B^2*a*b^2*d^3)*n^2 + 2*(A*B*b^3*c*d^2 - A*B*a*b^2*d^3)*n)*x^2 + 2*(B^2*b \\ & ^3*c^3 - 6*B^2*a*b^2*c^2*d + 3*B^2*a^2*b*c*d^2 + 2*B^2*a^3*d^3 - 6*(B^2*b^3 \\ & *c*d^2 - B^2*a*b^2*d^3)*x^2 - 3*(B^2*b^3*c^2*d + 2*B^2*a*b^2*c*d^2 - 3*B^2*a \\ & ^2*b*d^3)*x - 6*(B^2*b^3*d^3*x^3 + B^2*a^2*b*c*d^2 + (B^2*b^3*c*d^2 + 2*B^2 \\ & *a*b^2*d^3)*x^2 + (2*B^2*a*b^2*c*d^2 + B^2*a^2*b*d^3)*x)*\log((b*x + a)/(d*x \\ & + c))*\log(e)^2 - 2*(6*A*B*a^2*b*c*d^2*n + 3*(B^2*b^3*d^3*n^2 + 2*A*B*b^3 \\ & *d^3*n)*x^3 - (B^2*b^3*c^3 - 6*B^2*a*b^2*c^2*d + 2*B^2*a^3*d^3)*n^2 + 3*(3*B^2 \\ & *b^3*c*d^2*n^2 + 2*(A*B*b^3*c*d^2 + 2*A*B*a*b^2*d^3)*n)*x^2 + 3*((B^2*b^3 \\ & *c^2*d + 4*B^2*a*b^2*c*d^2 - 2*B^2*a^2*b*d^3)*n^2 + 2*(2*A*B*a*b^2*c*d^2 + \\ & A*B*a^2*b*d^3)*n)*x)*\log((b*x + a)/(d*x + c))^2 + 2*(A*B*b^3*c^3 - 12*A*B \\ & *a*b^2*c^2*d + 15*A*B*a^2*b*c*d^2 - 4*A*B*a^3*d^3)*n - 3*(2*A^2*b^3*c^2*d + \\ & 4*A^2*a*b^2*c*d^2 - 6*A^2*a^2*b*d^3 + (7*B^2*b^3*c^2*d + 6*B^2*a*b^2*c*d^2 \\ & - 13*B^2*a^2*b*d^3)*n^2 + 2*(3*A*B*b^3*c^2*d - 2*A*B*a*b^2*c*d^2 - A*B*a^2 \\ & *b*d^3)*n)*x + 2*(2*A*B*b^3*c^3 - 12*A*B*a*b^2*c^2*d + 6*A*B*a^2*b*c*d^2 + 4 \\ & *A*B*a^3*d^3 - 6*(2*A*B*b^3*c*d^2 - 2*A*B*a*b^2*d^3 + (B^2*b^3*c*d^2 - B^2*a \\ & *b^2*d^3)*n)*x^2 - 6*(B^2*b^3*d^3*n*x^3 + B^2*a^2*b*c*d^2*n + (B^2*b^3*c*d \\ & ^2 + 2*B^2*a*b^2*d^3)*n*x^2 + (2*B^2*a*b^2*c*d^2 + B^2*a^2*b*d^3)*n*x)*\log(\\ & (b*x + a)/(d*x + c))^2 + (B^2*b^3*c^3 - 12*B^2*a*b^2*c^2*d + 15*B^2*a^2*b*c \\ & *d^2 - 4*B^2*a^3*d^3)*n - 3*(2*A*B*b^3*c^2*d + 4*A*B*a*b^2*c*d^2 - 6*A*B*a^2 \\ & *b*d^3 + (3*B^2*b^3*c^2*d - 2*B^2*a*b^2*c*d^2 - B^2*a^2*b*d^3)*n)*x - 2*(6 \\ & *A*B*a^2*b*c*d^2 + 3*(B^2*b^3*d^3*n + 2*A*B*b^3*d^3)*x^3 + 3*(3*B^2*b^3*c*d \\ & ^2*n + 2*A*B*b^3*c*d^2 + 4*A*B*a*b^2*d^3)*x^2 - (B^2*b^3*c^3 - 6*B^2*a*b^2 \\ & *c^2*d + 2*B^2*a^3*d^3)*n + 3*(4*A*B*a*b^2*c*d^2 + 2*A*B*a^2*b*d^3 + (B^2*b^3 \\ & *c^2*d + 4*B^2*a*b^2*c*d^2 - 2*B^2*a^2*b*d^3)*n)*x)*\log((b*x + a)/(d*x + c \\ &))*\log(e) - 2*(6*A^2*a^2*b*c*d^2 + 3*(5*B^2*b^3*d^3*n^2 + 2*A*B*b^3*d^3*n \\ & + 2*A^2*b^3*d^3)*x^3 - (B^2*b^3*c^3 - 12*B^2*a*b^2*c^2*d - 4*B^2*a^3*d^3)*n \\ & ^2 + 3*(6*A*B*b^3*c*d^2*n + 2*A^2*b^3*c*d^2 + 4*A^2*a*b^2*d^3 + (7*B^2*b^3 \\ & *c*d^2 + 8*B^2*a*b^2*d^3)*n^2)*x^2 - 2*(A*B*b^3*c^3 - 6*A*B*a*b^2*c^2*d + 2* \\ & A*B*a^3*d^3)*n + 3*(4*A^2*a*b^2*c*d^2 + 2*A^2*a^2*b*d^3 + (3*B^2*b^3*c^2*d \\ & + 8*B^2*a*b^2*c*d^2 + 4*B^2*a^2*b*d^3)*n^2 + 2*(A*B*b^3*c^2*d + 4*A*B*a*b^2 \\ & *c*d^2 - 2*A*B*a^2*b*d^3)*n)*x)*\log((b*x + a)/(d*x + c)))/(b^6*c^4*d - 4*a \\ & *b^5*c^3*d^2 + 6*a^2*b^4*c^2*d^3 - 4*a^3*b^3*c*d^4 + a^4*b^2*d^5)*g^3*i^2*x \\ & ^3 + (b^6*c^5 - 2*a*b^5*c^4*d - 2*a^2*b^4*c^3*d^2 + 8*a^3*b^3*c^2*d^3 - 7*a^4 \\ & *b^2*c*d^4 + 2*a^5*b*d^5)*g^3*i^2*x^2 + (2*a*b^5*c^5 - 7*a^2*b^4*c^4*d + \\ & 8*a^3*b^3*c^3*d^2 - 2*a^4*b^2*c^2*d^3 - 2*a^5*b*c*d^4 + a^6*d^5)*g^3*i^2*x \end{aligned}$$

+ (a²*b⁴*c⁵ - 4*a³*b³*c⁴*d + 6*a⁴*b²*c³*d² - 4*a⁵*b*c²*d³ + a⁶*c*d⁴)*g³*i²)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^3/(d*i*x+c*i)^2,x,
algorithm="giac")

[Out] Timed out

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{\left(B \ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right) + A\right)^2}{(bgx + ag)^3 (dix + ci)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^3/(d*i*x+c*i)^2,x)

[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^3/(d*i*x+c*i)^2,x)

maxima [B] time = 4.81, size = 4198, normalized size = 7.50

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^3/(d*i*x+c*i)^2,x,
algorithm="maxima")

[Out] 1/2*B^2*((6*b^2*d^2*x^2 - b^2*c^2 + 5*a*b*c*d + 2*a^2*d^2 + 3*(b^2*c*d + 3*a*b*d^2)*x)/((b^5*c^3*d - 3*a*b^4*c^2*d^2 + 3*a^2*b^3*c*d^3 - a^3*b^2*d^4)*g^3*i^2*x^3 + (b^5*c^4 - a*b^4*c^3*d - 3*a^2*b^3*c^2*d^2 + 5*a^3*b^2*c*d^3 - 2*a^4*b*d^4)*g^3*i^2*x^2 + (2*a*b^4*c^4 - 5*a^2*b^3*c^3*d + 3*a^3*b^2*c^2*d^2 + a^4*b*c*d^3 - a^5*d^4)*g^3*i^2*x + (a^2*b^3*c^4 - 3*a^3*b^2*c^3*d + 3*a^4*b*c^2*d^2 - a^5*c*d^3)*g^3*i^2) + 6*b*d^2*log(b*x + a)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^3*i^2) - 6*b*d^2*log(d*x + c)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^3*i^2))*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)^2 + A*B*((6*b^2*d^2*x^2 - b^2*c^2 + 5*a*b*c*d + 2*a^2*d^2 + 3*(b^2*c*d + 3*a*b*d^2)*x)/((b^5*c^3*d - 3*a*b^4*c^2*d^2 + 3*a^2*b^3*c*d^3 - a^3*b^2*d^4)*g^3*i^2*x^3

$$\begin{aligned}
& + (b^5c^4 - ab^4c^3d - 3a^2b^3c^2d^2 + 5a^3b^2cd^3 - 2a^4bd^4)g^3i^2x^2 + (2ab^4c^4 - 5a^2b^3c^3d + 3a^3b^2c^2d^2 + a^4b^1c^1d^3 - a^5d^4)g^3i^2x \\
& + (a^2b^3c^4 - 3a^3b^2c^3d + 3a^4b^1c^2d^2 - a^5cd^3)g^3i^2) + 6bd^2\log(bx + a)/((b^4c^4 - 4a^2b^3c^3d + 6a^3b^2c^2d^2 - 4a^4bd^4) \\
& + 6a^2b^2c^2d^2 - 4a^3b^1cd^3 + a^4d^4)g^3i^2) - 6bd^2\log(dx + c)/((b^4c^4 - 4a^2b^3c^3d + 6a^3b^2c^2d^2 - 4a^4bd^4) \\
&)g^3i^2))*\log(e*(bx/(dx + c) + a/(dx + c))^n) - 1/4*((b^3c^3 - 24a^2b^2c^2d + 15a^2b^1cd^2 + 8a^3d^3 - 4*(b^3d^3x^3 + a^2b^1cd^2 + (b^3 \\
& *cd^2 + 2ab^2d^3)*x^2 + (2ab^2cd^2 + a^2bd^3)*x)*\log(bx + a)^3 + 4*(b^3d^3x^3 + a^2b^1cd^2 + (b^3cd^2 + 2ab^2d^3)*x^2 + (2ab^2cd^2 + \\
& a^2bd^3)*x)*\log(dx + c)^3 - 30*(b^3cd^2 - ab^2d^3)*x^2 + 6*(b^3d^3x^3 + a^2b^1cd^2 + (b^3cd^2 + 2ab^2d^3)*x^2 + (2ab^2cd^2 + \\
& a^2bd^3)*x)*\log(bx + a)^2 + 6*(b^3d^3x^3 + a^2b^1cd^2 + (b^3cd^2 + 2ab^2d^3)*x^2 + (2ab^2cd^2 + a^2bd^3)*x) - 2*(b^3d^3x^3 + a^2b^1c \\
& *d^2 + (b^3cd^2 + 2ab^2d^3)*x^2 + (2ab^2cd^2 + a^2bd^3)*x)*\log(bx + a))*\log(dx + c)^2 - 3*(7b^3c^2d + 6a^2b^2cd^2 - 13a^2bd^3)*x \\
& - 30*(b^3d^3x^3 + a^2b^1cd^2 + (b^3cd^2 + 2ab^2d^3)*x^2 + (2ab^2cd^2 + a^2bd^3)*x)*\log(bx + a) + 6*(5b^3d^3x^3 + 5a^2b^1cd^2 + 5*(\\
& b^3cd^2 + 2ab^2d^3)*x^2 + 2*(b^3d^3x^3 + a^2b^1cd^2 + (b^3cd^2 + 2ab^2d^3)*x^2 + (2ab^2cd^2 + a^2bd^3)*x) - 2*(b^3d^3x^3 + a^2b^1c \\
& *d^3)*x^2 + (2ab^2cd^2 + a^2bd^3)*x)*\log(bx + a))*\log(dx + c))*n^2/(a^2b^4c^5g^3i^2 - 4a^3b^3c^4dg^3i^2 + 6a^4b^2c^3d^2g^3i^2 \\
& - 4a^5b^1cd^3g^3i^2 + a^6cd^4g^3i^2 + (b^6c^4dg^3i^2 - 4a^5b^5c^3d^2g^3i^2 + 6a^2b^4c^2d^3g^3i^2 - 4a^3b^3cd^4g^3i^2 + \\
& a^4b^2d^5g^3i^2)*x^3 + (b^6c^5g^3i^2 - 2a^5b^5c^4dg^3i^2 - 2a^2b^4c^3d^2g^3i^2 + 8a^3b^3c^2d^3g^3i^2 - 7a^4b^2cd^4g^3i^2 \\
& + 2a^5bd^5g^3i^2)*x^2 + (2a^5b^5c^5g^3i^2 - 7a^2b^4c^4dg^3i^2 + 8a^3b^3c^3d^2g^3i^2 - 2a^4b^2c^2d^3g^3i^2 - 2a^5b^1cd^4g^3i^2 \\
& + a^6d^5g^3i^2)*x) + 2*(b^3c^3 - 12a^2b^2c^2d + 15a^2b^1cd^2 - 4a^3d^3 - 6*(b^3cd^2 - ab^2d^3)*x^2 + 6*(b^3d^3x^3 + a^2b^1cd^2 \\
& + (b^3cd^2 + 2ab^2d^3)*x^2 + (2ab^2cd^2 + a^2bd^3)*x)*\log(bx + a)^2 + 6*(b^3d^3x^3 + a^2b^1cd^2 + (b^3cd^2 + 2ab^2d^3)*x^2 + (2a \\
& *b^2cd^2 + a^2bd^3)*x)*\log(dx + c)^2 - 3*(3b^3c^2d - 2a^2b^2cd^2 - a^2bd^3)*x - 6*(b^3d^3x^3 + a^2b^1cd^2 + (b^3cd^2 + 2ab^2d^3)*x \\
& ^2 + (2ab^2cd^2 + a^2bd^3)*x)*\log(bx + a) + 6*(b^3d^3x^3 + a^2b^1cd^2 + (b^3cd^2 + 2ab^2d^3)*x^2 + (2ab^2cd^2 + a^2bd^3)*x) - 2*(b \\
& ^3d^3x^3 + a^2b^1cd^2 + (b^3cd^2 + 2ab^2d^3)*x^2 + (2ab^2cd^2 + a^2bd^3)*x)*\log(bx + a))*\log(dx + c))*n*\log(e*(bx/(dx + c) + a/(dx \\
& + c))^n)/(a^2b^4c^5g^3i^2 - 4a^3b^3c^4dg^3i^2 + 6a^4b^2c^3d^2g^3i^2 - 4a^5b^1cd^3g^3i^2 + a^6cd^4g^3i^2 + (b^6c^4dg^3i^2 \\
& - 4a^5b^5c^3d^2g^3i^2 + 6a^2b^4c^2d^3g^3i^2 - 4a^3b^3cd^4g^3i^2 + a^4b^2d^5g^3i^2)*x^3 + (b^6c^5g^3i^2 - 2a^5b^5c^4dg^3i^2 \\
& - 2a^2b^4c^3d^2g^3i^2 + 8a^3b^3c^2d^3g^3i^2 - 7a^4b^2cd^4g^3i^2 + 2a^5bd^5g^3i^2)*x^2 + (2a^5b^5c^5g^3i^2 - 7a^2b^4c^4dg^3i^2
\end{aligned}$$

```

*g^3*i^2 + 8*a^3*b^3*c^3*d^2*g^3*i^2 - 2*a^4*b^2*c^2*d^3*g^3*i^2 - 2*a^5*b*
c*d^4*g^3*i^2 + a^6*d^5*g^3*i^2)*x)*B^2 - 1/2*(b^3*c^3 - 12*a*b^2*c^2*d +
15*a^2*b*c*d^2 - 4*a^3*d^3 - 6*(b^3*c*d^2 - a*b^2*d^3)*x^2 + 6*(b^3*d^3*x^3
+ a^2*b*c*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3
)*x)*log(b*x + a)^2 + 6*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2*a*b^2*d
^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x)*log(d*x + c)^2 - 3*(3*b^3*c^2*d -
2*a*b^2*c*d^2 - a^2*b*d^3)*x - 6*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 +
2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x)*log(b*x + a) + 6*(b^3*d^3
*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b
*d^3)*x - 2*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2
*a*b^2*c*d^2 + a^2*b*d^3)*x)*log(b*x + a))*log(d*x + c))*A*B*n/(a^2*b^4*c^5
*g^3*i^2 - 4*a^3*b^3*c^4*d*g^3*i^2 + 6*a^4*b^2*c^3*d^2*g^3*i^2 - 4*a^5*b*c^
2*d^3*g^3*i^2 + a^6*c*d^4*g^3*i^2 + (b^6*c^4*d*g^3*i^2 - 4*a*b^5*c^3*d^2*g^
3*i^2 + 6*a^2*b^4*c^2*d^3*g^3*i^2 - 4*a^3*b^3*c*d^4*g^3*i^2 + a^4*b^2*d^5*g
^3*i^2)*x^3 + (b^6*c^5*g^3*i^2 - 2*a*b^5*c^4*d*g^3*i^2 - 2*a^2*b^4*c^3*d^2*
g^3*i^2 + 8*a^3*b^3*c^2*d^3*g^3*i^2 - 7*a^4*b^2*c*d^4*g^3*i^2 + 2*a^5*b*d^5
*g^3*i^2)*x^2 + (2*a*b^5*c^5*g^3*i^2 - 7*a^2*b^4*c^4*d*g^3*i^2 + 8*a^3*b^3*
c^3*d^2*g^3*i^2 - 2*a^4*b^2*c^2*d^3*g^3*i^2 - 2*a^5*b*c*d^4*g^3*i^2 + a^6*d
^5*g^3*i^2)*x) + 1/2*A^2*((6*b^2*d^2*x^2 - b^2*c^2 + 5*a*b*c*d + 2*a^2*d^2
+ 3*(b^2*c*d + 3*a*b*d^2)*x)/((b^5*c^3*d - 3*a*b^4*c^2*d^2 + 3*a^2*b^3*c*d^
3 - a^3*b^2*d^4)*g^3*i^2*x^3 + (b^5*c^4 - a*b^4*c^3*d - 3*a^2*b^3*c^2*d^2 +
5*a^3*b^2*c*d^3 - 2*a^4*b*d^4)*g^3*i^2*x^2 + (2*a*b^4*c^4 - 5*a^2*b^3*c^3*
d + 3*a^3*b^2*c^2*d^2 + a^4*b*c*d^3 - a^5*d^4)*g^3*i^2*x + (a^2*b^3*c^4 - 3
*a^3*b^2*c^3*d + 3*a^4*b*c^2*d^2 - a^5*c*d^3)*g^3*i^2) + 6*b*d^2*log(b*x +
a)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)
*g^3*i^2) - 6*b*d^2*log(d*x + c)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*
d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^3*i^2))

```

mupad [B] time = 10.28, size = 1784, normalized size = 3.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```

[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))^2/((a*g + b*g*x)^3*(c*i + d*i*x)
^2),x)

```

```

[Out] (B^2*b*d^2*log(e*((a + b*x)/(c + d*x))^n)^3)/(g^3*i^2*n*(a*d - b*c)^4) - lo
g(e*((a + b*x)/(c + d*x))^n)^2*((B^2*(2*a*d + b*c))/(2*(a^2*d^2 + b^2*c^2
- 2*a*b*c*d)) + (3*B^2*b*d*x)/(2*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)))/(x*(a^2*
d*g^3*i^2 + 2*a*b*c*g^3*i^2) + x^2*(b^2*c*g^3*i^2 + 2*a*b*d*g^3*i^2) + a^2*
c*g^3*i^2 + b^2*d*g^3*i^2*x^3) - (3*B*b*d^2*(2*A + B*n))/(2*g^3*i^2*n*(a*d
- b*c)^4) + (3*B^2*b*d^2*(b*g^3*i^2*n*x^2*(a*d - b*c) + (a*c*g^3*i^2*n*(a*d
- b*c))/d + (g^3*i^2*n*x*(a*d + b*c)*(a*d - b*c))/d)/(g^3*i^2*n*(a*d - b*
c)^4*(x*(a^2*d*g^3*i^2 + 2*a*b*c*g^3*i^2) + x^2*(b^2*c*g^3*i^2 + 2*a*b*d*g^
3*i^2) + a^2*c*g^3*i^2 + b^2*d*g^3*i^2*x^3))) - ((4*A^2*a^2*d^2 - 2*A^2*b^2

```

$$\begin{aligned}
& *c^2 + 8*B^2*a^2*d^2*n^2 - B^2*b^2*c^2*n^2 + 10*A^2*a*b*c*d - 8*A*B*a^2*d^2 \\
& *n - 2*A*B*b^2*c^2*n + 23*B^2*a*b*c*d*n^2 + 22*A*B*a*b*c*d*n)/(2*(a*d - b*c \\
&)) + (3*x^2*(2*A^2*b^2*d^2 + 5*B^2*b^2*d^2*n^2 + 2*A*B*b^2*d^2*n))/(a*d - b \\
& *c) + (3*x*(6*A^2*a*b*d^2 + 2*A^2*b^2*c*d + 13*B^2*a*b*d^2*n^2 + 7*B^2*b^2*c \\
& *d*n^2 + 2*A*B*a*b*d^2*n + 6*A*B*b^2*c*d*n))/(2*(a*d - b*c))/(x*(2*a^4*d^ \\
& 3*g^3*i^2 + 4*a*b^3*c^3*g^3*i^2 - 6*a^2*b^2*c^2*d*g^3*i^2) + x^2*(2*b^4*c^3 \\
& *g^3*i^2 + 4*a^3*b*d^3*g^3*i^2 - 6*a^2*b^2*c*d^2*g^3*i^2) + x^3*(2*a^2*b^2*d^ \\
& 3*g^3*i^2 + 2*b^4*c^2*d*g^3*i^2 - 4*a*b^3*c*d^2*g^3*i^2) + 2*a^2*b^2*c^3*g^ \\
& 3*i^2 + 2*a^4*c*d^2*g^3*i^2 - 4*a^3*b*c^2*d*g^3*i^2) - (b*d^2*atan((b*d^2 \\
& *(2*A^2 + 5*B^2*n^2 + 2*A*B*n)*(2*a^4*d^4*g^3*i^2 - 2*b^4*c^4*g^3*i^2 + 4*a \\
& *b^3*c^3*d*g^3*i^2 - 4*a^3*b*c*d^3*g^3*i^2)*3i)/(2*g^3*i^2*(a*d - b*c)^4*(6 \\
& *A^2*b*d^2 + 15*B^2*b*d^2*n^2 + 6*A*B*b*d^2*n)) + (b^2*d^3*x*(2*A^2 + 5*B^2 \\
& *n^2 + 2*A*B*n)*(a^3*d^3*g^3*i^2 - b^3*c^3*g^3*i^2 + 3*a*b^2*c^2*d*g^3*i^2 \\
& - 3*a^2*b*c*d^2*g^3*i^2)*6i)/(g^3*i^2*(a*d - b*c)^4*(6*A^2*b*d^2 + 15*B^2*b \\
& *d^2*n^2 + 6*A*B*b*d^2*n))*(2*A^2 + 5*B^2*n^2 + 2*A*B*n)*3i)/(g^3*i^2*(a*d \\
& - b*c)^4) - log(e*((a + b*x)/(c + d*x))^n)*(((B^2*b*c*n)/2 - 2*B^2*a*d*n - \\
& x*((3*B^2*b*d*n)/2 - 3*A*B*b*d) + 2*A*B*a*d + A*B*b*c)/(x*(a^4*d^3*g^3*i^2 \\
& + 2*a*b^3*c^3*g^3*i^2 - 3*a^2*b^2*c^2*d*g^3*i^2) + x^2*(b^4*c^3*g^3*i^2 + \\
& 2*a^3*b*d^3*g^3*i^2 - 3*a^2*b^2*c*d^2*g^3*i^2) + x^3*(a^2*b^2*d^3*g^3*i^2 + \\
& b^4*c^2*d*g^3*i^2 - 2*a*b^3*c*d^2*g^3*i^2) + a^2*b^2*c^3*g^3*i^2 + a^4*c*d \\
& ^2*g^3*i^2 - 2*a^3*b*c^2*d*g^3*i^2) + (3*B*b*d^2*(2*A + B*n)*(b*g^3*i^2*n*x \\
& ^2*(a*d - b*c)^3 + (g^3*i^2*n*x*(a*d + b*c)*(a*d - b*c)^3)/d + (a*c*g^3*i^2 \\
& *n*(a*d - b*c)^3)/d))/(g^3*i^2*n*(a*d - b*c)^4*(x*(a^4*d^3*g^3*i^2 + 2*a*b^ \\
& 3*c^3*g^3*i^2 - 3*a^2*b^2*c^2*d*g^3*i^2) + x^2*(b^4*c^3*g^3*i^2 + 2*a^3*b*d \\
& ^3*g^3*i^2 - 3*a^2*b^2*c*d^2*g^3*i^2) + x^3*(a^2*b^2*d^3*g^3*i^2 + b^4*c^2*d \\
& *g^3*i^2 - 2*a*b^3*c*d^2*g^3*i^2) + a^2*b^2*c^3*g^3*i^2 + a^4*c*d^2*g^3*i^ \\
& 2 - 2*a^3*b*c^2*d*g^3*i^2)))
\end{aligned}$$

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c)**n))**2/(b*g*x+a*g)**3/(d*i*x+c*i)**2, x)

[Out] Timed out

$$3.201 \quad \int \frac{\left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag+bgx)^4 (ci+dix)^2} dx$$

Optimal. Leaf size=729

$$\frac{b^4(c+dx)^3 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)^2}{3g^4 i^2 (a+bx)^3 (bc-ad)^5} - \frac{2b^4 B n (c+dx)^3 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{9g^4 i^2 (a+bx)^3 (bc-ad)^5} + \frac{2b^3 d (c+dx)^2 \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{g^4 i^2 (a+bx)^2 (bc-ad)^5}$$

[Out] $-2*A*B*d^4*n*(b*x+a)/(-a*d+b*c)^5/g^4/i^2/(d*x+c)+2*B^2*d^4*n^2*(b*x+a)/(-a*d+b*c)^5/g^4/i^2/(d*x+c)-12*b^2*B^2*d^2*n^2*(d*x+c)/(-a*d+b*c)^5/g^4/i^2/(b*x+a)+b^3*B^2*d*n^2*(d*x+c)^2/(-a*d+b*c)^5/g^4/i^2/(b*x+a)^2-2/27*b^4*B^2*n^2*(d*x+c)^3/(-a*d+b*c)^5/g^4/i^2/(b*x+a)^3-2*B^2*d^4*n*(b*x+a)*\ln(e*((b*x+a)/(d*x+c))^n)/(-a*d+b*c)^5/g^4/i^2/(d*x+c)-12*b^2*B*d^2*n*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^5/g^4/i^2/(b*x+a)+2*b^3*B*d*n*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^5/g^4/i^2/(b*x+a)^2-2/9*b^4*B*n*(d*x+c)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^5/g^4/i^2/(b*x+a)^3+d^4*(b*x+a)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^5/g^4/i^2/(d*x+c)-6*b^2*d^2*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^5/g^4/i^2/(b*x+a)+2*b^3*d*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^5/g^4/i^2/(b*x+a)^2-1/3*b^4*(d*x+c)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^5/g^4/i^2/(b*x+a)^3-4/3*b*d^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^3/B/(-a*d+b*c)^5/g^4/i^2/n$

Rubi [C] time = 9.29, antiderivative size = 2368, normalized size of antiderivative = 3.25, number of steps used = 167, number of rules used = 31, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}} = 0.689$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)^4*(c*i + d*i*x)^2), x]

[Out] $(-2*b*B^2*n^2)/(27*(b*c - a*d)^2*g^4*i^2*(a + b*x)^3) + (7*b*B^2*d*n^2)/(9*(b*c - a*d)^3*g^4*i^2*(a + b*x)^2) - (92*b*B^2*d^2*n^2)/(9*(b*c - a*d)^4*g^4*i^2*(a + b*x)) - (2*B^2*d^3*n^2)/((b*c - a*d)^4*g^4*i^2*(c + d*x)) - (110*b*B^2*d^3*n^2*Log[a + b*x])/(9*(b*c - a*d)^5*g^4*i^2) + (4*A*b*B*d^3*n*Log[a + b*x]^2)/((b*c - a*d)^5*g^4*i^2) + (10*b*B^2*d^3*n^2*Log[a + b*x]^2)/(3*(b*c - a*d)^5*g^4*i^2) + (4*b*B^2*d^3*Log[-((b*c - a*d)/(d*(a + b*x))])*Log[e*((a + b*x)/(c + d*x))^n]^2)/((b*c - a*d)^5*g^4*i^2) + (4*b*B^2*d^3*Log[$

$$\begin{aligned}
& a + b*x] * \text{Log}[e*((a + b*x)/(c + d*x))^n]^2) / ((b*c - a*d)^5 * g^4 * i^2) - (2*b*B \\
& *n*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])) / (9*(b*c - a*d)^2 * g^4 * i^2 * (a + b* \\
& x)^3) + (4*b*B*d*n*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])) / (3*(b*c - a*d)^3 \\
& * g^4 * i^2 * (a + b*x)^2) - (26*b*B*d^2*n*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n] \\
&)) / (3*(b*c - a*d)^4 * g^4 * i^2 * (a + b*x)) + (2*B*d^3*n*(A + B*\text{Log}[e*((a + b*x) \\
& / (c + d*x))^n])) / ((b*c - a*d)^4 * g^4 * i^2 * (c + d*x)) - (20*b*B*d^3*n*\text{Log}[a + \\
& b*x]*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])) / (3*(b*c - a*d)^5 * g^4 * i^2) - (b \\
& *(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2) / (3*(b*c - a*d)^2 * g^4 * i^2 * (a + b* \\
& x)^3) + (b*d*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2) / ((b*c - a*d)^3 * g^4 * i \\
& ^2 * (a + b*x)^2) - (3*b*d^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2) / ((b*c \\
& - a*d)^4 * g^4 * i^2 * (a + b*x)) - (d^3*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2) \\
&) / ((b*c - a*d)^4 * g^4 * i^2 * (c + d*x)) - (4*b*d^3*\text{Log}[a + b*x]*(A + B*\text{Log}[e*((\\
& a + b*x)/(c + d*x))^n])^2) / ((b*c - a*d)^5 * g^4 * i^2) + (110*b*B^2*d^3*n^2*\text{Log} \\
& [c + d*x]) / (9*(b*c - a*d)^5 * g^4 * i^2) - (8*A*b*B*d^3*n*\text{Log}[-((d*(a + b*x)) / (\\
& b*c - a*d))] * \text{Log}[c + d*x]) / ((b*c - a*d)^5 * g^4 * i^2) - (20*b*B^2*d^3*n^2*\text{Log} \\
& [-((d*(a + b*x)) / (b*c - a*d))] * \text{Log}[c + d*x]) / (3*(b*c - a*d)^5 * g^4 * i^2) - (4* \\
& b*B^2*d^3*\text{Log}[(a + b*x)^n]^2 * \text{Log}[c + d*x]) / ((b*c - a*d)^5 * g^4 * i^2) + (20*b* \\
& B*d^3*n*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]) * \text{Log}[c + d*x]) / (3*(b*c - a*d) \\
& ^5 * g^4 * i^2) + (4*b*d^3*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2 * \text{Log}[c + d*x \\
&]) / ((b*c - a*d)^5 * g^4 * i^2) + (4*A*b*B*d^3*n*\text{Log}[c + d*x]^2) / ((b*c - a*d)^5 * \\
& g^4 * i^2) + (10*b*B^2*d^3*n^2*\text{Log}[c + d*x]^2) / (3*(b*c - a*d)^5 * g^4 * i^2) - (4 \\
& *b*B^2*d^3*n^2*\text{Log}[a + b*x] * \text{Log}[c + d*x]^2) / ((b*c - a*d)^5 * g^4 * i^2) + (4*b* \\
& B^2*d^3*n*\text{Log}[e*((a + b*x)/(c + d*x))^n] * \text{Log}[c + d*x]^2) / ((b*c - a*d)^5 * g^4 \\
& * i^2) + (4*b*B^2*d^3*n^2*\text{Log}[c + d*x]^3) / (3*(b*c - a*d)^5 * g^4 * i^2) - (8*A*b \\
& *B*d^3*n*\text{Log}[a + b*x] * \text{Log}[(b*(c + d*x)) / (b*c - a*d)]) / ((b*c - a*d)^5 * g^4 * i^ \\
& 2) - (20*b*B^2*d^3*n^2*\text{Log}[a + b*x] * \text{Log}[(b*(c + d*x)) / (b*c - a*d)]) / (3*(b*c \\
& - a*d)^5 * g^4 * i^2) + (4*b*B^2*d^3*\text{Log}[(a + b*x)^n]^2 * \text{Log}[(b*(c + d*x)) / (b*c \\
& - a*d)]) / ((b*c - a*d)^5 * g^4 * i^2) - (8*b*B^2*d^3*n*\text{Log}[a + b*x] * \text{Log}[c + d*x \\
&] * \text{Log}[(c + d*x)^(-n)]) / ((b*c - a*d)^5 * g^4 * i^2) - (4*b*B^2*d^3*\text{Log}[a + b*x] * \\
& \text{Log}[(c + d*x)^(-n)]^2) / ((b*c - a*d)^5 * g^4 * i^2) + (4*b*B^2*d^3*\text{Log}[-((d*(a + \\
& b*x)) / (b*c - a*d))] * \text{Log}[(c + d*x)^(-n)]^2) / ((b*c - a*d)^5 * g^4 * i^2) + (8*b* \\
& B^2*d^3*n*\text{Log}[-((d*(a + b*x)) / (b*c - a*d))] * \text{Log}[c + d*x] * (\text{Log}[(a + b*x)^n] \\
& - \text{Log}[e*((a + b*x)/(c + d*x))^n] + \text{Log}[(c + d*x)^(-n)])) / ((b*c - a*d)^5 * g^4 \\
& * i^2) - (8*A*b*B*d^3*n*\text{PolyLog}[2, -((d*(a + b*x)) / (b*c - a*d))]) / ((b*c - a*d) \\
& ^5 * g^4 * i^2) - (20*b*B^2*d^3*n^2*\text{PolyLog}[2, -((d*(a + b*x)) / (b*c - a*d))]) \\
& / (3*(b*c - a*d)^5 * g^4 * i^2) + (8*b*B^2*d^3*n*\text{Log}[(a + b*x)^n] * \text{PolyLog}[2, -((\\
& d*(a + b*x)) / (b*c - a*d))]) / ((b*c - a*d)^5 * g^4 * i^2) - (8*A*b*B*d^3*n*\text{PolyLo} \\
& g[2, (b*(c + d*x)) / (b*c - a*d)]) / ((b*c - a*d)^5 * g^4 * i^2) - (20*b*B^2*d^3*n^ \\
& 2*\text{PolyLog}[2, (b*(c + d*x)) / (b*c - a*d)]) / (3*(b*c - a*d)^5 * g^4 * i^2) - (8*b*B \\
& ^2*d^3*n*\text{Log}[(c + d*x)^(-n)] * \text{PolyLog}[2, (b*(c + d*x)) / (b*c - a*d)]) / ((b*c - \\
& a*d)^5 * g^4 * i^2) + (8*b*B^2*d^3*n*(\text{Log}[(a + b*x)^n] - \text{Log}[e*((a + b*x)/(c + \\
& d*x))^n] + \text{Log}[(c + d*x)^(-n)]) * \text{PolyLog}[2, (b*(c + d*x)) / (b*c - a*d)]) / ((b \\
& *c - a*d)^5 * g^4 * i^2) - (8*b*B^2*d^3*n*\text{Log}[e*((a + b*x)/(c + d*x))^n] * \text{PolyLo} \\
& g[2, 1 + (b*c - a*d) / (d*(a + b*x))]) / ((b*c - a*d)^5 * g^4 * i^2) - (8*b*B^2*d^3 \\
& *n^2*\text{PolyLog}[3, -((d*(a + b*x)) / (b*c - a*d))]) / ((b*c - a*d)^5 * g^4 * i^2) - (8
\end{aligned}$$

$$*b*B^2*d^3*n^2*PolyLog[3, (b*(c + d*x))/(b*c - a*d)]/((b*c - a*d)^5*g^4*i^2) - (8*b*B^2*d^3*n^2*PolyLog[3, 1 + (b*c - a*d)/(d*(a + b*x))])/((b*c - a*d)^5*g^4*i^2)$$

Rule 12

$$\text{Int}[(a_*)(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] \text{ ; FreeQ}[a, x] \ \&\& \ \text{!MatchQ}[u, (b_*)(v_)] \text{ ; FreeQ}[b, x]$$

Rule 30

$$\text{Int}[(x_)^{(m_.)}, x_Symbol] \rightarrow \text{Simp}[x^{(m + 1)}/(m + 1), x] \text{ ; FreeQ}[m, x] \ \&\& \ \text{NeQ}[m, -1]$$

Rule 44

$$\text{Int}[(a_*) + (b_.)(x_)^{(m_.)}*((c_.) + (d_.)(x_)^{(n_.)}), x_Symbol] \rightarrow \text{Int}[\text{ExpandIntegrand}[(a + b*x)^m*(c + d*x)^n, x], x] \text{ ; FreeQ}[\{a, b, c, d\}, x] \ \&\& \ \text{NeQ}[b*c - a*d, 0] \ \&\& \ \text{ILtQ}[m, 0] \ \&\& \ \text{IntegerQ}[n] \ \&\& \ \text{!(IGtQ}[n, 0] \ \&\& \ \text{LtQ}[m + n + 2, 0])]$$

Rule 2301

$$\text{Int}[(a_.) + \text{Log}[(c_.)(x_)^{(n_.)}]*(b_.)]/(x_), x_Symbol] \rightarrow \text{Simp}[(a + b*\text{Log}[c*x^n])^2/(2*b*n), x] \text{ ; FreeQ}[\{a, b, c, n\}, x]$$

Rule 2302

$$\text{Int}[(a_.) + \text{Log}[(c_.)(x_)^{(n_.)}]*(b_.)]^{(p_.)}/(x_), x_Symbol] \rightarrow \text{Dist}[1/(b*n), \text{Subst}[\text{Int}[x^p, x], x, a + b*\text{Log}[c*x^n]], x] \text{ ; FreeQ}[\{a, b, c, n, p\}, x]$$

Rule 2317

$$\text{Int}[(a_.) + \text{Log}[(c_.)(x_)^{(n_.)}]*(b_.)]^{(p_.)}/((d_) + (e_.)(x_)), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[1 + (e*x)/d]*(a + b*\text{Log}[c*x^n])^p)/e, x] - \text{Dist}[(b*n*p)/e, \text{Int}[(\text{Log}[1 + (e*x)/d]*(a + b*\text{Log}[c*x^n])^{(p - 1)})/x, x], x] \text{ ; FreeQ}[\{a, b, c, d, e, n\}, x] \ \&\& \ \text{IGtQ}[p, 0]$$

Rule 2344

$$\text{Int}[(a_.) + \text{Log}[(c_.)(x_)^{(n_.)}]*(b_.)]^{(p_.)}/((x_)*((d_) + (e_.)(x_))), x_Symbol] \rightarrow \text{Dist}[1/d, \text{Int}[(a + b*\text{Log}[c*x^n])^p/x, x], x] - \text{Dist}[e/d, \text{Int}[(a + b*\text{Log}[c*x^n])^p/(d + e*x), x], x] \text{ ; FreeQ}[\{a, b, c, d, e, n\}, x] \ \&\& \ \text{IGtQ}[p, 0]$$

Rule 2374

Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.))/(x_), x_Symbol] := -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0] && EqQ[d*e, 1]

Rule 2375

Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*(a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.))/(x_), x_Symbol] := Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m - 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d, e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))])*(b_.)/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2396

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.

```
)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^((f_.) + (g_.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] := Dist[1/e, Subst[Int[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^((p_.)*(RFx_)), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] := Dist[1/e, Subst[Int[(k*x)/d]^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(e*i - d*j)/e + (j*x)/e]^m), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int((((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] := Simp[Log[x]*(a + b*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Log[x]*(a + b*Log[c*(d + e*x)^n])]/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x]*(f + g*Log[h*(i + j*x)^m))]/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] := Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-(e*k - d*l)/l) + (e*x)/l]^n)*(f + g*Log[h*(-(j*k - i*l)/l) + (j*x)/l]^m), x], x, k + l*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] := -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q]^r]^s - 1)/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*(s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] := Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q]^r]/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*(s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))/((j_.) + (k
_.)*(x_)), x_Symbol] := Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_)
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] := With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1)/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
```

```

^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] := With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
h*x)^t]^u)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^(s + 1))/(p*r*(s + 1)*(b*c
- a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q]^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
EqQ[p + q, 0] && NeQ[s, -1]

```

Rule 2524

```

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]

```

Rule 2525

```

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]

```

Rule 2528

```

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[[]
] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]

```

Rule 6589

```

Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]

```

Rule 6610

```

Int[(u_)*PolyLog[n_, v_], x_Symbol] := With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /; !FalseQ[w] /; FreeQ[n, x]

```

Rule 6688

```
Int[u_, x_Symbol] := With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; SimplifyIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] := With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]]
```

Rubi steps

$$\int \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(201c + 201dx)^2(ag + bgx)^4} dx = -\frac{2bB^2n^2}{1090827(bc - ad)^2g^4(a + bx)^3} + \frac{7bB^2dn^2}{363609(bc - ad)^3g^4(a + bx)^2} - \frac{1}{363609}$$

Mathematica [B] time = 3.04, size = 1695, normalized size = 2.33

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)^4*(c*i + d*i*x)^2), x]
```

```
[Out] -1/27*(36*b*B^2*d^3*n^2*(a + b*x)^3*(c + d*x)*Log[(a + b*x)/(c + d*x)]^3 + 9*B*n*Log[(a + b*x)/(c + d*x)]^2*(12*a^3*A*b*c*d^3 + b^4*B*c^4*n - 6*a*b^3*B*c^3*d*n + 18*a^2*b^2*B*c^2*d^2*n - 3*a^4*B*d^4*n + 36*a^2*A*b^2*c*d^3*x + 12*a^3*A*b*d^4*x - 2*b^4*B*c^3*d*n*x + 18*a*b^3*B*c^2*d^2*n*x + 36*a^2*b^2*B*c*d^3*n*x - 12*a^3*b*B*d^4*n*x + 36*a*A*b^3*c*d^3*x^2 + 36*a^2*A*b^2*d^4*x^2 + 6*b^4*B*c^2*d^2*n*x^2 + 54*a*b^3*B*c*d^3*n*x^2 + 12*A*b^4*c*d^3*x^3 + 36*a*A*b^3*d^4*x^3 + 22*b^4*B*c*d^3*n*x^3 + 18*a*b^3*B*d^4*n*x^3 + 12*A*b^4*d^4*x^4 + 10*b^4*B*d^4*n*x^4 + 12*b*B*d^3*(a + b*x)^3*(c + d*x)*Log[e*((a + b*x)/(c + d*x))^n] - 12*b*B*d^3*n*(a + b*x)^3*(c + d*x)*Log[(a + b*x)/(c + d*x)]) + 3*b*d^2*(b*c - a*d)*(a + b*x)^2*(c + d*x)*(27*A^2 + 78*A*B*n + 92*B^2*n^2 + 27*B^2*Log[e*((a + b*x)/(c + d*x))^n]^2 - 6*B*n*(9*A + 13*B*n)*Log[(a + b*x)/(c + d*x)] + 27*B^2*n^2*Log[(a + b*x)/(c + d*x)]^2 + 6*B*Log[e*((a + b*x)/(c + d*x))^n]*(9*A + 13*B*n - 9*B*n*Log[(a + b*x)/(c + d*x)])) + 6*b*d^3*(a + b*x)^3*(c + d*x)*Log[a + b*x]*(18*A^2 + 30*A*B*n + 55*B^2*n^2 + 18*B^2*Log[e*((a + b*x)/(c + d*x))^n]^2 - 6*B*n*(6*A + 5*B*n)*Log[(a + b*x)/(c + d*x)] + 18*B^2*n^2*Log[(a + b*x)/(c + d*x)]^2 + 6*B*Log[e*((a + b*x)/(c + d*x))^n]*(6*A + 5*B*n - 6*B*n*Log[(a + b*x)/(c + d*x)])) + b*(b*c - a*d)^3*(c + d*x)*(9*A^2 + 6*A*B*n + 2*B^2*n^2 + 9*B^2*Log[e*((a + b*x)/(c + d*x))^n]^2 - 6*B*n*(3*A + B*n)*Log[(a + b*x)/(c + d*x)] + 9*B^2*n^2*L
```

$$\begin{aligned} & \log\left[\frac{a+bx}{c+dx}\right]^2 + 6B \operatorname{Log}\left[e^{\left(\frac{a+bx}{c+dx}\right)^n}\right] \cdot (3A + Bn - 3Bn \operatorname{Log}\left[\frac{a+bx}{c+dx}\right]) - 3b^2 d^2 (bc - ad)^2 (a+bx)(c+dx) \\ & \cdot (9A^2 + 12ABn + 7B^2 n^2 + 9B^2 \operatorname{Log}\left[e^{\left(\frac{a+bx}{c+dx}\right)^n}\right]^2 - 6Bn(3A + 2Bn) \operatorname{Log}\left[\frac{a+bx}{c+dx}\right] + 9B^2 n^2 \operatorname{Log}\left[\frac{a+bx}{c+dx}\right]^2 \\ & + 6B \operatorname{Log}\left[e^{\left(\frac{a+bx}{c+dx}\right)^n}\right] \cdot (3A + 2Bn - 3Bn \operatorname{Log}\left[\frac{a+bx}{c+dx}\right])) + 6B(b^2 c - a^2 d) n \operatorname{Log}\left[\frac{a+bx}{c+dx}\right] \cdot (3b^2 d^2 (a+bx)^2 \\ & (c+dx)(9A + 13Bn + 9B \operatorname{Log}\left[e^{\left(\frac{a+bx}{c+dx}\right)^n}\right] - 9Bn \operatorname{Log}\left[\frac{a+bx}{c+dx}\right]) + b^2 (bc - ad)^2 (c+dx)(3A + Bn + 3B \operatorname{Log}\left[e^{\left(\frac{a+bx}{c+dx}\right)^n}\right] \\ & - 3Bn \operatorname{Log}\left[\frac{a+bx}{c+dx}\right]) - 3b^2 d^2 (bc - ad)(a+bx)(c+dx)(3A + 2Bn + 3B \operatorname{Log}\left[e^{\left(\frac{a+bx}{c+dx}\right)^n}\right] - 3Bn \operatorname{Log}\left[\frac{a+bx}{c+dx}\right]) \\ & + 9d^3 (a+bx)^3 (A - Bn + B \operatorname{Log}\left[e^{\left(\frac{a+bx}{c+dx}\right)^n}\right] - Bn \operatorname{Log}\left[\frac{a+bx}{c+dx}\right]) + 27d^3 (bc - ad)(a+bx)^3 (A^2 - 2ABn + 2B^2 n^2 + B^2 \operatorname{Log}\left[e^{\left(\frac{a+bx}{c+dx}\right)^n}\right]^2 \\ & + 2Bn(-A + Bn) \operatorname{Log}\left[\frac{a+bx}{c+dx}\right] + B^2 n^2 \operatorname{Log}\left[\frac{a+bx}{c+dx}\right]^2 - 2B \operatorname{Log}\left[e^{\left(\frac{a+bx}{c+dx}\right)^n}\right] \cdot (-A + Bn + Bn \operatorname{Log}\left[\frac{a+bx}{c+dx}\right])) \\ & - 6b^2 d^3 (a+bx)^3 (c+dx)(18A^2 + 30ABn + 55B^2 n^2 + 18B^2 \operatorname{Log}\left[e^{\left(\frac{a+bx}{c+dx}\right)^n}\right]^2 - 6Bn(6A + 5Bn) \operatorname{Log}\left[\frac{a+bx}{c+dx}\right] \\ & + 18B^2 n^2 \operatorname{Log}\left[\frac{a+bx}{c+dx}\right]^2 + 6B \operatorname{Log}\left[e^{\left(\frac{a+bx}{c+dx}\right)^n}\right] \cdot (6A + 5Bn - 6Bn \operatorname{Log}\left[\frac{a+bx}{c+dx}\right])) \cdot \operatorname{Log}\left[\frac{c+dx}{(bc - ad)^5 g^4 i^2 (a+bx)^3 (c+dx)}\right] \end{aligned}$$

fricas [B] time = 1.28, size = 3183, normalized size = 4.37

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^4/(d*i*x+c*i)^2,x, algorithm="fricas")

[Out]
$$\begin{aligned} & -1/27*(9A^2*b^4*c^4 - 54A^2*a*b^3*c^3*d + 162A^2*a^2*b^2*c^2*d^2 - 90A^2*a^3*b*c*d^3 - 27A^2*a^4*d^4 + 6*(18A^2*b^4*c*d^3 - 18A^2*a*b^3*d^4 + 55*(B^2*b^4*c*d^3 - B^2*a*b^3*d^4)*n^2 + 30*(A*B*b^4*c*d^3 - A*B*a*b^3*d^4)*n)*x^3 \\ & + 36*(B^2*b^4*d^4*n^2*x^4 + B^2*a^3*b*c*d^3*n^2 + (B^2*b^4*c*d^3 + 3*B^2*a*b^3*d^4)*n^2*x^3 + 3*(B^2*a*b^3*c*d^3 + B^2*a^2*b^2*d^4)*n^2*x^2 + (3*B^2*a^2*b^2*c*d^3 + B^2*a^3*b*d^4)*n^2*x)*\log\left(\frac{b*x+a}{d*x+c}\right)^3 + (2*B^2*b^4*c^4 - 27*B^2*a*b^3*c^3*d + 324*B^2*a^2*b^2*c^2*d^2 - 245*B^2*a^3*b*c*d^3 - 54*B^2*a^4*d^4)*n^2 \\ & + 3*(18A^2*b^4*c^2*d^2 + 72A^2*a*b^3*c*d^3 - 90A^2*a^2*b^2*d^4 + 5*(17B^2*b^4*c^2*d^2 + 32B^2*a*b^3*c*d^3 - 49B^2*a^2*b^2*d^4)*n^2 + 6*(11A*B*b^4*c^2*d^2 + 8A*B*a*b^3*c*d^3 - 19A*B*a^2*b^2*d^4)*n)*x^2 \\ & + 9*(B^2*b^4*c^4 - 6B^2*a*b^3*c^3*d + 18B^2*a^2*b^2*c^2*d^2 - 10B^2*a^3*b*c*d^3 - 3B^2*a^4*d^4 + 12*(B^2*b^4*c*d^3 - B^2*a*b^3*d^4)*x^3 \\ & + 6*(B^2*b^4*c^2*d^2 + 4B^2*a*b^3*c*d^3 - 5B^2*a^2*b^2*d^4)*x^2 - 2*(B^2*b^4*c^3*d - 9B^2*a*b^3*c^2*d^2 - 3B^2*a^2*b^2*c*d^3 + 11B^2*a^3*b*d^4)*x \\ & + 12*(B^2*b^4*d^4*x^4 + B^2*a^3*b*c*d^3 + (B^2*b^4*c*d^3 + 3B^2*a*b^3*d^4)*x^3 + 3*(B^2*a*b^3*c*d^3 + B^2*a^2*b^2*d^4)*x^2 + (3B^2*a^2*b^2*c*d^3 \end{aligned}$$

$$\begin{aligned}
& 3 + B^2 a^3 b^4 d^4) x) \log((b x + a)/(d x + c)) \log(e)^2 + 9(12 A^2 B^2 a^3 b^4 c^3 d^3 n + 2(5 B^2 b^4 d^4 n^2 + 6 A^2 B^2 b^4 d^4 n) x^4 + 2((11 B^2 b^4 c^3 d^3 + 9 B^2 a^3 b^3 d^4) n^2 + 6(A^2 B^2 b^4 c^3 d^3 + 3 A^2 B^2 a^3 b^3 d^4) n) x^3 + (B^2 b^4 c^4 - 6 B^2 a^2 b^3 c^3 d + 18 B^2 a^2 b^2 c^2 d^2 - 3 B^2 a^4 d^4) n^2 + 6((B^2 b^4 c^2 d^2 + 9 B^2 a^2 b^3 c^3 d) n^2 + 6(A^2 B^2 a^2 b^3 c^3 d + A^2 B^2 a^2 b^2 d^4) n) x^2 - 2((B^2 b^4 c^3 d - 9 B^2 a^2 b^3 c^2 d^2 - 18 B^2 a^2 b^2 c^2 d^3 + 6 B^2 a^3 b^2 d^4) n^2 - 6(3 A^2 B^2 a^2 b^2 c^2 d^3 + A^2 B^2 a^3 b^2 d^4) n) x) \log((b x + a)/(d x + c))^2 + 6(A^2 B^2 b^4 c^4 - 9 A^2 B^2 a^2 b^3 c^3 d + 54 A^2 B^2 a^2 b^2 c^2 d^2 - 55 A^2 B^2 a^3 b^2 c^2 d^3 + 9 A^2 B^2 a^4 d^4) n - (18 A^2 b^4 c^3 d - 162 A^2 a^2 b^3 c^2 d^2 - 54 A^2 a^2 b^2 c^2 d^3 + 198 A^2 a^3 b^2 d^4 + (19 B^2 b^4 c^3 d - 567 B^2 a^2 b^3 c^2 d^2 + 87 B^2 a^2 b^2 c^2 d^3 + 461 B^2 a^3 b^2 d^4) n^2 + 6(5 A^2 B^2 b^4 c^3 d - 81 A^2 B^2 a^2 b^3 c^2 d^2 + 57 A^2 B^2 a^2 b^2 c^2 d^3 + 19 A^2 B^2 a^3 b^2 d^4) n) x + 6(3 A^2 B^2 b^4 c^4 - 18 A^2 B^2 a^2 b^3 c^3 d + 54 A^2 B^2 a^2 b^2 c^2 d^2 - 30 A^2 B^2 a^3 b^2 c^2 d^3 - 9 A^2 B^2 a^4 d^4 + 6(6 A^2 B^2 b^4 c^3 d^3 - 6 A^2 B^2 a^2 b^3 d^4 + 5(B^2 b^4 c^3 d^3 - B^2 a^2 b^3 d^4) n) x^3 + 3(6 A^2 B^2 b^4 c^2 d^2 + 24 A^2 B^2 a^2 b^3 c^2 d^3 - 30 A^2 B^2 a^2 b^2 d^4 + (11 B^2 b^4 c^2 d^2 + 8 B^2 a^2 b^3 c^2 d^3 - 19 B^2 a^2 b^2 d^4) n) x^2 + 18(B^2 b^4 d^4 n x^4 + B^2 a^3 b^2 c^2 d^3 n + (B^2 b^4 c^2 d^3 + 3 B^2 a^2 b^3 d^4) n x^3 + 3(B^2 a^2 b^3 c^2 d^3 + B^2 a^2 b^2 d^4) n x^2 + (3 B^2 a^2 b^2 c^2 d^3 + B^2 a^3 b^2 d^4) n x) \log((b x + a)/(d x + c))^2 + (B^2 b^4 c^4 - 9 B^2 a^2 b^3 c^3 d + 54 B^2 a^2 b^2 c^2 d^2 - 55 B^2 a^3 b^2 c^2 d^3 + 9 B^2 a^4 d^4) n - (6 A^2 B^2 b^4 c^3 d - 54 A^2 B^2 a^2 b^3 c^2 d^2 - 18 A^2 B^2 a^2 b^2 c^2 d^3 + 66 A^2 B^2 a^3 b^2 d^4 + (5 B^2 b^4 c^3 d - 81 B^2 a^2 b^3 c^2 d^2 + 57 B^2 a^2 b^2 c^2 d^3 + 19 B^2 a^3 b^2 d^4) n) x + 3(12 A^2 B^2 a^3 b^2 c^2 d^3 + 2(5 B^2 b^4 d^4 n + 6 A^2 B^2 b^4 d^4) x^4 + 2(6 A^2 B^2 b^4 c^2 d^3 + 18 A^2 B^2 a^2 b^3 d^4 + (11 B^2 b^4 c^2 d^3 + 9 B^2 a^2 b^3 d^4) n) x^3 + 6(6 A^2 B^2 a^2 b^3 c^2 d^3 + 6 A^2 B^2 a^2 b^2 d^4 + (B^2 b^4 c^2 d^2 + 9 B^2 a^2 b^3 c^2 d^3) n) x^2 + (B^2 b^4 c^4 - 6 B^2 a^2 b^3 c^3 d + 18 B^2 a^2 b^2 c^2 d^2 - 3 B^2 a^4 d^4) n + 2(18 A^2 B^2 a^2 b^2 c^2 d^3 + 6 A^2 B^2 a^3 b^2 d^4 - (B^2 b^4 c^3 d - 9 B^2 a^2 b^3 c^2 d^2 - 18 B^2 a^2 b^2 c^2 d^3 + 6 B^2 a^3 b^2 d^4) n) x) \log((b x + a)/(d x + c)) \log(e) + 6(18 A^2 a^3 b^2 c^2 d^3 + (55 B^2 b^4 d^4 n^2 + 30 A^2 B^2 b^4 d^4 n + 18 A^2 b^4 d^4) x^4 + (18 A^2 b^4 c^2 d^3 + 54 A^2 a^2 b^3 d^4 + 5(17 B^2 b^4 c^2 d^3 + 27 B^2 a^2 b^3 d^4) n^2 + 6(11 A^2 B^2 b^4 c^2 d^3 + 9 A^2 B^2 a^2 b^3 d^4) n) x^3 + (B^2 b^4 c^4 - 9 B^2 a^2 b^3 c^3 d + 54 B^2 a^2 b^2 c^2 d^2 + 9 B^2 a^4 d^4) n^2 + 3(18 A^2 a^2 b^3 c^2 d^3 + 18 A^2 a^2 b^2 d^4 + (11 B^2 b^4 c^2 d^2 + 63 B^2 a^2 b^3 c^2 d^3 + 36 B^2 a^2 b^2 d^4) n^2 + 6(A^2 B^2 b^4 c^2 d^2 + 9 A^2 B^2 a^2 b^3 c^2 d^3) n) x^2 + 3(A^2 B^2 b^4 c^4 - 6 A^2 B^2 a^2 b^3 c^3 d + 18 A^2 B^2 a^2 b^2 c^2 d^2 - 3 A^2 B^2 a^4 d^4) n + (54 A^2 a^2 b^2 c^2 d^3 + 18 A^2 a^3 b^2 d^4 - (5 B^2 b^4 c^3 d - 81 B^2 a^2 b^3 c^2 d^2 - 108 B^2 a^2 b^2 c^2 d^3 - 36 B^2 a^3 b^2 d^4) n^2 - 6(A^2 B^2 b^4 c^3 d - 9 A^2 B^2 a^2 b^3 c^2 d^2 - 18 A^2 B^2 a^2 b^2 c^2 d^3 + 6 A^2 B^2 a^3 b^2 d^4) n) x) \log((b x + a)/(d x + c)) / ((b^8 c^5 d - 5 a^2 b^7 c^4 d^2 + 10 a^2 b^6 c^3 d^3 - 10 a^3 b^5 c^2 d^4 + 5 a^4 b^4 c^2 d^5 - a^5 b^3 d^6) g^4 i^2 x^4 + (b^8 c^6 - 2 a^2 b^7 c^5 d - 5 a^2 b^6 c^4 d^2 + 20 a^3 b^5 c^3 d^3 - 25 a^4 b^4 c^2 d^4 + 14 a^5 b^3 c^2 d^5 - 3 a^6 b^2 d^6) g^4 i^2 x^3 + 3(a^2 b^7 c^6 - 4 a^2 b^6 c^5 d + 5 a^3 b^5 c^4 d^2 - 5 a^4 b^4 c^3 d^3 + 4 a^5 b^3 c^2 d^4 + 4 a^6 b^2 c^2 d^5 - a^7 b^2 d^6) g^4 i^2 x^2
\end{aligned}$$

$2 + (3a^2b^6c^6 - 14a^3b^5c^5d + 25a^4b^4c^4d^2 - 20a^5b^3c^3d^3 + 5a^6b^2c^2d^4 + 2a^7b^1c^1d^5 - a^8d^6)g^4i^2x + (a^3b^5c^6 - 5a^4b^4c^5d + 10a^5b^3c^4d^2 - 10a^6b^2c^3d^3 + 5a^7b^1c^2d^4 - a^8c^1d^5)g^4i^2$

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^4/(d*i*x+c*i)^2,x, algorithm="giac")

[Out] Timed out

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{\left(B \ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right) + A\right)^2}{(bgx + ag)^4 (dix + ci)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^4/(d*i*x+c*i)^2,x)

[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^4/(d*i*x+c*i)^2,x)

maxima [B] time = 7.49, size = 6171, normalized size = 8.47

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^4/(d*i*x+c*i)^2,x, algorithm="maxima")

[Out] $-1/3B^2((12b^3d^3x^3 + b^3c^3 - 5ab^2c^2d + 13a^2b^1c^1d^2 + 3a^3d^3 + 6(b^3c^1d^2 + 5ab^2d^3)x^2 - 2(b^3c^2d - 8ab^2c^1d^2 - 11a^2b^1d^3)x)/((b^7c^4d - 4a^6b^6c^3d^2 + 6a^5b^5c^2d^3 - 4a^4b^4c^1d^4 + a^4b^3d^5)g^4i^2x^4 + (b^7c^5 - ab^6c^4d - 6a^2b^5c^3d^2 + 14a^3b^4c^2d^3 - 11a^4b^3c^1d^4 + 3a^5b^2d^5)g^4i^2x^3 + 3(ab^6c^5 - 3a^2b^5c^4d + 2a^3b^4c^3d^2 + 2a^4b^3c^2d^3 - 3a^5b^2c^1d^4 + a^6b^1d^5)g^4i^2x^2 + (3a^2b^5c^5 - 11a^3b^4c^4d + 14a^4b^3c^3d^2 - 6a^5b^2c^2d^3 - a^6b^1c^1d^4 + a^7d^5)g^4i^2x + (a^3b^4c^5 - 4a^4b^3c^4d + 6a^5b^2c^3d^2 - 4a^6b^1c^2d^3 +$

$$\begin{aligned}
& a^7*c*d^4)*g^4*i^2) + 12*b*d^3*log(b*x + a)/((b^5*c^5 - 5*a*b^4*c^4*d + 10* \\
& a^2*b^3*c^3*d^2 - 10*a^3*b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5)*g^4*i^2) - \\
& 12*b*d^3*log(d*x + c)/((b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a \\
& ^3*b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5)*g^4*i^2))*log(e*(b*x/(d*x + c) + \\
& a/(d*x + c))^n)^2 - 2/3*A*B*((12*b^3*d^3*x^3 + b^3*c^3 - 5*a*b^2*c^2*d + 13 \\
& *a^2*b*c*d^2 + 3*a^3*d^3 + 6*(b^3*c*d^2 + 5*a*b^2*d^3)*x^2 - 2*(b^3*c^2*d - \\
& 8*a*b^2*c*d^2 - 11*a^2*b*d^3)*x)/((b^7*c^4*d - 4*a*b^6*c^3*d^2 + 6*a^2*b^5 \\
& *c^2*d^3 - 4*a^3*b^4*c*d^4 + a^4*b^3*d^5)*g^4*i^2*x^4 + (b^7*c^5 - a*b^6*c^ \\
& 4*d - 6*a^2*b^5*c^3*d^2 + 14*a^3*b^4*c^2*d^3 - 11*a^4*b^3*c*d^4 + 3*a^5*b^2 \\
& *d^5)*g^4*i^2*x^3 + 3*(a*b^6*c^5 - 3*a^2*b^5*c^4*d + 2*a^3*b^4*c^3*d^2 + 2* \\
& a^4*b^3*c^2*d^3 - 3*a^5*b^2*c*d^4 + a^6*b*d^5)*g^4*i^2*x^2 + (3*a^2*b^5*c^5 \\
& - 11*a^3*b^4*c^4*d + 14*a^4*b^3*c^3*d^2 - 6*a^5*b^2*c^2*d^3 - a^6*b*c*d^4 \\
& + a^7*d^5)*g^4*i^2*x + (a^3*b^4*c^5 - 4*a^4*b^3*c^4*d + 6*a^5*b^2*c^3*d^2 - \\
& 4*a^6*b*c^2*d^3 + a^7*c*d^4)*g^4*i^2) + 12*b*d^3*log(b*x + a)/((b^5*c^5 - \\
& 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a^3*b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a \\
& ^5*d^5)*g^4*i^2) - 12*b*d^3*log(d*x + c)/((b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2 \\
& *b^3*c^3*d^2 - 10*a^3*b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5)*g^4*i^2))*log(\\
& e*(b*x/(d*x + c) + a/(d*x + c))^n) - 1/27*((2*b^4*c^4 - 27*a*b^3*c^3*d + 32 \\
& 4*a^2*b^2*c^2*d^2 - 245*a^3*b*c*d^3 - 54*a^4*d^4 + 330*(b^4*c*d^3 - a*b^3*d \\
& ^4)*x^3 + 36*(b^4*d^4*x^4 + a^3*b*c*d^3 + (b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 3 \\
& *(a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + (3*a^2*b^2*c*d^3 + a^3*b*d^4)*x)*log(b*x \\
& + a)^3 - 36*(b^4*d^4*x^4 + a^3*b*c*d^3 + (b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 3 \\
& *(a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + (3*a^2*b^2*c*d^3 + a^3*b*d^4)*x)*log(d*x \\
& + c)^3 + 15*(17*b^4*c^2*d^2 + 32*a*b^3*c*d^3 - 49*a^2*b^2*d^4)*x^2 - 90*(b \\
& ^4*d^4*x^4 + a^3*b*c*d^3 + (b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 3*(a*b^3*c*d^3 + \\
& a^2*b^2*d^4)*x^2 + (3*a^2*b^2*c*d^3 + a^3*b*d^4)*x)*log(b*x + a)^2 - 18*(5 \\
& *b^4*d^4*x^4 + 5*a^3*b*c*d^3 + 5*(b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 15*(a*b^3*c \\
& *d^3 + a^2*b^2*d^4)*x^2 + 5*(3*a^2*b^2*c*d^3 + a^3*b*d^4)*x - 6*(b^4*d^4*x \\
& ^4 + a^3*b*c*d^3 + (b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 3*(a*b^3*c*d^3 + a^2*b^2 \\
& *d^4)*x^2 + (3*a^2*b^2*c*d^3 + a^3*b*d^4)*x)*log(b*x + a))*log(d*x + c)^2 - \\
& (19*b^4*c^3*d - 567*a*b^3*c^2*d^2 + 87*a^2*b^2*c*d^3 + 461*a^3*b*d^4)*x + \\
& 330*(b^4*d^4*x^4 + a^3*b*c*d^3 + (b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 3*(a*b^3*c \\
& *d^3 + a^2*b^2*d^4)*x^2 + (3*a^2*b^2*c*d^3 + a^3*b*d^4)*x)*log(b*x + a) - 6 \\
& *(55*b^4*d^4*x^4 + 55*a^3*b*c*d^3 + 55*(b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 165* \\
& (a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 18*(b^4*d^4*x^4 + a^3*b*c*d^3 + (b^4*c*d^ \\
& 3 + 3*a*b^3*d^4)*x^3 + 3*(a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + (3*a^2*b^2*c*d^3 \\
& + a^3*b*d^4)*x)*log(b*x + a)^2 + 55*(3*a^2*b^2*c*d^3 + a^3*b*d^4)*x - 30*(\\
& b^4*d^4*x^4 + a^3*b*c*d^3 + (b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 3*(a*b^3*c*d^3 \\
& + a^2*b^2*d^4)*x^2 + (3*a^2*b^2*c*d^3 + a^3*b*d^4)*x)*log(b*x + a))*log(d*x \\
& + c))^n^2/(a^3*b^5*c^6*g^4*i^2 - 5*a^4*b^4*c^5*d*g^4*i^2 + 10*a^5*b^3*c^4* \\
& d^2*g^4*i^2 - 10*a^6*b^2*c^3*d^3*g^4*i^2 + 5*a^7*b*c^2*d^4*g^4*i^2 - a^8*c* \\
& d^5*g^4*i^2 + (b^8*c^5*d*g^4*i^2 - 5*a*b^7*c^4*d^2*g^4*i^2 + 10*a^2*b^6*c^3 \\
& *d^3*g^4*i^2 - 10*a^3*b^5*c^2*d^4*g^4*i^2 + 5*a^4*b^4*c*d^5*g^4*i^2 - a^5*b \\
& ^3*d^6*g^4*i^2)*x^4 + (b^8*c^6*g^4*i^2 - 2*a*b^7*c^5*d*g^4*i^2 - 5*a^2*b^6* \\
& c^4*d^2*g^4*i^2 + 20*a^3*b^5*c^3*d^3*g^4*i^2 - 25*a^4*b^4*c^2*d^4*g^4*i^2 +
\end{aligned}$$

$$\begin{aligned}
& 14a^5b^3c^2d^5g^4i^2 - 3a^6b^2d^6g^4i^2)x^3 + 3(a^7b^3c^6g^4i^2 - 4a^2b^6c^5d^2g^4i^2 + 5a^3b^5c^4d^2g^4i^2 - 5a^5b^3c^2d^4g^4i^2 + 4a^6b^2c^3d^3g^4i^2 - a^7b^2d^6g^4i^2)x^2 + (3a^2b^6c^6g^4i^2 - 14a^3b^5c^5d^2g^4i^2 + 25a^4b^4c^4d^2g^4i^2 - 20a^5b^3c^3d^3g^4i^2 + 5a^6b^2c^2d^4g^4i^2 + 2a^7b^2c^2d^4g^4i^2 - a^8d^6g^4i^2)x) + 6(b^4c^4 - 9a^2b^3c^3d + 54a^2b^2c^2d^2 - 55a^3b^2c^2d^3 + 9a^4d^4 + 30(b^4c^2d^3 - a^2b^3d^4)x^3 + 3(11b^4c^2d^2 + 8a^2b^3c^2d^3 - 19a^2b^2d^4)x^2 - 18(b^4d^4x^4 + a^3b^2c^2d^3 + (b^4c^2d^3 + 3a^2b^3d^4)x^3 + 3(a^2b^3c^2d^3 + a^2b^2d^4)x^2 + (3a^2b^2c^2d^3 + a^3b^2d^4)x) \log(bx + a)^2 - 18(b^4d^4x^4 + a^3b^2c^2d^3 + (b^4c^2d^3 + 3a^2b^3d^4)x^3 + 3(a^2b^3c^2d^3 + a^2b^2d^4)x^2 + (3a^2b^2c^2d^3 + a^3b^2d^4)x) \log(dx + c)^2 - (5b^4c^3d - 81a^2b^3c^2d^2 + 57a^2b^2c^2d^3 + 19a^3b^2d^4)x + 30(b^4d^4x^4 + a^3b^2c^2d^3 + (b^4c^2d^3 + 3a^2b^3d^4)x^3 + 3(a^2b^3c^2d^3 + a^2b^2d^4)x^2 + (3a^2b^2c^2d^3 + a^3b^2d^4)x) \log(bx + a) - 6(5b^4d^4x^4 + 5a^3b^2c^2d^3 + 5(b^4c^2d^3 + 3a^2b^3d^4)x^3 + 15(a^2b^3c^2d^3 + a^2b^2d^4)x^2 + 5(3a^2b^2c^2d^3 + a^3b^2d^4)x - 6(b^4d^4x^4 + a^3b^2c^2d^3 + (b^4c^2d^3 + 3a^2b^3d^4)x^3 + 3(a^2b^3c^2d^3 + a^2b^2d^4)x^2 + (3a^2b^2c^2d^3 + a^3b^2d^4)x) \log(bx + a)) \log(dx + c)) \cdot n \log(e \cdot (bx / (dx + c)) + a / (dx + c))^n) / (a^3b^5c^6g^4i^2 - 5a^4b^4c^5d^2g^4i^2 + 10a^5b^3c^4d^2g^4i^2 - 10a^6b^2c^3d^3g^4i^2 + 5a^7b^2c^2d^4g^4i^2 - a^8c^2d^5g^4i^2 + (b^8c^5d^2g^4i^2 - 5a^2b^7c^4d^2g^4i^2 + 10a^2b^6c^3d^3g^4i^2 - 10a^3b^5c^2d^4g^4i^2 + 5a^4b^4c^2d^4g^4i^2 - a^5b^3d^6g^4i^2)x^4 + (b^8c^6g^4i^2 - 2a^2b^7c^5d^2g^4i^2 - 5a^2b^6c^4d^2g^4i^2 + 20a^3b^5c^3d^3g^4i^2 - 25a^4b^4c^2d^4g^4i^2 + 14a^5b^3c^2d^5g^4i^2 - 3a^6b^2d^6g^4i^2)x^3 + 3(a^7b^3c^6g^4i^2 - 4a^2b^6c^5d^2g^4i^2 + 5a^3b^5c^4d^2g^4i^2 - 5a^5b^3c^2d^4g^4i^2 + 4a^6b^2c^3d^3g^4i^2 - a^7b^2d^6g^4i^2)x^2 + (3a^2b^6c^6g^4i^2 - 14a^3b^5c^5d^2g^4i^2 + 25a^4b^4c^4d^2g^4i^2 - 20a^5b^3c^3d^3g^4i^2 + 5a^6b^2c^2d^4g^4i^2 + 2a^7b^2c^2d^4g^4i^2 - a^8d^6g^4i^2)x) \cdot B^2 - 2/9(b^4c^4 - 9a^2b^3c^3d + 54a^2b^2c^2d^2 - 55a^3b^2c^2d^3 + 9a^4d^4 + 30(b^4c^2d^3 - a^2b^3d^4)x^3 + 3(11b^4c^2d^2 + 8a^2b^3c^2d^3 - 19a^2b^2d^4)x^2 - 18(b^4d^4x^4 + a^3b^2c^2d^3 + (b^4c^2d^3 + 3a^2b^3d^4)x^3 + 3(a^2b^3c^2d^3 + a^2b^2d^4)x^2 + (3a^2b^2c^2d^3 + a^3b^2d^4)x) \log(bx + a)^2 - 18(b^4d^4x^4 + a^3b^2c^2d^3 + (b^4c^2d^3 + 3a^2b^3d^4)x^3 + 3(a^2b^3c^2d^3 + a^2b^2d^4)x^2 + (3a^2b^2c^2d^3 + a^3b^2d^4)x) \log(dx + c)^2 - (5b^4c^3d - 81a^2b^3c^2d^2 + 57a^2b^2c^2d^3 + 19a^3b^2d^4)x + 30(b^4d^4x^4 + a^3b^2c^2d^3 + (b^4c^2d^3 + 3a^2b^3d^4)x^3 + 3(a^2b^3c^2d^3 + a^2b^2d^4)x^2 + (3a^2b^2c^2d^3 + a^3b^2d^4)x) \log(bx + a) - 6(5b^4d^4x^4 + 5a^3b^2c^2d^3 + 5(b^4c^2d^3 + 3a^2b^3d^4)x^3 + 15(a^2b^3c^2d^3 + a^2b^2d^4)x^2 + 5(3a^2b^2c^2d^3 + a^3b^2d^4)x - 6(b^4d^4x^4 + a^3b^2c^2d^3 + (b^4c^2d^3 + 3a^2b^3d^4)x^3 + 3(a^2b^3c^2d^3 + a^2b^2d^4)x^2 + (3a^2b^2c^2d^3 + a^3b^2d^4)x) \log(bx + a)) \log(dx + c)) \cdot A \cdot B \cdot n / (a^3b^5c^6g^4i^2 - 5a^4b^4c^5d^2g^4i^2 + 10a^5b^3c^4d^2g^4i^2 - 10a^6b^2c^3d^3g^4i^2 +
\end{aligned}$$

$$\begin{aligned}
& 5a^7b^2c^2d^4g^4i^2 - a^8c^2d^5g^4i^2 + (b^8c^5d^2g^4i^2 - 5a^2b^7c^4d^2g^4i^2 + 10a^2b^6c^3d^3g^4i^2 - 10a^3b^5c^2d^4g^4i^2 \\
& + 5a^4b^4c^2d^5g^4i^2 - a^5b^3d^6g^4i^2)x^4 + (b^8c^6g^4i^2 - 2a^2b^7c^5d^2g^4i^2 - 5a^2b^6c^4d^2g^4i^2 + 20a^3b^5c^3d^3g^4i^2 \\
& - 25a^4b^4c^2d^4g^4i^2 + 14a^5b^3c^2d^5g^4i^2 - 3a^6b^2d^6g^4i^2)x^3 + 3(a^2b^7c^6g^4i^2 - 4a^2b^6c^5d^2g^4i^2 + 5a^3b^5c^4d^2g^4i^2 \\
& - 5a^5b^3c^2d^4g^4i^2 + 4a^6b^2c^2d^5g^4i^2 - a^7b^2d^6g^4i^2)x^2 + (3a^2b^6c^6g^4i^2 - 14a^3b^5c^5d^2g^4i^2 + 25a^4b^4c^4d^2g^4i^2 \\
& - 20a^5b^3c^3d^3g^4i^2 + 5a^6b^2c^2d^4g^4i^2 + 2a^7b^2c^2d^5g^4i^2 - a^8d^6g^4i^2)x - 1/3A^2((12b^3d^3x^3 + b^3c^3 - 5a^2b^2c^2d + 13a^2b^2c^2d^2 + 3a^3d^3 + 6(b^3c^2d^2 \\
& + 5a^2b^2d^3)x^2 - 2(b^3c^2d - 8a^2b^2c^2d^2 - 11a^2b^2d^3)x)/(b^7c^4d - 4a^2b^6c^3d^2 + 6a^2b^5c^2d^3 - 4a^3b^4c^2d^4 + a^4b^3d^5) \\
&)g^4i^2x^4 + (b^7c^5 - a^2b^6c^4d - 6a^2b^5c^3d^2 + 14a^3b^4c^2d^3 - 11a^4b^3c^2d^4 + 3a^5b^2d^5)g^4i^2x^3 + 3(a^2b^6c^5 - 3a^2b^5c^4d \\
& + 2a^3b^4c^3d^2 + 2a^4b^3c^2d^3 - 3a^5b^2c^2d^4 + a^6b^2d^5)g^4i^2x^2 + (3a^2b^5c^5 - 11a^3b^4c^4d + 14a^4b^3c^3d^2 - 6a^5b^2c^2d^3 \\
& - a^6b^2c^2d^4 + a^7d^5)g^4i^2x + (a^3b^4c^5 - 4a^4b^3c^4d + 6a^5b^2c^3d^2 - 4a^6b^2c^2d^3 + a^7c^2d^4)g^4i^2 + 12b^2d^3 \log(bx + a) \\
& /((b^5c^5 - 5a^2b^4c^4d + 10a^2b^3c^3d^2 - 10a^3b^2c^2d^3 + 5a^4b^2c^2d^4 - a^5d^5)g^4i^2) - 12b^2d^3 \log(dx + c) /((b^5c^5 - 5a^2b^4c^4d \\
& + 10a^2b^3c^3d^2 - 10a^3b^2c^2d^3 + 5a^4b^2c^2d^4 - a^5d^5)g^4i^2)
\end{aligned}$$

mupad [B] time = 11.67, size = 3157, normalized size = 4.33

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{int}((A + B \cdot \log(e((a + bx)/(c + dx))^n))^2 / ((a \cdot g + b \cdot g \cdot x)^4 \cdot (c \cdot i + d \cdot i \cdot x)^2), x)$

[Out] $\log(e((a + bx)/(c + dx))^n) \cdot ((x \cdot (8A \cdot B \cdot b^2 \cdot c \cdot d - 8A \cdot B \cdot a \cdot b \cdot d^2 + 12B^2 \cdot b \cdot d \cdot n \cdot (a \cdot d + b \cdot c) + (16B^2 \cdot a \cdot b \cdot d^2 \cdot n) / 3 - (16B^2 \cdot b^2 \cdot c \cdot d \cdot n) / 3) - 6A \cdot B \cdot a^2 \cdot d^2 + 2A \cdot B \cdot b^2 \cdot c^2 + 6B^2 \cdot a^2 \cdot d^2 \cdot n + (2B^2 \cdot b^2 \cdot c^2 \cdot n) / 3 + 12B^2 \cdot b^2 \cdot d^2 \cdot n \cdot x^2 + 4A \cdot B \cdot a \cdot b \cdot c \cdot d + (16B^2 \cdot a \cdot b \cdot c \cdot d \cdot n) / 3) / (x \cdot (3a^6d^4g^4i^2 - 9a^2b^4c^4g^4i^2 + 24a^3b^3c^3d^2g^4i^2 - 18a^4b^2c^2d^2g^4i^2) - x^2 \cdot (9a^2b^5c^4g^4i^2 - 9a^5b^2d^4g^4i^2 - 18a^2b^4c^3d^2g^4i^2 + 18a^4b^2c^2d^3g^4i^2) - x^3 \cdot (3b^6c^4g^4i^2 - 9a^4b^2d^4g^4i^2 + 24a^3b^3c^2d^3g^4i^2 - 18a^2b^4c^2d^2g^4i^2) + x^4 \cdot (3a^3b^3d^4g^4i^2 - 3b^6c^3d^2g^4i^2 + 9a^2b^5c^2d^2g^4i^2 - 9a^2b^4c^2d^3g^4i^2) - 3a^3b^3c^4g^4i^2 + 3a^6c^2d^3g^4i^2 + 9a^4b^2c^3d^2g^4i^2 - 9a^5b^2c^2d^2g^4i^2) - (4d^3 \cdot (6A \cdot B \cdot b + 5B^2 \cdot b \cdot n) \cdot (x \cdot ((a \cdot d + b \cdot c) \cdot ((3a \cdot g^4i^2 \cdot n \cdot (a \cdot d - b \cdot c))^4) / (2d) + (3g^4i^2 \cdot n \cdot (a \cdot d - b \cdot c))^4 \cdot (2a \cdot d - b \cdot c)) / (2d^2)) + (3a \cdot b \cdot c \cdot g^4i^2 \cdot n \cdot (a \cdot d - b \cdot c)^4) / d) + x^2 \cdot (b$

$$\begin{aligned}
& *d*((3*a*g^4*i^2*n*(a*d - b*c)^4)/(2*d) + (3*g^4*i^2*n*(a*d - b*c)^4*(2*a*d \\
& - b*c))/(2*d^2)) + (3*b*g^4*i^2*n*(a*d + b*c)*(a*d - b*c)^4)/d + a*c*((3* \\
& a*g^4*i^2*n*(a*d - b*c)^4)/(2*d) + (3*g^4*i^2*n*(a*d - b*c)^4*(2*a*d - b*c) \\
&)/(2*d^2)) + 3*b^2*g^4*i^2*n*x^3*(a*d - b*c)^4)/(3*g^4*i^2*n*(a*d - b*c)^3 \\
& *(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)*(x*(3*a^6*d^4*g^4*i^2 - 9*a^2*b^4*c^4*g^4* \\
& i^2 + 24*a^3*b^3*c^3*d*g^4*i^2 - 18*a^4*b^2*c^2*d^2*g^4*i^2) - x^2*(9*a*b^5 \\
& *c^4*g^4*i^2 - 9*a^5*b*d^4*g^4*i^2 - 18*a^2*b^4*c^3*d*g^4*i^2 + 18*a^4*b^2* \\
& c*d^3*g^4*i^2) - x^3*(3*b^6*c^4*g^4*i^2 - 9*a^4*b^2*d^4*g^4*i^2 + 24*a^3*b^ \\
& 3*c*d^3*g^4*i^2 - 18*a^2*b^4*c^2*d^2*g^4*i^2) + x^4*(3*a^3*b^3*d^4*g^4*i^2 \\
& - 3*b^6*c^3*d*g^4*i^2 + 9*a*b^5*c^2*d^2*g^4*i^2 - 9*a^2*b^4*c*d^3*g^4*i^2) \\
& - 3*a^3*b^3*c^4*g^4*i^2 + 3*a^6*c*d^3*g^4*i^2 + 9*a^4*b^2*c^3*d*g^4*i^2 - 9 \\
& *a^5*b*c^2*d^2*g^4*i^2))) - ((27*A^2*a^3*d^3 + 9*A^2*b^3*c^3 + 54*B^2*a^3*d \\
& ^3*n^2 + 2*B^2*b^3*c^3*n^2 - 45*A^2*a*b^2*c^2*d + 117*A^2*a^2*b*c*d^2 - 54* \\
& A*B*a^3*d^3*n + 6*A*B*b^3*c^3*n - 25*B^2*a*b^2*c^2*d*n^2 + 299*B^2*a^2*b*c* \\
& d^2*n^2 - 48*A*B*a*b^2*c^2*d*n + 276*A*B*a^2*b*c*d^2*n)/(3*(a*d - b*c)) + (\\
& x^2*(90*A^2*a*b^2*d^3 + 18*A^2*b^3*c*d^2 + 245*B^2*a*b^2*d^3*n^2 + 85*B^2*b \\
& ^3*c*d^2*n^2 + 114*A*B*a*b^2*d^3*n + 66*A*B*b^3*c*d^2*n))/(a*d - b*c) + (2* \\
& x^3*(18*A^2*b^3*d^3 + 55*B^2*b^3*d^3*n^2 + 30*A*B*b^3*d^3*n))/(a*d - b*c) + \\
& (x*(198*A^2*a^2*b*d^3 - 18*A^2*b^3*c^2*d + 144*A^2*a*b^2*c*d^2 + 461*B^2*a \\
& ^2*b*d^3*n^2 - 19*B^2*b^3*c^2*d*n^2 + 548*B^2*a*b^2*c*d^2*n^2 + 114*A*B*a^2 \\
& *b*d^3*n - 30*A*B*b^3*c^2*d*n + 456*A*B*a*b^2*c*d^2*n))/(3*(a*d - b*c)))/(x \\
& *(9*a^6*d^4*g^4*i^2 - 27*a^2*b^4*c^4*g^4*i^2 + 72*a^3*b^3*c^3*d*g^4*i^2 - 5 \\
& 4*a^4*b^2*c^2*d^2*g^4*i^2) - x^2*(27*a*b^5*c^4*g^4*i^2 - 27*a^5*b*d^4*g^4*i \\
& ^2 - 54*a^2*b^4*c^3*d*g^4*i^2 + 54*a^4*b^2*c*d^3*g^4*i^2) - x^3*(9*b^6*c^4* \\
& g^4*i^2 - 27*a^4*b^2*d^4*g^4*i^2 + 72*a^3*b^3*c*d^3*g^4*i^2 - 54*a^2*b^4*c^ \\
& 2*d^2*g^4*i^2) + x^4*(9*a^3*b^3*d^4*g^4*i^2 - 9*b^6*c^3*d*g^4*i^2 + 27*a*b^ \\
& 5*c^2*d^2*g^4*i^2 - 27*a^2*b^4*c*d^3*g^4*i^2) - 9*a^3*b^3*c^4*g^4*i^2 + 9*a \\
& ^6*c*d^3*g^4*i^2 + 27*a^4*b^2*c^3*d*g^4*i^2 - 27*a^5*b*c^2*d^2*g^4*i^2) - l \\
& og(e*((a + b*x)/(c + d*x))^n)^2*((B^2*(3*a*d + b*c))/(3*(a^2*d^2 + b^2*c^2 \\
& - 2*a*b*c*d)) + (4*B^2*b*d*x)/(3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)))/(x^3*(b \\
& ^3*c*g^4*i^2 + 3*a*b^2*d*g^4*i^2) + x^2*(3*a*b^2*c*g^4*i^2 + 3*a^2*b*d*g^4* \\
& i^2) + x*(a^3*d*g^4*i^2 + 3*a^2*b*c*g^4*i^2) + a^3*c*g^4*i^2 + b^3*d*g^4*i^ \\
& 2*x^4) - (2*d^3*(6*A*B*b + 5*B^2*b*n))/(3*g^4*i^2*n*(a*d - b*c)^3*(a^2*d^2 \\
& + b^2*c^2 - 2*a*b*c*d) + (4*B^2*b*d^3*(x*((a*d + b*c)*((a*g^4*i^2*n*(a*d - \\
& b*c))/(2*d) + (g^4*i^2*n*(a*d - b*c)*(2*a*d - b*c))/(2*d^2)) + (a*b*c*g^4* \\
& i^2*n*(a*d - b*c))/d) + x^2*(b*d*((a*g^4*i^2*n*(a*d - b*c))/(2*d) + (g^4*i^ \\
& 2*n*(a*d - b*c)*(2*a*d - b*c))/(2*d^2)) + (b*g^4*i^2*n*(a*d + b*c)*(a*d - b \\
& *c))/d) + a*c*((a*g^4*i^2*n*(a*d - b*c))/(2*d) + (g^4*i^2*n*(a*d - b*c)*(2* \\
& a*d - b*c))/(2*d^2)) + b^2*g^4*i^2*n*x^3*(a*d - b*c))/(g^4*i^2*n*(a*d - b* \\
& c)^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)*(x^3*(b^3*c*g^4*i^2 + 3*a*b^2*d*g^4*i^ \\
& 2) + x^2*(3*a*b^2*c*g^4*i^2 + 3*a^2*b*d*g^4*i^2) + x*(a^3*d*g^4*i^2 + 3*a^2 \\
& *b*c*g^4*i^2) + a^3*c*g^4*i^2 + b^3*d*g^4*i^2*x^4))) - (b*d^3*atan((b*d^3*(\\
& 18*A^2 + 55*B^2*n^2 + 30*A*B*n)*(9*a^5*d^5*g^4*i^2 + 9*b^5*c^5*g^4*i^2 - 27 \\
& *a*b^4*c^4*d*g^4*i^2 - 27*a^4*b*c*d^4*g^4*i^2 + 18*a^2*b^3*c^3*d^2*g^4*i^2 \\
& + 18*a^3*b^2*c^2*d^3*g^4*i^2)*2i)/(9*g^4*i^2*(a*d - b*c)^5*(36*A^2*b*d^3 +
\end{aligned}$$

$$110*B^2*b*d^3*n^2 + 60*A*B*b*d^3*n)) + (b^2*d^4*x*(18*A^2 + 55*B^2*n^2 + 30*A*B*n)*(a^4*d^4*g^4*i^2 + b^4*c^4*g^4*i^2 - 4*a*b^3*c^3*d*g^4*i^2 - 4*a^3*b*c*d^3*g^4*i^2 + 6*a^2*b^2*c^2*d^2*g^4*i^2)*4i)/(g^4*i^2*(a*d - b*c)^5*(36*A^2*b*d^3 + 110*B^2*b*d^3*n^2 + 60*A*B*b*d^3*n)))*(18*A^2 + 55*B^2*n^2 + 30*A*B*n)*4i)/(9*g^4*i^2*(a*d - b*c)^5) + (4*B^2*b*d^3*log(e*((a + b*x)/(c + d*x))^n)^3)/(3*g^4*i^2*n*(a*d - b*c)^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))$$

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(b*g*x+a*g)**4/(d*i*x+c*i)**2, x)

[Out] Timed out

$$3.202 \quad \int \frac{(ag+bgx)^3 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ci+dix)^3} dx$$

Optimal. Leaf size=676

$$\frac{6b^2Bg^3n(bc-ad)\text{Li}_2\left(\frac{d(a+bx)}{b(c+dx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{d^4i^3} + \frac{3b^2g^3(bc-ad)\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{d^4i^3} + \dots$$

[Out] $1/4*B^2*(-a*d+b*c)*g^3*n^2*(b*x+a)^2/d^2/i^3/(d*x+c)^2-4*A*b*B*(-a*d+b*c)*g^3*n*(b*x+a)/d^3/i^3/(d*x+c)+4*b*B^2*(-a*d+b*c)*g^3*n^2*(b*x+a)/d^3/i^3/(d*x+c)-4*b*B^2*(-a*d+b*c)*g^3*n*(b*x+a)*\ln(e*((b*x+a)/(d*x+c))^n)/d^3/i^3/(d*x+c)-1/2*B*(-a*d+b*c)*g^3*n*(b*x+a)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/d^2/i^3/(d*x+c)^2+b^2*g^3*(b*x+a)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/d^3/i^3+1/2*(-a*d+b*c)*g^3*(b*x+a)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/d^2/i^3/(d*x+c)^2+2*b*(-a*d+b*c)*g^3*(b*x+a)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/d^3/i^3/(d*x+c)+2*b^2*B*(-a*d+b*c)*g^3*n*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))*\ln((-a*d+b*c)/b/(d*x+c))/d^4/i^3+3*b^2*(-a*d+b*c)*g^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2*\ln((-a*d+b*c)/b/(d*x+c))/d^4/i^3+2*b^2*B^2*(-a*d+b*c)*g^3*n^2*\text{polylog}(2,d*(b*x+a)/b/(d*x+c))/d^4/i^3+6*b^2*B*(-a*d+b*c)*g^3*n*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))*\text{polylog}(2,d*(b*x+a)/b/(d*x+c))/d^4/i^3-6*b^2*B^2*(-a*d+b*c)*g^3*n^2*\text{polylog}(3,d*(b*x+a)/b/(d*x+c))/d^4/i^3$

Rubi [B] time = 6.20, antiderivative size = 2026, normalized size of antiderivative = 3.00, number of steps used = 117, number of rules used = 26, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}} = 0.578$, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 44, 6688, 6742, 2500, 2433, 2375, 2317, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

[In] $\text{Int}[(a*g + b*g*x)^3*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2/(c*i + d*i*x)^3, x]$

[Out] $(B^2*(b*c - a*d)^3*g^3*n^2)/(4*d^4*i^3*(c + d*x)^2) - (9*b*B^2*(b*c - a*d)^2*g^3*n^2)/(2*d^4*i^3*(c + d*x)) - (9*b^2*B^2*(b*c - a*d)*g^3*n^2*\text{Log}[a + b*x])/(2*d^4*i^3) - (a*b^2*B^2*g^3*n^2*\text{Log}[a + b*x]^2)/(d^3*i^3) - (5*b^2*B^2*(b*c - a*d)*g^3*n^2*\text{Log}[a + b*x]^2)/(2*d^4*i^3) - (B*(b*c - a*d)^3*g^3*n*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(2*d^4*i^3*(c + d*x)^2) + (5*b*B*(b*c - a*d)^2*g^3*n*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(d^4*i^3*(c + d*x)) + (2*a*b^2*B*g^3*n*\text{Log}[a + b*x]*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(d^3*i^3) + (5*b^2*B*(b*c - a*d)*g^3*n*\text{Log}[a + b*x]*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(d^3*i^3)$

$$\begin{aligned}
& /((c + d*x))^n) / (d^{4*i^3}) + (b^3*g^3*x*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2) / (d^{3*i^3}) + ((b*c - a*d)^3*g^3*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2) / (2*d^{4*i^3}*(c + d*x)^2) - (3*b*(b*c - a*d)^2*g^3*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2) / (d^{4*i^3}*(c + d*x)) + (9*b^2*B^2*(b*c - a*d)*g^3*n^2*\text{Log}[c + d*x]) / (2*d^{4*i^3}) + (6*A*b^2*B*(b*c - a*d)*g^3*n*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c + d*x]) / (d^{4*i^3}) + (2*b^3*B^2*c*g^3*n^2*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c + d*x]) / (d^{4*i^3}) + (5*b^2*B^2*(b*c - a*d)*g^3*n^2*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c + d*x]) / (d^{4*i^3}) + (3*b^2*B^2*(b*c - a*d)*g^3*\text{Log}[(a + b*x)^n]^2*\text{Log}[c + d*x]) / (d^{4*i^3}) - (2*b^3*B*c*g^3*n*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])*\text{Log}[c + d*x]) / (d^{4*i^3}) - (5*b^2*B*(b*c - a*d)*g^3*n*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])*\text{Log}[c + d*x]) / (d^{4*i^3}) - (3*b^2*(b*c - a*d)*g^3*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2*\text{Log}[c + d*x]) / (d^{4*i^3}) - (3*A*b^2*B*(b*c - a*d)*g^3*n*\text{Log}[c + d*x]^2) / (d^{4*i^3}) - (b^3*B^2*c*g^3*n^2*\text{Log}[c + d*x]^2) / (d^{4*i^3}) - (5*b^2*B^2*(b*c - a*d)*g^3*n^2*\text{Log}[c + d*x]^2) / (2*d^{4*i^3}) + (3*b^2*B^2*(b*c - a*d)*g^3*n^2*\text{Log}[a + b*x]*\text{Log}[c + d*x]^2) / (d^{4*i^3}) - (3*b^2*B^2*(b*c - a*d)*g^3*n*\text{Log}[e*((a + b*x)/(c + d*x))^n]*\text{Log}[c + d*x]^2) / (d^{4*i^3}) - (b^2*B^2*(b*c - a*d)*g^3*n^2*\text{Log}[c + d*x]^3) / (d^{4*i^3}) + (2*a*b^2*B^2*g^3*n^2*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)]) / (d^{3*i^3}) + (5*b^2*B^2*(b*c - a*d)*g^3*n^2*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)]) / (d^{4*i^3}) - (3*b^2*B^2*(b*c - a*d)*g^3*\text{Log}[(a + b*x)^n]^2*\text{Log}[(b*(c + d*x))/(b*c - a*d)]) / (d^{4*i^3}) + (6*b^2*B^2*(b*c - a*d)*g^3*n*\text{Log}[a + b*x]*\text{Log}[c + d*x]*\text{Log}[(c + d*x)^{-n}]) / (d^{4*i^3}) + (3*b^2*B^2*(b*c - a*d)*g^3*\text{Log}[a + b*x]*\text{Log}[(c + d*x)^{-n}]^2) / (d^{4*i^3}) - (3*b^2*B^2*(b*c - a*d)*g^3*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[(c + d*x)^{-n}]^2) / (d^{4*i^3}) - (6*b^2*B^2*(b*c - a*d)*g^3*n*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c + d*x]*(\text{Log}[(a + b*x)^n] - \text{Log}[e*((a + b*x)/(c + d*x))^n] + \text{Log}[(c + d*x)^{-n}]]) / (d^{4*i^3}) + (2*a*b^2*B^2*g^3*n^2*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))]) / (d^{3*i^3}) + (5*b^2*B^2*(b*c - a*d)*g^3*n^2*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))]) / (d^{4*i^3}) - (6*b^2*B^2*(b*c - a*d)*g^3*n*\text{Log}[(a + b*x)^n]*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))]) / (d^{4*i^3}) + (6*A*b^2*B*(b*c - a*d)*g^3*n*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]) / (d^{4*i^3}) + (2*b^3*B^2*c*g^3*n^2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]) / (d^{4*i^3}) + (5*b^2*B^2*(b*c - a*d)*g^3*n^2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]) / (d^{4*i^3}) + (6*b^2*B^2*(b*c - a*d)*g^3*n*\text{Log}[(c + d*x)^{-n}]*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]) / (d^{4*i^3}) - (6*b^2*B^2*(b*c - a*d)*g^3*n*(\text{Log}[(a + b*x)^n] - \text{Log}[e*((a + b*x)/(c + d*x))^n] + \text{Log}[(c + d*x)^{-n}])* \text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]) / (d^{4*i^3}) + (6*b^2*B^2*(b*c - a*d)*g^3*n^2*\text{PolyLog}[3, -((d*(a + b*x))/(b*c - a*d))]) / (d^{4*i^3}) + (6*b^2*B^2*(b*c - a*d)*g^3*n^2*\text{PolyLog}[3, (b*(c + d*x))/(b*c - a*d)]) / (d^{4*i^3})
\end{aligned}$$

Rule 12

```

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

```

Rule 30

Int[(x_)^(m_), x_Symbol] := Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && NeQ[m, -1]

Rule 44

Int[((a_) + (b_)*(x_))^(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])

Rule 2301

Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2302

Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)^(p_))/(x_), x_Symbol] := Dist[1/(b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p}, x]

Rule 2317

Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)^(p_)/((d_) + (e_)*(x_)), x_Symbol] := Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e, Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]

Rule 2374

Int[(Log[(d_)*((e_) + (f_)*(x_)^(m_))])*(a_) + Log[(c_)*(x_)^(n_)]*(b_)^(p_))/(x_), x_Symbol] := -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0] && EqQ[d*e, 1]

Rule 2375

Int[(Log[(d_)*((e_) + (f_)*(x_)^(m_))]^(r_))*((a_) + Log[(c_)*(x_)^(n_)]*(b_)^(p_))/(x_), x_Symbol] := Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m - 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,

$e, f, r, m, n\}, x] \&\& \text{IGtQ}[p, 0] \&\& \text{NeQ}[d*e, 1]$

Rule 2390

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_.) + (e_.)*(x_.))^{(n_.)}]*(b_.))^{(p_.)}*((f_.) + (g_.)*(x_.))^{(q_.)}, x_Symbol] \rightarrow \text{Dist}[1/e, \text{Subst}[\text{Int}[(f*x)/d]^{q*}(a + b*\text{Log}[c*x^n])^p, x], x, d + e*x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g, n, p, q\}, x] \&\& \text{EqQ}[e*f - d*g, 0]$

Rule 2391

$\text{Int}[\text{Log}[(c_.)*((d_.) + (e_.)*(x_.))^{(n_.)}]/(x_), x_Symbol] \rightarrow -\text{Simp}[\text{PolyLog}[2, -(c*e*x^n)]/n, x] /; \text{FreeQ}[\{c, d, e, n\}, x] \&\& \text{EqQ}[c*d, 1]$

Rule 2393

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_.) + (e_.)*(x_.))]*(b_.)]/((f_.) + (g_.)*(x_.)), x_Symbol] \rightarrow \text{Dist}[1/g, \text{Subst}[\text{Int}[(a + b*\text{Log}[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g\}, x] \&\& \text{NeQ}[e*f - d*g, 0] \&\& \text{EqQ}[g + c*(e*f - d*g), 0]$

Rule 2394

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_.) + (e_.)*(x_.))^{(n_.)}]*(b_.)]/((f_.) + (g_.)*(x_.)), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[(e*(f + g*x))/(e*f - d*g)]*(a + b*\text{Log}[c*(d + e*x)^n]))/g, x] - \text{Dist}[(b*e*n)/g, \text{Int}[\text{Log}[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g, n\}, x] \&\& \text{NeQ}[e*f - d*g, 0]$

Rule 2396

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_.) + (e_.)*(x_.))^{(n_.)}]*(b_.))^{(p_.)}/((f_.) + (g_.)*(x_.)), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[(e*(f + g*x))/(e*f - d*g)]*(a + b*\text{Log}[c*(d + e*x)^n])^p)/g, x] - \text{Dist}[(b*e*n*p)/g, \text{Int}[(\text{Log}[(e*(f + g*x))/(e*f - d*g)]*(a + b*\text{Log}[c*(d + e*x)^n])^{(p-1)})/(d + e*x), x], x] /; \text{FreeQ}[\{a, b, c, d, e, f, g, n, p\}, x] \&\& \text{NeQ}[e*f - d*g, 0] \&\& \text{IGtQ}[p, 1]$

Rule 2418

$\text{Int}[(a_.) + \text{Log}[(c_.)*((d_.) + (e_.)*(x_.))^{(n_.)}]*(b_.))^{(p_.)}*(\text{RFX}_), x_Symbol] \rightarrow \text{With}[\{u = \text{ExpandIntegrand}[(a + b*\text{Log}[c*(d + e*x)^n])^p, \text{RFX}, x]\}, \text{Int}[u, x] /; \text{SumQ}[u] /; \text{FreeQ}[\{a, b, c, d, e, n\}, x] \&\& \text{RationalFunctionQ}[\text{RFX}, x] \&\& \text{IntegerQ}[p]$

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[(k*x)/d]^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e]^m)], x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n])]/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m])]/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] :>
Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q]^r)]/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n])]/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n])]/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2523

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] := Simp[x*(a +
  b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*
  RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, p}, x] && Rat
  ionalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
  ymbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
  , Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
  FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
  ), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
  , x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
  a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d
  , e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
  IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
  [{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
  ]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
  onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
  ymbol] := Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
  , e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6688

```
Int[u_, x_Symbol] := With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
  erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] := With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
  ]
```

Rubi steps

$$\begin{aligned}
\int \frac{(ag + bgx)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(202c + 202dx)^3} dx &= \int \left(\frac{b^3 g^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{8242408d^3} + \frac{(-bc + ad)^3 g^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{8242408d^3(c + dx)} \right) dx \\
&= \frac{(b^3 g^3) \int \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx}{8242408d^3} - \frac{(3b^2(bc - ad)g^3) \int \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx}{8242408d^3} \\
&= \frac{b^3 g^3 x \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{8242408d^3} + \frac{(bc - ad)^3 g^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{16484816d^4(c + dx)^2} \\
&= \frac{b^3 g^3 x \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{8242408d^3} + \frac{(bc - ad)^3 g^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{16484816d^4(c + dx)^2} \\
&= \frac{b^3 g^3 x \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{8242408d^3} + \frac{(bc - ad)^3 g^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{16484816d^4(c + dx)^2} \\
&= \frac{b^3 g^3 x \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{8242408d^3} + \frac{(bc - ad)^3 g^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{16484816d^4(c + dx)^2} \\
&= -\frac{B(bc - ad)^3 g^3 n \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{16484816d^4(c + dx)^2} + \frac{5bB(bc - ad)^2 g^3 n \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{8242408d^3} \\
&= -\frac{B(bc - ad)^3 g^3 n \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{16484816d^4(c + dx)^2} + \frac{5bB(bc - ad)^2 g^3 n \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{8242408d^3} \\
&= -\frac{B(bc - ad)^3 g^3 n \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{16484816d^4(c + dx)^2} + \frac{5bB(bc - ad)^2 g^3 n \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{8242408d^3} \\
&= \frac{B^2(bc - ad)^3 g^3 n^2}{32969632d^4(c + dx)^2} - \frac{9bB^2(bc - ad)^2 g^3 n^2}{16484816d^4(c + dx)} - \frac{9b^2 B^2(bc - ad) g^3 n^2}{16484816d^4} \\
&= \frac{B^2(bc - ad)^3 g^3 n^2}{32969632d^4(c + dx)^2} - \frac{9bB^2(bc - ad)^2 g^3 n^2}{16484816d^4(c + dx)} - \frac{9b^2 B^2(bc - ad) g^3 n^2}{16484816d^4}
\end{aligned}$$

Mathematica [B] time = 9.80, size = 5730, normalized size = 8.48

Result too large to show

Antiderivative was successfully verified.

[In] Integrate[((a*g + b*g*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(c*i + d*i*x)^3,x]

[Out] Result too large to show

fricas [F] time = 0.89, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{A^2 b^3 g^3 x^3 + 3 A^2 a b^2 g^3 x^2 + 3 A^2 a^2 b g^3 x + A^2 a^3 g^3 + (B^2 b^3 g^3 x^3 + 3 B^2 a b^2 g^3 x^2 + 3 B^2 a^2 b g^3 x + B^2 a^3 g^3)}{d^3 i^3 x^3 + 3 c d^2 i^3 x^2 + 3 c^2 d i^3 x + c^3 i^3}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^3,x, algorithm="fricas")

[Out] integral((A^2*b^3*g^3*x^3 + 3*A^2*a*b^2*g^3*x^2 + 3*A^2*a^2*b*g^3*x + A^2*a^3*g^3 + (B^2*b^3*g^3*x^3 + 3*B^2*a*b^2*g^3*x^2 + 3*B^2*a^2*b*g^3*x + B^2*a^3*g^3)*log(e*((b*x + a)/(d*x + c))^n))^2 + 2*(A*B*b^3*g^3*x^3 + 3*A*B*a*b^2*g^3*x^2 + 3*A*B*a^2*b*g^3*x + A*B*a^3*g^3)*log(e*((b*x + a)/(d*x + c))^n))/(d^3*i^3*x^3 + 3*c*d^2*i^3*x^2 + 3*c^2*d*i^3*x + c^3*i^3), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^3,x, algorithm="giac")

[Out] Timed out

maple [F] time = 0.45, size = 0, normalized size = 0.00

$$\int \frac{(bgx + ag)^3 \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)^2}{(dix + ci)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{int}((b*g*x+a*g)^3*(B*\ln(e*((b*x+a)/(d*x+c)))^n)+A)^2/(d*i*x+c*i)^3,x)$

[Out] $\text{int}((b*g*x+a*g)^3*(B*\ln(e*((b*x+a)/(d*x+c)))^n)+A)^2/(d*i*x+c*i)^3,x)$

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{integrate}((b*g*x+a*g)^3*(A+B*\log(e*((b*x+a)/(d*x+c)))^n))^2/(d*i*x+c*i)^3,x,$
algorithm="maxima")

[Out]
$$\begin{aligned} & \frac{3}{2}A*B*a^2*b*g^3*n*((b*c^2 - 3*a*c*d + 2*(b*c*d - 2*a*d^2)*x)/((b*c*d^4 - a*d^5)*i^3*x^2 + 2*(b*c^2*d^3 - a*c*d^4)*i^3*x + (b*c^3*d^2 - a*c^2*d^3)*i^3) \\ & + 2*(b^2*c - 2*a*b*d)*\log(b*x + a)/((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)*i^3) \\ & - 2*(b^2*c - 2*a*b*d)*\log(d*x + c)/((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)*i^3) \\ & + \frac{1}{2}A*B*a^3*g^3*n*((2*b*d*x + 3*b*c - a*d)/((b*c*d^3 - a*d^4)*i^3*x^2 + 2*(b*c^2*d^2 - a*c*d^3)*i^3*x + (b*c^3*d - a*c^2*d^2)*i^3) \\ & + 2*b^2*\log(b*x + a)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3) - 2*b^2*\log(d*x + c)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3) \\ & - \frac{1}{2}A^2*b^3*g^3*((6*c^2*d*x + 5*c^3)/(d^6*i^3*x^2 + 2*c*d^5*i^3*x + c^2*d^4*i^3) - 2*x/(d^3*i^3) + 6*c*\log(d*x + c)/(d^4*i^3) + 3/2*A^2*a*b^2*g^3*((4*c*d*x + 3*c^2)/(d^5*i^3*x^2 + 2*c*d^4*i^3*x + c^2*d^3*i^3) + 2*\log(d*x + c)/(d^3*i^3)) - 3*(2*d*x + c)*A*B*a^2*b*g^3*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(d^4*i^3*x^2 + 2*c*d^3*i^3*x + c^2*d^2*i^3) - 3/2*(2*d*x + c)*A^2*a^2*b*g^3/(d^4*i^3*x^2 + 2*c*d^3*i^3*x + c^2*d^2*i^3) - A*B*a^3*g^3*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(d^3*i^3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3) - 1/2*A^2*a^3*g^3/(d^3*i^3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3) + 1/2*(2*B^2*b^3*d^3*g^3*x^3 + 4*B^2*b^3*c*d^2*g^3*x^2 - 2*(2*b^3*c^2*d*g^3 - 6*a*b^2*c*d^2*g^3 + 3*a^2*b*d^3*g^3)*B^2*x - (5*b^3*c^3*g^3 - 9*a*b^2*c^2*d*g^3 + 3*a^2*b*c*d^2*g^3 + a^3*d^3*g^3)*B^2 - 6*((b^3*c*d^2*g^3 - a*b^2*d^3*g^3)*B^2*x^2 + 2*(b^3*c^2*d*g^3 - a*b^2*c*d^2*g^3)*B^2*x + (b^3*c^3*g^3 - a*b^2*c^2*d*g^3)*B^2)*\log(d*x + c))*\log((d*x + c)^n)^2/(d^6*i^3*x^2 + 2*c*d^5*i^3*x + c^2*d^4*i^3) - \text{integrate}(-(3*B^2*a^2*b*d^3*g^3*x*\log(e)^2 + B^2*a^3*d^3*g^3*\log(e)^2 + (B^2*b^3*d^3*g^3*\log(e)^2 + 2*A*B*b^3*d^3*g^3*\log(e))*x^3 + 3*(B^2*a*b^2*d^3*g^3*\log(e)^2 + 2*A*B*a*b^2*d^3*g^3*\log(e))*x^2 + (B^2*b^3*d^3*g^3*x^3 + 3*B^2*a*b^2*d^3*g^3*x^2 + 3*B^2*a^2*b*d^3*g^3*x + B^2*a^3*d^3*g^3)*\log((b*x + a)^n)^2 + 2*(3*B^2*a^2*b*d^3*g^3*x*\log(e) + B^2*a^3*d^3*g^3*\log(e) + (B^2*b^3*d^3*g^3*\log(e) + A*B*b^3*d^3*g^3)*x^3 + 3*(B^2*a*b^2*d^3*g^3*\log(e) + A*B*a*b^2*d^3*g^3)*x^2)*\log((b*x + a)^n) + (2*(2*b^3*c^2*d*g^3*n - 6*a*b^2*c*d^2*g^3*n + 3*(g^3*n - g^3*\log(e))*a^2*b*d^3)*B^2*x - 2*(A*B*b^3*d^3*g^3 + (g^3*n + g^3*\log(e))*B^2*b^3*d^3)*x^3 + (5*b^3*c^3*g^3*n - 9*a*b^2*c^2*d*g^3*n + 3*a^2*b*c*d^2*g^3*n + (g^3*n - 2*g^3*\log(e))*a^3*d^3)*B^2 - 2*(3*A*B*a*b^2*d^3*g^3 + \end{aligned}$$

$(2*b^3*c*d^2*g^3*n + 3*a*b^2*d^3*g^3*\log(e))*B^2)*x^2 + 6*((b^3*c*d^2*g^3*n - a*b^2*d^3*g^3*n)*B^2*x^2 + 2*(b^3*c^2*d*g^3*n - a*b^2*c*d^2*g^3*n)*B^2*x + (b^3*c^3*g^3*n - a*b^2*c^2*d*g^3*n)*B^2)*\log(d*x + c) - 2*(B^2*b^3*d^3*g^3*x^3 + 3*B^2*a*b^2*d^3*g^3*x^2 + 3*B^2*a^2*b*d^3*g^3*x + B^2*a^3*d^3*g^3)*\log((b*x + a)^n)*\log((d*x + c)^n)/(d^6*i^3*x^3 + 3*c*d^5*i^3*x^2 + 3*c^2*d^4*i^3*x + c^3*d^3*i^3), x)$

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ag + bgx)^3 \left(A + B \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ci + dix)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((a*g + b*g*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(c*i + d*i*x)^3, x)

[Out] int(((a*g + b*g*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(c*i + d*i*x)^3, x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)**3*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(d*i*x+c*i)**3, x)

[Out] Timed out

$$3.203 \quad \int \frac{(ag+bgx)^2 \left(A+B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ci+dix)^3} dx$$

Optimal. Leaf size=441

$$\frac{2b^2Bg^2n \operatorname{Li}_2 \left(\frac{d(a+bx)}{b(c+dx)} \right) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right) + b^2g^2 \log \left(\frac{bc-ad}{b(c+dx)} \right) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)^2}{d^3i^3} \frac{bg^2(a+bx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{d^2i^3(c+dx)}$$

[Out] $-1/4*B^2*g^2*n^2*(b*x+a)^2/d/i^3/(d*x+c)^2+2*A*b*B*g^2*n*(b*x+a)/d^2/i^3/(d*x+c)-2*b*B^2*g^2*n^2*(b*x+a)/d^2/i^3/(d*x+c)+2*b*B^2*g^2*n*(b*x+a)*\ln(e*((b*x+a)/(d*x+c))^n)/d^2/i^3/(d*x+c)+1/2*B*g^2*n*(b*x+a)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/d/i^3/(d*x+c)^2-1/2*g^2*(b*x+a)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/d/i^3/(d*x+c)^2-b*g^2*(b*x+a)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/d^2/i^3/(d*x+c)-b^2*g^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2*\ln((-a*d+b*c)/b/(d*x+c))/d^3/i^3-2*b^2*B*g^2*n*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))*\operatorname{polylog}(2,d*(b*x+a)/b/(d*x+c))/d^3/i^3+2*b^2*B^2*g^2*n^2*\operatorname{polylog}(3,d*(b*x+a)/b/(d*x+c))/d^3/i^3$

Rubi [B] time = 5.12, antiderivative size = 1435, normalized size of antiderivative = 3.25, number of steps used = 97, number of rules used = 25, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}} = 0.556$, Rules used = {2528, 2525, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 44, 6688, 6742, 2500, 2433, 2375, 2317, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

[In] $\operatorname{Int} \left[\left((a*g + b*g*x)^2 * (A + B*\operatorname{Log} \left[e \left(\frac{a + b*x}{c + d*x} \right)^n \right] \right)^2 / (c*i + d*i*x) \right)^3, x]$

[Out] $-(B^2*(b*c - a*d)^2*g^2*n^2)/(4*d^3*i^3*(c + d*x)^2) + (5*b*B^2*(b*c - a*d)*g^2*n^2)/(2*d^3*i^3*(c + d*x)) + (5*b^2*B^2*g^2*n^2*\operatorname{Log}[a + b*x])/(2*d^3*i^3) + (3*b^2*B^2*g^2*n^2*\operatorname{Log}[a + b*x]^2)/(2*d^3*i^3) + (B*(b*c - a*d)^2*g^2*n*(A + B*\operatorname{Log}[e*((a + b*x)/(c + d*x))^n]))/(2*d^3*i^3*(c + d*x)^2) - (3*b*B*(b*c - a*d)*g^2*n*(A + B*\operatorname{Log}[e*((a + b*x)/(c + d*x))^n]))/(d^3*i^3*(c + d*x)) - (3*b^2*B*g^2*n*\operatorname{Log}[a + b*x]*(A + B*\operatorname{Log}[e*((a + b*x)/(c + d*x))^n]))/(d^3*i^3) - ((b*c - a*d)^2*g^2*(A + B*\operatorname{Log}[e*((a + b*x)/(c + d*x))^n])^2)/(2*d^3*i^3*(c + d*x)^2) + (2*b*(b*c - a*d)*g^2*(A + B*\operatorname{Log}[e*((a + b*x)/(c + d*x))^n])^2)/(d^3*i^3*(c + d*x)) - (5*b^2*B^2*g^2*n^2*\operatorname{Log}[c + d*x])/(2*d^3*i^3) - (2*A*b^2*B*g^2*n*\operatorname{Log}[-(d*(a + b*x))/(b*c - a*d)]*\operatorname{Log}[c + d*x])/(d^3*i^3) - (3*b^2*B^2*g^2*n^2*\operatorname{Log}[-(d*(a + b*x))/(b*c - a*d)]*\operatorname{Log}[c + d*x])/(d^3*i^3) - (b^2*B^2*g^2*\operatorname{Log}[(a + b*x)^n]^2*\operatorname{Log}[c + d*x])/(d^3*i^3) + (3*b^2$

$$\begin{aligned}
& *B*g^{2*n}*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])*\text{Log}[c + d*x]/(d^3*i^3) + (\\
& b^2*g^{2*n}*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2*\text{Log}[c + d*x]/(d^3*i^3) + \\
& (A*b^2*B*g^{2*n}*\text{Log}[c + d*x]^2)/(d^3*i^3) + (3*b^2*B^2*g^{2*n}^2*\text{Log}[c + d*x]^2)/(2*d^3*i^3) - (b^2*B^2*g^{2*n}^2*\text{Log}[a + b*x]*\text{Log}[c + d*x]^2)/(d^3*i^3) + \\
& (b^2*B^2*g^{2*n}*\text{Log}[e*((a + b*x)/(c + d*x))^n]*\text{Log}[c + d*x]^2)/(d^3*i^3) + (\\
& b^2*B^2*g^{2*n}^2*\text{Log}[c + d*x]^3)/(3*d^3*i^3) - (3*b^2*B^2*g^{2*n}^2*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)]/(d^3*i^3) + (b^2*B^2*g^{2*n}*\text{Log}[(a + b*x)^n]^2*\text{Log}[(b*(c + d*x))/(b*c - a*d)]/(d^3*i^3) - (2*b^2*B^2*g^{2*n}*\text{Log}[a + b*x]*\text{Log}[c + d*x]*\text{Log}[(c + d*x)^{-n}])/(d^3*i^3) - (b^2*B^2*g^{2*n}*\text{Log}[a + b*x]*\text{Log}[(c + d*x)^{-n}]^2)/(d^3*i^3) + (b^2*B^2*g^{2*n}*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[(c + d*x)^{-n}]^2)/(d^3*i^3) + (2*b^2*B^2*g^{2*n}*\text{Log}[-((d*(a + b*x))/(b*c - a*d))]*\text{Log}[c + d*x]*(\text{Log}[(a + b*x)^n] - \text{Log}[e*((a + b*x)/(c + d*x))^n] + \text{Log}[(c + d*x)^{-n}]))/(d^3*i^3) - (3*b^2*B^2*g^{2*n}^2*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))]/(d^3*i^3) + (2*b^2*B^2*g^{2*n}*\text{Log}[(a + b*x)^n]*\text{PolyLog}[2, -((d*(a + b*x))/(b*c - a*d))]/(d^3*i^3) - (2*A*b^2*B*g^{2*n}*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]/(d^3*i^3) - (3*b^2*B^2*g^{2*n}^2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]/(d^3*i^3) - (2*b^2*B^2*g^{2*n}*\text{Log}[(c + d*x)^{-n}]*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]/(d^3*i^3) + (2*b^2*B^2*g^{2*n}*(\text{Log}[(a + b*x)^n] - \text{Log}[e*((a + b*x)/(c + d*x))^n] + \text{Log}[(c + d*x)^{-n}]))*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]/(d^3*i^3) - (2*b^2*B^2*g^{2*n}^2*\text{PolyLog}[3, -((d*(a + b*x))/(b*c - a*d))]/(d^3*i^3) - (2*b^2*B^2*g^{2*n}^2*\text{PolyLog}[3, (b*(c + d*x))/(b*c - a*d)]/(d^3*i^3)
\end{aligned}$$

Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]
```

Rule 30

```
Int[(x_)^(m_), x_Symbol] := Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && NeQ[m, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] := Dist[1/(b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p}, x]

Rule 2317

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol] := Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e, Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]

Rule 2374

Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*(a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] := -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0] && EqQ[d*e, 1]

Rule 2375

Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]^(r_.))*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] := Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m - 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d, e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.)]*(b_.))^(p_.))*((f_) + (g_.)*(x_)^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x]

], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2396

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n]))^p/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n]))^(p - 1)/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]

Rule 2418

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]

Rule 2433

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] := Dist[1/e, Subst[Int[(k*x)/d]^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(e*i - d*j)/e + (j*x)/e]^m), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*1, 0]

Rule 2434

Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] := Simp[Log[x]*(a + b*Log[c*(d + e*x)^n]*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Log[x]*(a + b*Log[c*(d + e*x)^n))]/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x]*(f + g*Log[h*(i + j*x)^m))]/(i + j*x), x], x)) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :=
Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*1)/l) + (e*x)/l)^n)]*(f +
g*Log[h*(-((j*k - i*1)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] := Simp[(s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r]/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] := Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.))/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.))*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[ {u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
] ] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunci
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6688

```
Int[u_, x_Symbol] := With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] := With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\begin{aligned}
\int \frac{(ag + bgx)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(203c + 203dx)^3} dx &= \int \left(\frac{(-bc + ad)^2 g^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{8365427d^2(c + dx)^3} - \frac{2b(bc - ad)g^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{8365427d^3(c + dx)^2} \right) dx \\
&= \frac{(b^2 g^2) \int \frac{\left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{c+dx} dx}{8365427d^2} - \frac{(2b(bc - ad)g^2) \int \frac{\left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(c+dx)^2} dx}{8365427d^2} \\
&= -\frac{(bc - ad)^2 g^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{16730854d^3(c + dx)^2} + \frac{2b(bc - ad)g^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{8365427d^3(c + dx)} \\
&= -\frac{(bc - ad)^2 g^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{16730854d^3(c + dx)^2} + \frac{2b(bc - ad)g^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{8365427d^3(c + dx)} \\
&= -\frac{(bc - ad)^2 g^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{16730854d^3(c + dx)^2} + \frac{2b(bc - ad)g^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{8365427d^3(c + dx)} \\
&= -\frac{(bc - ad)^2 g^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{16730854d^3(c + dx)^2} + \frac{2b(bc - ad)g^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{8365427d^3(c + dx)} \\
&= \frac{B(bc - ad)^2 g^2 n \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{16730854d^3(c + dx)^2} - \frac{3bB(bc - ad)g^2 n \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{8365427d^3(c + dx)} \\
&= \frac{B(bc - ad)^2 g^2 n \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{16730854d^3(c + dx)^2} - \frac{3bB(bc - ad)g^2 n \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{8365427d^3(c + dx)} \\
&= \frac{B(bc - ad)^2 g^2 n \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{16730854d^3(c + dx)^2} - \frac{3bB(bc - ad)g^2 n \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{8365427d^3(c + dx)} \\
&= -\frac{B^2(bc - ad)^2 g^2 n^2}{33461708d^3(c + dx)^2} + \frac{5bB^2(bc - ad)g^2 n^2}{16730854d^3(c + dx)} + \frac{5b^2B^2g^2 n^2 \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{16730854d^3(c + dx)} \\
&= -\frac{B^2(bc - ad)^2 g^2 n^2}{33461708d^3(c + dx)^2} + \frac{5bB^2(bc - ad)g^2 n^2}{16730854d^3(c + dx)} + \frac{5b^2B^2g^2 n^2 \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{16730854d^3(c + dx)}
\end{aligned}$$

Mathematica [B] time = 6.59, size = 3172, normalized size = 7.19

Result too large to show

Antiderivative was successfully verified.

[In] Integrate[((a*g + b*g*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(c*i + d*i*x)^3,x]

[Out]
$$\begin{aligned} & (g^2 * ((-2 * (b * c - a * d) ^ 2 * (A + B * \text{Log}[e * ((a + b * x) / (c + d * x)) ^ n] - B * n * \text{Log}[(a + b * x) / (c + d * x)]) ^ 2) / (c + d * x) ^ 2 + (8 * b * (b * c - a * d) * (A + B * \text{Log}[e * ((a + b * x) / (c + d * x)) ^ n] - B * n * \text{Log}[(a + b * x) / (c + d * x)]) ^ 2) / (c + d * x) + 4 * b ^ 2 * (A + B * \text{Log}[e * ((a + b * x) / (c + d * x)) ^ n] - B * n * \text{Log}[(a + b * x) / (c + d * x)]) ^ 2 * \text{Log}[c + d * x] + (4 * a * b * B * d * n * (-A - B * \text{Log}[e * ((a + b * x) / (c + d * x)) ^ n] + B * n * \text{Log}[(a + b * x) / (c + d * x)]) * (-b ^ 2 * c ^ 3 + 4 * a * b * c ^ 2 * d - 3 * a ^ 2 * c * d ^ 2 - 2 * b ^ 2 * c ^ 2 * d * x + 6 * a * b * c * d ^ 2 * x - 4 * a ^ 2 * d ^ 3 * x - 2 * b * (b * c - 2 * a * d) * (c + d * x) ^ 2 * \text{Log}[a + b * x] + 2 * (b * c - a * d) ^ 2 * (c + 2 * d * x) * \text{Log}[(a + b * x) / (c + d * x)] + 2 * b ^ 2 * c ^ 3 * \text{Log}[c + d * x] - 4 * a * b * c ^ 2 * d * \text{Log}[c + d * x] + 4 * b ^ 2 * c ^ 2 * d * x * \text{Log}[c + d * x] - 8 * a * b * c * d ^ 2 * x * \text{Log}[c + d * x] + 2 * b ^ 2 * c * d ^ 2 * x ^ 2 * \text{Log}[c + d * x] - 4 * a * b * d ^ 3 * x ^ 2 * \text{Log}[c + d * x])) / ((b * c - a * d) ^ 2 * (c + d * x) ^ 2) + (2 * a ^ 2 * B * d ^ 2 * n * (-A - B * \text{Log}[e * ((a + b * x) / (c + d * x)) ^ n] + B * n * \text{Log}[(a + b * x) / (c + d * x)]) * (-b ^ 2 * c ^ 2) + 4 * a * b * c * d - a ^ 2 * d ^ 2 + 2 * b ^ 2 * c * d * x + 2 * a * b * d ^ 2 * x + 2 * b ^ 2 * d ^ 2 * x ^ 2 - 2 * b ^ 2 * (c + d * x) ^ 2 * \text{Log}[a / b + x] + 2 * (b * c - a * d) ^ 2 * \text{Log}[(a + b * x) / (c + d * x)] + 2 * b ^ 2 * c ^ 2 * \text{Log}[(b * (c + d * x)) / (b * c - a * d)] + 4 * b ^ 2 * c * d * x * \text{Log}[(b * (c + d * x)) / (b * c - a * d)] + 2 * b ^ 2 * d ^ 2 * x ^ 2 * \text{Log}[(b * (c + d * x)) / (b * c - a * d)])) / ((b * c - a * d) ^ 2 * (c + d * x) ^ 2) + 2 * b ^ 2 * B * n * (A + B * \text{Log}[e * ((a + b * x) / (c + d * x)) ^ n] - B * n * \text{Log}[(a + b * x) / (c + d * x)]) * (-2 * \text{Log}[c / d + x] ^ 2 - (8 * c * (1 + \text{Log}[c / d + x])) / (c + d * x) + (c ^ 2 * (1 + 2 * \text{Log}[c / d + x])) / (c + d * x) ^ 2 + 8 * c * (\text{Log}[a / b + x] / (c + d * x) + (b * (\text{Log}[a + b * x] - \text{Log}[c + d * x])) / (-b * c) + a * d)) + 2 * (-\text{Log}[a / b + x] + \text{Log}[c / d + x] + \text{Log}[(a + b * x) / (c + d * x)]) * ((c * (3 * c + 4 * d * x)) / (c + d * x) ^ 2 + 2 * \text{Log}[c + d * x]) + (2 * c ^ 2 * (-\text{Log}[a / b + x] + (b * (c + d * x)) * (b * c - a * d + b * (c + d * x)) * \text{Log}[a + b * x] - b * (c + d * x)) * \text{Log}[c + d * x])) / (b * c - a * d) ^ 2) / (c + d * x) ^ 2 + 4 * (\text{Log}[a / b + x] * \text{Log}[(b * (c + d * x)) / (b * c - a * d)] + \text{PolyLog}[2, (d * (a + b * x)) / (-b * c) + a * d]) + (2 * a * b * B ^ 2 * d * n ^ 2 * (2 * c * \text{Log}[(a + b * x) / (c + d * x)] ^ 2 - 4 * (c + d * x) * \text{Log}[(a + b * x) / (c + d * x)] ^ 2 - (4 * (c + d * x) * (2 * b * c - 2 * a * d + 2 * b * (c + d * x)) * \text{Log}[a + b * x] - 2 * (b * c - a * d) * \text{Log}[(a + b * x) / (c + d * x)] - 2 * b * (c + d * x) * \text{Log}[a + b * x] * \text{Log}[(a + b * x) / (c + d * x)] - 2 * b * (c + d * x) * \text{Log}[c + d * x] - 2 * b * (c + d * x) * \text{Log}[(a + b * x) / (c + d * x)] * \text{Log}[(b * c - a * d) / (b * c + b * d * x)] + b * (c + d * x) * (\text{Log}[a + b * x] * (\text{Log}[a + b * x] - 2 * \text{Log}[(b * (c + d * x)) / (b * c - a * d)]) - 2 * \text{PolyLog}[2, (d * (a + b * x)) / (-b * c) + a * d]) + b * (c + d * x) * (\text{Log}[(b * c - a * d) / (b * c + b * d * x)] * (2 * \text{Log}[(d * (a + b * x)) / (-b * c) + a * d]) + \text{Log}[(b * c - a * d) / (b * c + b * d * x)]) - 2 * \text{PolyLog}[2, (b * (c + d * x)) / (b * c - a * d)])) / (b * c - a * d) + (c * ((b * c - a * d) ^ 2 + 2 * b * (b * c - a * d) * (c + d * x) + 2 * b ^ 2 * (c + d * x) ^ 2 * \text{Log}[a + b * x] - 2 * (b * c - a * d) ^ 2 * \text{Log}[(a + b * x) / (c + d * x)] - 4 * b * (b * c - a * d) * (c + d * x) * \text{Log}[(a + b * x) / (c + d * x)] - 4 * b ^ 2 * (c + d * x) ^ 2 * \text{Log}[a + b * x] * \text{Log}[(a + b * x) / (c + d * x)] - 2 * b ^ 2 * (c + d * x) ^ 2 * \text{Log}[c + d * x] + 4 * \end{aligned}$$

$$\begin{aligned}
& b*(c + d*x)*(b*c - a*d + b*(c + d*x)*\text{Log}[a + b*x] - b*(c + d*x)*\text{Log}[c + d*x]) \\
& - 4*b^2*(c + d*x)^2*\text{Log}[(a + b*x)/(c + d*x)]*\text{Log}[(b*c - a*d)/(b*c + b*d*x)] \\
& + 2*b^2*(c + d*x)^2*(\text{Log}[a + b*x]*(\text{Log}[a + b*x] - 2*\text{Log}[(b*(c + d*x))/(b*c - a*d)]) \\
& - 2*\text{PolyLog}[2, (d*(a + b*x))/(-(b*c) + a*d)]) + 2*b^2*(c + d*x)^2*(\text{Log}[(b*c - a*d)/(b*c + b*d*x)] \\
& *(2*\text{Log}[(d*(a + b*x))/(-(b*c) + a*d)] + \text{Log}[(b*c - a*d)/(b*c + b*d*x)]) - 2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]) \\
&)/(b*c - a*d)^2)/(c + d*x)^2 - (a^2*B^2*d^2*n^2*((b*c - a*d)^2 + 2*b*(b*c - a*d)*(c + d*x) \\
& + 2*b^2*(c + d*x)^2*\text{Log}[a + b*x] - 2*(b*c - a*d)^2*\text{Log}[(a + b*x)/(c + d*x)] \\
& - 4*b*(b*c - a*d)*(c + d*x)*\text{Log}[(a + b*x)/(c + d*x)] - 4*b^2*(c + d*x)^2*\text{Log}[a + b*x] \\
& *\text{Log}[(a + b*x)/(c + d*x)] + 2*(b*c - a*d)^2*\text{Log}[(a + b*x)/(c + d*x)]^2 - 2*b^2*(c + d*x)^2*\text{Log}[c + d*x] \\
& + 4*b*(c + d*x)*(b*c - a*d + b*(c + d*x)*\text{Log}[a + b*x] - b*(c + d*x)*\text{Log}[c + d*x]) - 4*b^2*(c + d*x)^2 \\
& *\text{Log}[(a + b*x)/(c + d*x)]*\text{Log}[(b*c - a*d)/(b*c + b*d*x)] + 2*b^2*(c + d*x)^2*(\text{Log}[a + b*x]*(\text{Log}[a + b*x] \\
& - 2*\text{Log}[(b*(c + d*x))/(b*c - a*d)]) - 2*\text{PolyLog}[2, (d*(a + b*x))/(-(b*c) + a*d)]) + 2*b^2*(c + d*x)^2 \\
& *(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*\text{Log}[(d*(a + b*x))/(-(b*c) + a*d)] + \text{Log}[(b*c - a*d)/(b*c + b*d*x)] \\
&) - 2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])))/(b*c - a*d)^2*(c + d*x)^2 - 2*b^2*B^2*n^2*((c^2*\text{Log}[(a + b*x)/(c + d*x)]^2)/(c + d*x)^2 \\
& - (4*c*\text{Log}[(a + b*x)/(c + d*x)]^2)/(c + d*x) + 2*\text{Log}[(a + b*x)/(c + d*x)]^2*\text{Log}[(b*c - a*d)/(b*c + b*d*x)] \\
& + 4*\text{Log}[(a + b*x)/(c + d*x)]*\text{PolyLog}[2, (d*(a + b*x))/(b*(c + d*x))] - (4*c*(2*b*c - 2*a*d + 2*b*(c + d*x)*\text{Log}[a + b*x] \\
& - 2*(b*c - a*d)*\text{Log}[(a + b*x)/(c + d*x)] - 2*b*(c + d*x)*\text{Log}[a + b*x]*\text{Log}[(a + b*x)/(c + d*x)] \\
& - 2*b*(c + d*x)*\text{Log}[c + d*x] - 2*b*(c + d*x)*\text{Log}[(a + b*x)/(c + d*x)]*\text{Log}[(b*c - a*d)/(b*c + b*d*x)] \\
& + b*(c + d*x)*(\text{Log}[a + b*x]*(\text{Log}[a + b*x] - 2*\text{Log}[(b*(c + d*x))/(b*c - a*d)]) - 2*\text{PolyLog}[2, (d*(a + b*x))/(-(b*c) + a*d)]) \\
& + b*(c + d*x)*(\text{Log}[(b*c - a*d)/(b*c + b*d*x)]*(2*\text{Log}[(d*(a + b*x))/(-(b*c) + a*d)] + \text{Log}[(b*c - a*d)/(b*c + b*d*x)] \\
&) - 2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])))/(b*c - a*d)^2*(c + d*x) + (c^2*((b*c - a*d)^2 + 2*b*(b*c - a*d)*(c + d*x) \\
& + 2*b^2*(c + d*x)^2*\text{Log}[a + b*x] - 2*(b*c - a*d)^2*\text{Log}[(a + b*x)/(c + d*x)] - 4*b*(b*c - a*d)*(c + d*x)*\text{Log}[(a + b*x)/(c + d*x)] \\
& - 4*b^2*(c + d*x)^2*\text{Log}[a + b*x]*\text{Log}[(a + b*x)/(c + d*x)] - 2*b^2*(c + d*x)^2*\text{Log}[c + d*x] \\
& + 4*b*(c + d*x)*(b*c - a*d + b*(c + d*x)*\text{Log}[a + b*x] - b*(c + d*x)*\text{Log}[c + d*x]) - 4*b^2*(c + d*x)^2*\text{Log}[(a + b*x)/(c + d*x)] \\
& *\text{Log}[(b*c - a*d)/(b*c + b*d*x)] + 2*b^2*(c + d*x)^2*(\text{Log}[a + b*x]*(\text{Log}[a + b*x] - 2*\text{Log}[(b*(c + d*x))/(b*c - a*d)]) \\
& - 2*\text{PolyLog}[2, (d*(a + b*x))/(-(b*c) + a*d)]) + 2*b^2*(c + d*x)^2*(\text{Log}[(b*c - a*d)/(b*c + b*d*x)]*(2*\text{Log}[(d*(a + b*x))/(-(b*c) + a*d)] \\
& + \text{Log}[(b*c - a*d)/(b*c + b*d*x)]) - 2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])))/(2*(b*c - a*d)^2*(c + d*x)^2) - 4*\text{PolyLog}[3, (d*(a + b*x))/(b*(c + d*x)))] \\
&)/(4*d^3*i^3)
\end{aligned}$$

fricas [F] time = 0.91, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{A^2 b^2 g^2 x^2 + 2 A^2 a b g^2 x + A^2 a^2 g^2 + \left(B^2 b^2 g^2 x^2 + 2 B^2 a b g^2 x + B^2 a^2 g^2 \right) \log \left(e \left(\frac{b x + a}{d x + c} \right)^n \right)^2 + 2 \left(A B b^2 g^2 x^2 + 2 A B a b g^2 x + A B a^2 g^2 \right) \log \left(e \left(\frac{b x + a}{d x + c} \right)^n \right)}{d^3 i^3 x^3 + 3 c d^2 i^3 x^2 + 3 c^2 d i^3 x + c^3 i^3}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^3,x,
algorithm="fricas")

[Out] integral((A^2*b^2*g^2*x^2 + 2*A^2*a*b*g^2*x + A^2*a^2*g^2 + (B^2*b^2*g^2*x^2 + 2*B^2*a*b*g^2*x + B^2*a^2*g^2)*log(e*((b*x + a)/(d*x + c))^n))^2 + 2*(A*B*b^2*g^2*x^2 + 2*A*B*a*b*g^2*x + A*B*a^2*g^2)*log(e*((b*x + a)/(d*x + c))^n))/(d^3*i^3*x^3 + 3*c*d^2*i^3*x^2 + 3*c^2*d*i^3*x + c^3*i^3), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^3,x,
algorithm="giac")

[Out] Timed out

maple [F] time = 0.46, size = 0, normalized size = 0.00

$$\int \frac{(bgx + ag)^2 \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)^2}{(dix + ci)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(d*i*x+c*i)^3,x)

[Out] int((b*g*x+a*g)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(d*i*x+c*i)^3,x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^3,x,
algorithm="maxima")

[Out] A*B*a*b*g^2*n*((b*c^2 - 3*a*c*d + 2*(b*c*d - 2*a*d^2)*x)/((b*c*d^4 - a*d^5)
*i^3*x^2 + 2*(b*c^2*d^3 - a*c*d^4)*i^3*x + (b*c^3*d^2 - a*c^2*d^3)*i^3) + 2
*(b^2*c - 2*a*b*d)*log(b*x + a)/((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)*i^3)
- 2*(b^2*c - 2*a*b*d)*log(d*x + c)/((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)*
i^3)) + 1/2*A*B*a^2*g^2*n*((2*b*d*x + 3*b*c - a*d)/((b*c*d^3 - a*d^4)*i^3*x
^2 + 2*(b*c^2*d^2 - a*c*d^3)*i^3*x + (b*c^3*d - a*c^2*d^2)*i^3) + 2*b^2*log
(b*x + a)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3) - 2*b^2*log(d*x + c)/((
b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3)) + 1/2*A^2*b^2*g^2*((4*c*d*x + 3*c^2)
/((d^5*i^3*x^2 + 2*c*d^4*i^3*x + c^2*d^3*i^3) + 2*log(d*x + c)/(d^3*i^3))
- 2*(2*d*x + c)*A*B*a*b*g^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(d^4*i^3
*x^2 + 2*c*d^3*i^3*x + c^2*d^2*i^3) - (2*d*x + c)*A^2*a*b*g^2/(d^4*i^3*x^2
+ 2*c*d^3*i^3*x + c^2*d^2*i^3) - A*B*a^2*g^2*log(e*(b*x/(d*x + c) + a/(d*x
+ c))^n)/(d^3*i^3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3) - 1/2*A^2*a^2*g^2/(d^3*i
^3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3) + 1/2*(4*(b^2*c*d*g^2 - a*b*d^2*g^2)*B^2
*x + (3*b^2*c^2*g^2 - 2*a*b*c*d*g^2 - a^2*d^2*g^2)*B^2 + 2*(B^2*b^2*d^2*g^2
*x^2 + 2*B^2*b^2*c*d*g^2*x + B^2*b^2*c^2*g^2)*log(d*x + c))*log((d*x + c)
^n)^2/(d^5*i^3*x^2 + 2*c*d^4*i^3*x + c^2*d^3*i^3) - integrate(-(2*B^2*a*b*d^2
*g^2*x*log(e)^2 + B^2*a^2*d^2*g^2*log(e)^2 + (B^2*b^2*d^2*g^2*log(e)^2 + 2
*A*B*b^2*d^2*g^2*log(e))*x^2 + (B^2*b^2*d^2*g^2*x^2 + 2*B^2*a*b*d^2*g^2*x +
B^2*a^2*d^2*g^2)*log((b*x + a)^n)^2 + 2*(2*B^2*a*b*d^2*g^2*x*log(e) + B^2*a
^2*d^2*g^2*log(e) + (B^2*b^2*d^2*g^2*log(e) + A*B*b^2*d^2*g^2)*x^2)*log((b
x + a)^n) - (4(b^2*c*d*g^2*n - (g^2*n - g^2*log(e))*a*b*d^2)*B^2*x + (3*b
^2*c^2*g^2*n - 2*a*b*c*d*g^2*n - (g^2*n - 2*g^2*log(e))*a^2*d^2)*B^2 + 2*(B
^2*b^2*d^2*g^2*log(e) + A*B*b^2*d^2*g^2)*x^2 + 2*(B^2*b^2*d^2*g^2*n*x^2 + 2
*B^2*b^2*c*d*g^2*n*x + B^2*b^2*c^2*g^2*n)*log(d*x + c) + 2*(B^2*b^2*d^2*g^2
*x^2 + 2*B^2*a*b*d^2*g^2*x + B^2*a^2*d^2*g^2)*log((b*x + a)^n))*log((d*x +
c)^n))/(d^5*i^3*x^3 + 3*c*d^4*i^3*x^2 + 3*c^2*d^3*i^3*x + c^3*d^2*i^3), x)

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ag + bgx)^2 \left(A + B \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ci + dix)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((a*g + b*g*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(c*i + d*i*x
)^3,x)

[Out] int(((a*g + b*g*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(c*i + d*i*x
)^3, x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(d*i*x+c*i)**3, x)
```

```
[Out] Timed out
```

$$3.204 \quad \int \frac{(ag+bgx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ci+dx)^3} dx$$

Optimal. Leaf size=151

$$\frac{g(a+bx)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{2i^3(c+dx)^2(bc-ad)} - \frac{Bgn(a+bx)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{2i^3(c+dx)^2(bc-ad)} + \frac{B^2gn^2(a+bx)^2}{4i^3(c+dx)^2(bc-ad)}$$

[Out] $1/4*B^2*g*n^2*(b*x+a)^2/(-a*d+b*c)/i^3/(d*x+c)^2-1/2*B*g*n*(b*x+a)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)/i^3/(d*x+c)^2+1/2*g*(b*x+a)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)/i^3/(d*x+c)^2$

Rubi [C] time = 2.00, antiderivative size = 686, normalized size of antiderivative = 4.54, number of steps used = 54, number of rules used = 11, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.256$, Rules used = {2528, 2525, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 44}

$$\frac{b^2B^2gn^2\text{PolyLog}\left(2, -\frac{d(a+bx)}{bc-ad}\right)}{d^2i^3(bc-ad)} + \frac{b^2B^2gn^2\text{PolyLog}\left(2, \frac{b(c+dx)}{bc-ad}\right)}{d^2i^3(bc-ad)} + \frac{b^2Bgn\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{d^2i^3(bc-ad)} - \frac{b^2B^2gn^2}{d^2i^3(bc-ad)}$$

Antiderivative was successfully verified.

[In] Int[((a*g + b*g*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(c*i + d*i*x)^3, x]

[Out] $(B^2*(b*c - a*d)*g*n^2)/(4*d^2*i^3*(c + d*x)^2) - (b*B^2*g*n^2)/(2*d^2*i^3*(c + d*x)) - (b^2*B^2*g*n^2*Log[a + b*x])/(2*d^2*(b*c - a*d)*i^3) - (b^2*B^2*g*n^2*Log[a + b*x]^2)/(2*d^2*(b*c - a*d)*i^3) - (B*(b*c - a*d)*g*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(2*d^2*i^3*(c + d*x)^2) + (b*B*g*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(d^2*i^3*(c + d*x)) + (b^2*B*g*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(d^2*(b*c - a*d)*i^3) + ((b*c - a*d)*g*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(2*d^2*i^3*(c + d*x)^2) - (b*g*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(d^2*i^3*(c + d*x)) + (b^2*B^2*g*n^2*Log[c + d*x])/(2*d^2*(b*c - a*d)*i^3) + (b^2*B^2*g*n^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(d^2*(b*c - a*d)*i^3) - (b^2*B*g*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x])/(d^2*(b*c - a*d)*i^3) - (b^2*B^2*g*n^2*Log[c + d*x]^2)/(2*d^2*(b*c - a*d)*i^3) + (b^2*B^2*g*n^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(d^2*(b*c - a*d)*i^3) + (b^2*B^2*g*n^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(d^2*(b*c - a*d)*i^3) + (b^2*B^2*g*n^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(d^2*(b*c - a*d)*i^3)$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 44

Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])

Rule 2301

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2418

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},


```
Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
Rfx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[
RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(ag + bgx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(204c + 204dx)^3} dx &= \int \left[\frac{(-bc + ad)g \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{8489664d(c + dx)^3} + \frac{bg \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{8489664d(c + dx)^2} \right] dx \\
&= \frac{(bg) \int \frac{\left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(c+dx)^2} dx}{8489664d} - \frac{((bc - ad)g) \int \frac{\left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(c+dx)^3} dx}{8489664d} \\
&= \frac{(bc - ad)g \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{16979328d^2(c + dx)^2} - \frac{bg \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{8489664d^2(c + dx)} \\
&= \frac{(bc - ad)g \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{16979328d^2(c + dx)^2} - \frac{bg \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{8489664d^2(c + dx)} \\
&= \frac{(bc - ad)g \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{16979328d^2(c + dx)^2} - \frac{bg \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{8489664d^2(c + dx)} \\
&= \frac{(bc - ad)g \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{16979328d^2(c + dx)^2} - \frac{bg \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{8489664d^2(c + dx)} \\
&= -\frac{B(bc - ad)gn \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{16979328d^2(c + dx)^2} + \frac{bBgn \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{8489664d^2(c + dx)} \\
&= -\frac{B(bc - ad)gn \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{16979328d^2(c + dx)^2} + \frac{bBgn \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{8489664d^2(c + dx)} \\
&= -\frac{B(bc - ad)gn \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{16979328d^2(c + dx)^2} + \frac{bBgn \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{8489664d^2(c + dx)} \\
&= \frac{B^2(bc - ad)gn^2}{33958656d^2(c + dx)^2} - \frac{bB^2gn^2}{16979328d^2(c + dx)} - \frac{b^2B^2gn^2 \log(a + bx)}{16979328d^2(bc - ad)} \\
&= \frac{B^2(bc - ad)gn^2}{33958656d^2(c + dx)^2} - \frac{bB^2gn^2}{16979328d^2(c + dx)} - \frac{b^2B^2gn^2 \log(a + bx)}{16979328d^2(bc - ad)} \\
&= \frac{B^2(bc - ad)gn^2}{33958656d^2(c + dx)^2} - \frac{bB^2gn^2}{16979328d^2(c + dx)} - \frac{b^2B^2gn^2 \log(a + bx)}{16979328d^2(bc - ad)}
\end{aligned}$$

Mathematica [C] time = 0.99, size = 803, normalized size = 5.32

$$g \left(2(bc - ad)^2 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 - 4b(bc - ad)(c + dx) \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) + 4bBn(c + dx) \left(2(bc - ad) \right) \right)$$

Antiderivative was successfully verified.

[In] Integrate[((a*g + b*g*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(c*i + d*i*x)^3,x]

[Out] (g*(2*(b*c - a*d)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 - 4*b*(b*c - a*d)*(c + d*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 + 4*b*B*n*(c + d*x)*(2*(b*c - a*d)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 2*b*(c + d*x)*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 2*b*(c + d*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] - 2*B*n*(b*c - a*d + b*(c + d*x)*Log[a + b*x] - b*(c + d*x)*Log[c + d*x]) - b*B*n*(c + d*x)*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-b*c + a*d)]) + b*B*n*(c + d*x)*((2*Log[(d*(a + b*x))/(-b*c + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])) - B*n*(2*(b*c - a*d)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 4*b*(b*c - a*d)*(c + d*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 4*b^2*(c + d*x)^2*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 4*b^2*(c + d*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] - 4*b*B*n*(c + d*x)*(b*c - a*d + b*(c + d*x)*Log[a + b*x] - b*(c + d*x)*Log[c + d*x]) - B*n*((b*c - a*d)^2 + 2*b*(b*c - a*d)*(c + d*x) + 2*b^2*(c + d*x)^2*Log[a + b*x] - 2*b^2*(c + d*x)^2*Log[c + d*x]) - 2*b^2*B*n*(c + d*x)^2*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-b*c + a*d)]) + 2*b^2*B*n*(c + d*x)^2*((2*Log[(d*(a + b*x))/(-b*c + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(4*d^2*(b*c - a*d)*i^3*(c + d*x)^2)

fricas [B] time = 0.87, size = 600, normalized size = 3.97

$$\frac{(B^2b^2c^2 - B^2a^2d^2)gn^2 - 2(ABb^2c^2 - ABa^2d^2)gn + 2(2(B^2b^2cd - B^2abd^2)gx + (B^2b^2c^2 - B^2a^2d^2)g) \log(e)^2 - \dots}{4d^2(b^2c^2 - a^2d^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^3,x, algorithm="fricas")

[Out] -1/4*((B^2*b^2*c^2 - B^2*a^2*d^2)*g*n^2 - 2*(A*B*b^2*c^2 - A*B*a^2*d^2)*g*n + 2*(2*(B^2*b^2*c*d - B^2*a*b*d^2)*g*x + (B^2*b^2*c^2 - B^2*a^2*d^2)*g)*lo

$$g(e)^2 - 2*(B^2*b^2*d^2*g*n^2*x^2 + 2*B^2*a*b*d^2*g*n^2*x + B^2*a^2*d^2*g*n^2)*\log((b*x + a)/(d*x + c))^2 + 2*(A^2*b^2*c^2 - A^2*a^2*d^2)*g + 2*((B^2*b^2*c*d - B^2*a*b*d^2)*g*n^2 - 2*(A*B*b^2*c*d - A*B*a*b*d^2)*g*n + 2*(A^2*b^2*c*d - A^2*a*b*d^2)*g)*x - 2*((B^2*b^2*c^2 - B^2*a^2*d^2)*g*n - 2*(A*B*b^2*c*d - A*B*a*b*d^2)*g)*x + 2*((B^2*b^2*d^2*g*n*x^2 + 2*B^2*a*b*d^2*g*n*x + B^2*a^2*d^2*g*n)*\log((b*x + a)/(d*x + c)))*\log(e) + 2*(B^2*a^2*d^2*g*n^2 - 2*A*B*a^2*d^2*g*n + (B^2*b^2*d^2*g*n^2 - 2*A*B*b^2*d^2*g*n)*x^2 + 2*(B^2*a*b*d^2*g*n^2 - 2*A*B*a*b*d^2*g*n)*x)*\log((b*x + a)/(d*x + c)))/((b*c*d^4 - a*d^5)*i^3*x^2 + 2*(b*c^2*d^3 - a*c*d^4)*i^3*x + (b*c^3*d^2 - a*c^2*d^3)*i^3)$$

giac [A] time = 19.66, size = 186, normalized size = 1.23

$$\frac{1}{4} \left(\frac{2(bx+a)^2 B^2 g i n^2 \log\left(\frac{bx+a}{dx+c}\right)^2}{(dx+c)^2} - \frac{2(B^2 g i n^2 - 2 A B g i n - 2 B^2 g i n)(bx+a)^2 \log\left(\frac{bx+a}{dx+c}\right)}{(dx+c)^2} + \frac{(B^2 g i n^2 - 2 A B g i n - 2 B^2 g i n)(bx+a)^2 \log\left(\frac{bx+a}{dx+c}\right)^2}{(dx+c)^2} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^3,x, algorithm="giac")

[Out] 1/4*(2*(b*x + a)^2*B^2*g*i*n^2*log((b*x + a)/(d*x + c))^2/(d*x + c)^2 - 2*(B^2*g*i*n^2 - 2*A*B*g*i*n - 2*B^2*g*i*n)*(b*x + a)^2*log((b*x + a)/(d*x + c)))/(d*x + c)^2 + (B^2*g*i*n^2 - 2*A*B*g*i*n - 2*B^2*g*i*n + 2*A^2*g*i + 4*A*B*g*i + 2*B^2*g*i)*(b*x + a)^2/(d*x + c)^2)*(b*c/(b*c - a*d)^2 - a*d/(b*c - a*d)^2)

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int \frac{(bgx + ag) \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)^2}{(dix + ci)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(d*i*x+c*i)^3,x)

[Out] int((b*g*x+a*g)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(d*i*x+c*i)^3,x)

maxima [B] time = 2.35, size = 1995, normalized size = 13.21

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^3,x, algorithm="maxima")

[Out] $\frac{1}{2}A*B*b*g*n*((b*c^2 - 3*a*c*d + 2*(b*c*d - 2*a*d^2)*x)/((b*c*d^4 - a*d^5)*i^3*x^2 + 2*(b*c^2*d^3 - a*c*d^4)*i^3*x + (b*c^3*d^2 - a*c^2*d^3)*i^3) + 2*(b^2*c - 2*a*b*d)*\log(b*x + a)/((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)*i^3) - 2*(b^2*c - 2*a*b*d)*\log(d*x + c)/((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)*i^3)) + \frac{1}{2}A*B*a*g*n*((2*b*d*x + 3*b*c - a*d)/((b*c*d^3 - a*d^4)*i^3*x^2 + 2*(b*c^2*d^2 - a*c*d^3)*i^3*x + (b*c^3*d - a*c^2*d^2)*i^3) + 2*b^2*\log(b*x + a)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3) - 2*b^2*\log(d*x + c)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3)) - \frac{1}{2}*(2*d*x + c)*B^2*b*g*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n)^2/(d^4*i^3*x^2 + 2*c*d^3*i^3*x + c^2*d^2*i^3) + \frac{1}{4}*(2*n*((2*b*d*x + 3*b*c - a*d)/((b*c*d^3 - a*d^4)*i^3*x^2 + 2*(b*c^2*d^2 - a*c*d^3)*i^3*x + (b*c^3*d - a*c^2*d^2)*i^3) + 2*b^2*\log(b*x + a)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3) - 2*b^2*\log(d*x + c)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3))*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) - (7*b^2*c^2 - 8*a*b*c*d + a^2*d^2 + 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*\log(b*x + a)^2 + 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*\log(d*x + c)^2 + 6*(b^2*c*d - a*b*d^2)*x + 6*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*\log(b*x + a) - 2*(3*b^2*d^2*x^2 + 6*b^2*c*d*x + 3*b^2*c^2 + 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*\log(b*x + a))*\log(d*x + c))*n^2/(b^2*c^4*d*i^3 - 2*a*b*c^3*d^2*i^3 + a^2*c^2*d^3*i^3 + (b^2*c^2*d^3*i^3 - 2*a*b*c*d^4*i^3 + a^2*d^5*i^3)*x^2 + 2*(b^2*c^3*d^2*i^3 - 2*a*b*c^2*d^3*i^3 + a^2*c*d^4*i^3)*x))*B^2*a*g + \frac{1}{4}*(2*n*((b*c^2 - 3*a*c*d + 2*(b*c*d - 2*a*d^2)*x)/((b*c*d^4 - a*d^5)*i^3*x^2 + 2*(b*c^2*d^3 - a*c*d^4)*i^3*x + (b*c^3*d^2 - a*c^2*d^3)*i^3) + 2*(b^2*c - 2*a*b*d)*\log(b*x + a)/((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)*i^3) - 2*(b^2*c - 2*a*b*d)*\log(d*x + c)/((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)*i^3))*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n) - (b^2*c^3 - 8*a*b*c^2*d + 7*a^2*c*d^2 + 2*(b^2*c^3 - 2*a*b*c^2*d + (b^2*c*d^2 - 2*a*b*d^3)*x^2 + 2*(b^2*c^2*d - 2*a*b*c*d^2)*x)*\log(b*x + a)^2 + 2*(b^2*c^3 - 2*a*b*c^2*d + (b^2*c*d^2 - 2*a*b*d^3)*x^2 + 2*(b^2*c^2*d - 2*a*b*c*d^2)*x)*\log(d*x + c)^2 + 2*(b^2*c^2*d - 5*a*b*c*d^2 + 4*a^2*d^3)*x + 2*(b^2*c^3 - 4*a*b*c^2*d + (b^2*c*d^2 - 4*a*b*d^3)*x^2 + 2*(b^2*c^2*d - 4*a*b*c*d^2)*x)*\log(b*x + a) - 2*(b^2*c^3 - 4*a*b*c^2*d + (b^2*c*d^2 - 4*a*b*d^3)*x^2 + 2*(b^2*c^2*d - 4*a*b*c*d^2)*x + 2*(b^2*c^3 - 2*a*b*c^2*d + (b^2*c*d^2 - 2*a*b*d^3)*x^2 + 2*(b^2*c^2*d - 2*a*b*c*d^2)*x)*\log(b*x + a))*\log(d*x + c))*n^2/(b^2*c^4*d^2*i^3 - 2*a*b*c^3*d^3*i^3 + a^2*c^2*d^4*i^3 + (b^2*c^2*d^4*i^3 - 2*a*b*c*d^5*i^3 + a^2*d^6*i^3)*x^2 + 2*(b^2*c^3*d^3*i^3 - 2*a*b*c^2*d^4*i^3 + a^2*c*d^5*i^3)*x))*B^2*b*g - (2*d*x + c)*A*B*b*g*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(d^4*i^3*x^2 + 2*c*d^3*i^3*x + c^2*d^2*i^3) - \frac{1}{2}B^2*a*g*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n)^2/(d^3*i^3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3) - \frac{1}{2}*(2*d*x + c)*A^2*b*g/(d^4*i^3*x^2 + 2*c*d^3*i^3*x + c^2*d^2*i^3) - A*B*a*g*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(d^3*i^3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3) - \frac{1}{2}A^2*a*g/(d^3*i^3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3)$

mupad [B] time = 7.50, size = 565, normalized size = 3.74

$$-\ln\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^2\left(\frac{\frac{B^2ag}{2d} + \frac{B^2bgx}{d} + \frac{B^2bcg}{2d^2}}{c^2i^3 + 2cdi^3x + d^2i^3x^2} + \frac{B^2b^2g}{2d^2i^3(ad-bc)}\right) - \frac{x(2bdgA^2 - 2bdgABn + bdgB^2n^2)}{2c^2d}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((a*g + b*g*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(c*i + d*i*x)^3,x)

[Out] - log(e*((a + b*x)/(c + d*x))^n)^2*((B^2*a*g)/(2*d) + (B^2*b*g*x)/d + (B^2*b*c*g)/(2*d^2))/(c^2*i^3 + d^2*i^3*x^2 + 2*c*d*i^3*x) + (B^2*b^2*g)/(2*d^2*i^3*(a*d - b*c)) - (x*(2*A^2*b*d*g + B^2*b*d*g*n^2 - 2*A*B*b*d*g*n) + A^2*a*d*g + A^2*b*c*g + (B^2*a*d*g*n^2)/2 + (B^2*b*c*g*n^2)/2 - A*B*a*d*g*n - A*B*b*c*g*n)/(2*c^2*d^2*i^3 + 2*d^4*i^3*x^2 + 4*c*d^3*i^3*x) - log(e*((a + b*x)/(c + d*x))^n)*((A*B*a*d*g + A*B*b*c*g - B^2*a*d*g*n + B^2*b*c*g*n + 2*A*B*b*d*g*x)/(c^2*d^2*i^3 + d^4*i^3*x^2 + 2*c*d^3*i^3*x) - (B^2*b^2*g*((c*d^2*i^3*n*(a*d - b*c))/(2*b) + (d^3*i^3*n*x*(a*d - b*c))/b - (d^2*i^3*n*(a*d - b*c)*(a*d - 2*b*c))/(2*b^2)))/(d^2*i^3*(a*d - b*c)*(c^2*d^2*i^3 + d^4*i^3*x^2 + 2*c*d^3*i^3*x)) - (B*b^2*g*n*atan((B*b^2*g*n*(2*A - B*n)*((a*d^3*i^3 + b*c*d^2*i^3)/(d^2*i^3) + 2*b*d*x)*1i)/((a*d - b*c)*(B^2*b^2*g*n^2 - 2*A*B*b^2*g*n)))*(2*A - B*n)*1i)/(d^2*i^3*(a*d - b*c))

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$g\left(\int \frac{A^2a}{c^3+3c^2dx+3cd^2x^2+d^3x^3} dx + \int \frac{A^2bx}{c^3+3c^2dx+3cd^2x^2+d^3x^3} dx + \int \frac{B^2a \log\left(e\left(\frac{a}{c+dx} + \frac{bx}{c+dx}\right)^n\right)^2}{c^3+3c^2dx+3cd^2x^2+d^3x^3} dx + \int \frac{2ABa \log\left(e\left(\frac{a}{c+dx} + \frac{bx}{c+dx}\right)^n\right)}{c^3+3c^2dx+3cd^2x^2+d^3x^3} dx + \right.$$

i^3

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)**3,x)

[Out] g*(Integral(A**2*a/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x) + Integral(A**2*b*x/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x) + Integral(B**2*a*log(e*(a/(c + d*x) + b*x/(c + d*x))^n)**2/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x) + Integral(2*A*B*a*log(e*(a/(c + d*x) + b*x/(c + d*x))^n)/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x) + Integral(B**2*b*x*log(e*(a/(c + d*x) + b*x/(c + d*x))^n)**2/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x) + Integral(2*A*B*b*x*log(e*(a/(c + d*x) + b*x/(c + d*x))^n)/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x))/i**3

$$3.205 \quad \int \frac{\left(A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ci+dix)^3} dx$$

Optimal. Leaf size=317

$$\frac{Bdn(a+bx)^2\left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{2i^3(c+dx)^2(bc-ad)^2} + \frac{b(a+bx)\left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{i^3(c+dx)(bc-ad)^2} - \frac{d(a+bx)^2\left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{2i^3(c+dx)^2(bc-ad)^2}$$

[Out] $-1/4*B^2*d*n^2*(b*x+a)^2/(-a*d+b*c)^2/i^3/(d*x+c)^2-2*A*b*B*n*(b*x+a)/(-a*d+b*c)^2/i^3/(d*x+c)+2*b*B^2*n^2*(b*x+a)/(-a*d+b*c)^2/i^3/(d*x+c)-2*b*B^2*n*(b*x+a)*\ln(e*((b*x+a)/(d*x+c))^n)/(-a*d+b*c)^2/i^3/(d*x+c)+1/2*B*d*n*(b*x+a)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^2/i^3/(d*x+c)^2-1/2*d*(b*x+a)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^2/i^3/(d*x+c)^2+b*(b*x+a)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^2/i^3/(d*x+c)$

Rubi [C] time = 0.88, antiderivative size = 626, normalized size of antiderivative = 1.97, number of steps used = 28, number of rules used = 11, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.314$, Rules used = {2525, 12, 2528, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 44}

$$\frac{b^2B^2n^2\text{PolyLog}\left(2, -\frac{d(a+bx)}{bc-ad}\right)}{di^3(bc-ad)^2} + \frac{b^2B^2n^2\text{PolyLog}\left(2, \frac{b(c+dx)}{bc-ad}\right)}{di^3(bc-ad)^2} + \frac{b^2Bn \log(a+bx)\left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{di^3(bc-ad)^2} - \frac{b^2Bn \log(a+bx)\left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{di^3(bc-ad)^2}$$

Antiderivative was successfully verified.

[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/(c*i + d*i*x)^3, x]

[Out] $-(B^2*n^2)/(4*d*i^3*(c+d*x)^2) - (3*b*B^2*n^2)/(2*d*(b*c-a*d)*i^3*(c+d*x)) - (3*b^2*B^2*n^2*Log[a+b*x])/(2*d*(b*c-a*d)^2*i^3) - (b^2*B^2*n^2*Log[a+b*x]^2)/(2*d*(b*c-a*d)^2*i^3) + (B*n*(A+B*Log[e*((a+b*x)/(c+d*x))^n]))/(2*d*i^3*(c+d*x)^2) + (b*B*n*(A+B*Log[e*((a+b*x)/(c+d*x))^n]))/(d*(b*c-a*d)*i^3*(c+d*x)) + (b^2*B*n*Log[a+b*x]*(A+B*Log[e*((a+b*x)/(c+d*x))^n]))/(d*(b*c-a*d)^2*i^3) - (A+B*Log[e*((a+b*x)/(c+d*x))^n])^2/(2*d*i^3*(c+d*x)^2) + (3*b^2*B^2*n^2*Log[c+d*x])/(2*d*(b*c-a*d)^2*i^3) + (b^2*B^2*n^2*Log[-((d*(a+b*x))/(b*c-a*d))]*Log[c+d*x])/(d*(b*c-a*d)^2*i^3) - (b^2*B*n*(A+B*Log[e*((a+b*x)/(c+d*x))^n])*Log[c+d*x])/(d*(b*c-a*d)^2*i^3) - (b^2*B^2*n^2*Log[c+d*x]^2)/(2*d*(b*c-a*d)^2*i^3) + (b^2*B^2*n^2*Log[a+b*x]*Log[(b*(c+d*x))/(b*c-a*d)])/(d*(b*c-a*d)^2*i^3) + (b^2*B^2*n^2*PolyLog[2, -((d*(a+b*x))/(b*c-a*d))])/(d*(b*c-a*d)^2*i^3) + (b^2*B^2*n^2*PolyLog[2, (b*(c+d*x))/(b*c-a*d)])/(d*(b*c-a*d)^2*i^3)$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 44

Int[((a_) + (b_)*(x_))^(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])

Rule 2301

Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2390

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)])*(b_)^(p_)*((f_) + (g_)*(x_))^(q_), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_)*((d_) + (e_)*(x_))^(n_)]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))])*(b_)/((f_) + (g_)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_) + Log[(c_)*((d_) + (e_)*(x_))^(n_)])*(b_)/((f_) + (g_)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e^n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2418


```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n]^p, RFx, x]}, Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{\left(A + B \log \left(e \left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(205c + 205dx)^3} dx &= -\frac{\left(A + B \log \left(e \left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{17230250d(c + dx)^2} + \frac{(Bn) \int \frac{(bc-ad)\left(A+B \log \left(e \left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{42025(a+bx)(c+dx)^3} dx}{205d} \\
&= -\frac{\left(A + B \log \left(e \left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{17230250d(c + dx)^2} + \frac{(B(bc - ad)n) \int \frac{A+B \log \left(e \left(\frac{a+bx}{c+dx}\right)^n\right)}{(a+bx)(c+dx)^3} dx}{8615125d} \\
&= -\frac{\left(A + B \log \left(e \left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{17230250d(c + dx)^2} + \frac{(B(bc - ad)n) \int \left(\frac{b^3\left(A+B \log \left(e \left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(bc-ad)^3(a+bx)} - \frac{d\left(A+B \log \left(e \left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(bc-ad)(c+dx)}\right) dx}{8615125d} \\
&= -\frac{\left(A + B \log \left(e \left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{17230250d(c + dx)^2} - \frac{(Bn) \int \frac{A+B \log \left(e \left(\frac{a+bx}{c+dx}\right)^n\right)}{(c+dx)^3} dx}{8615125} - \frac{(b^2Bn) \int \frac{A+B \log \left(e \left(\frac{a+bx}{c+dx}\right)^n\right)}{c+dx} dx}{8615125(bc - ad)} \\
&= \frac{Bn \left(A + B \log \left(e \left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{17230250d(c + dx)^2} + \frac{bBn \left(A + B \log \left(e \left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{8615125d(bc - ad)(c + dx)} + \frac{b^2Bn \log(a + bx)}{8615125} \\
&= \frac{Bn \left(A + B \log \left(e \left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{17230250d(c + dx)^2} + \frac{bBn \left(A + B \log \left(e \left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{8615125d(bc - ad)(c + dx)} + \frac{b^2Bn \log(a + bx)}{8615125} \\
&= \frac{Bn \left(A + B \log \left(e \left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{17230250d(c + dx)^2} + \frac{bBn \left(A + B \log \left(e \left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{8615125d(bc - ad)(c + dx)} + \frac{b^2Bn \log(a + bx)}{8615125} \\
&= -\frac{B^2n^2}{34460500d(c + dx)^2} - \frac{3bB^2n^2}{17230250d(bc - ad)(c + dx)} - \frac{3b^2B^2n^2 \log(a + bx)}{17230250d(bc - ad)^2} \\
&= -\frac{B^2n^2}{34460500d(c + dx)^2} - \frac{3bB^2n^2}{17230250d(bc - ad)(c + dx)} - \frac{3b^2B^2n^2 \log(a + bx)}{17230250d(bc - ad)^2} \\
&= -\frac{B^2n^2}{34460500d(c + dx)^2} - \frac{3bB^2n^2}{17230250d(bc - ad)(c + dx)} - \frac{3b^2B^2n^2 \log(a + bx)}{17230250d(bc - ad)^2}
\end{aligned}$$

Mathematica [C] time = 0.44, size = 464, normalized size = 1.46

$$Bn\left(4b^2(c+dx)^2 \log(a+bx)\left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)-4b^2(c+dx)^2 \log(c+dx)\left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)+2(bc-ad)^2\left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)+4b(c+dx)(bc-ad)\left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)\right)$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/(c*i + d*i*x)^3,x]

[Out] $(-2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2 + (B*n*(2*(b*c - a*d)^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]) + 4*b*(b*c - a*d)*(c + d*x)*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]) + 4*b^2*(c + d*x)^2*\text{Log}[a + b*x]*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]) - 4*b^2*(c + d*x)^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])*\text{Log}[c + d*x] - 4*b*B*n*(c + d*x)*(b*c - a*d + b*(c + d*x)*\text{Log}[a + b*x] - b*(c + d*x)*\text{Log}[c + d*x]) - B*n*((b*c - a*d)^2 + 2*b*(b*c - a*d)*(c + d*x) + 2*b^2*(c + d*x)^2*\text{Log}[a + b*x] - 2*b^2*(c + d*x)^2*\text{Log}[c + d*x]) - 2*b^2*B*n*(c + d*x)^2*(\text{Log}[a + b*x]*(\text{Log}[a + b*x] - 2*\text{Log}[(b*(c + d*x))/(b*c - a*d)]) - 2*\text{PolyLog}[2, (d*(a + b*x))/(-(b*c) + a*d)]) + 2*b^2*B*n*(c + d*x)^2*((2*\text{Log}[(d*(a + b*x))/(-(b*c) + a*d)] - \text{Log}[c + d*x])*\text{Log}[c + d*x] + 2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])))/(b*c - a*d)^2/(4*d*i^3*(c + d*x)^2)$

fricas [B] time = 0.99, size = 654, normalized size = 2.06

$$2 A^2 b^2 c^2 - 4 A^2 a b c d + 2 A^2 a^2 d^2 + (7 B^2 b^2 c^2 - 8 B^2 a b c d + B^2 a^2 d^2) n^2 + 2 (B^2 b^2 c^2 - 2 B^2 a b c d + B^2 a^2 d^2) \log(e)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^3,x, algorithm="fricas")

[Out] $-1/4*(2*A^2*b^2*c^2 - 4*A^2*a*b*c*d + 2*A^2*a^2*d^2 + (7*B^2*b^2*c^2 - 8*B^2*a*b*c*d + B^2*a^2*d^2)*n^2 + 2*(B^2*b^2*c^2 - 2*B^2*a*b*c*d + B^2*a^2*d^2)*\log(e)^2 - 2*(B^2*b^2*d^2*n^2*x^2 + 2*B^2*b^2*c*d*n^2*x + (2*B^2*a*b*c*d - B^2*a^2*d^2)*n^2)*\log((b*x + a)/(d*x + c))^2 - 2*(3*A*B*b^2*c^2 - 4*A*B*a*b*c*d + A*B*a^2*d^2)*n + 2*(3*(B^2*b^2*c*d - B^2*a*b*d^2)*n^2 - 2*(A*B*b^2*c*d - A*B*a*b*d^2)*n)*x + 2*(2*A*B*b^2*c^2 - 4*A*B*a*b*c*d + 2*A*B*a^2*d^2 - 2*(B^2*b^2*c*d - B^2*a*b*d^2)*n*x - (3*B^2*b^2*c^2 - 4*B^2*a*b*c*d + B^2*a^2*d^2)*n - 2*(B^2*b^2*d^2*n*x^2 + 2*B^2*b^2*c*d*n*x + (2*B^2*a*b*c*d - B^2*a^2*d^2)*n)*\log((b*x + a)/(d*x + c))*\log(e) + 2*((4*B^2*a*b*c*d - B^2*a^2*d^2)*n^2 + (3*B^2*b^2*d^2*n^2 - 2*A*B*b^2*d^2*n)*x^2 - 2*(2*A*B*a*b*c*d - A*B*a^2*d^2)*n - 2*(2*A*B*b^2*c*d*n - (2*B^2*b^2*c*d + B^2*a*b*d^2)*n^2))*$

$x) \cdot \log\left(\frac{bx+a}{dx+c}\right) / \left((b^2c^2d^3 - 2abc^2d^4 + a^2d^5)i^3x^2 + 2(b^2c^3d^2 - 2abc^2d^3 + a^2cd^4)i^3x + (b^2c^4d - 2abc^3d^2 + a^2c^2d^3)i^3 \right)$

giac [A] time = 4.17, size = 371, normalized size = 1.17

$$\frac{1}{4} \left(2 \left(\frac{2(bx+a)B^2bin^2}{(bc-ad)(dx+c)} - \frac{(bx+a)^2B^2din^2}{(bc-ad)(dx+c)^2} \right) \log\left(\frac{bx+a}{dx+c}\right)^2 + 2 \left(\frac{(B^2din^2 - 2ABdin - 2B^2din)(bx+a)^2}{(bc-ad)(dx+c)^2} - \frac{4(B^2din^2 - 2ABdin - 2B^2din)(bx+a)}{(bc-ad)(dx+c)} \right) \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((bx+a)/(dx+c))^n))^2/(d*i*x+c*i)^3,x, algorithm="giac")

[Out] $\frac{1}{4} \cdot (2 \cdot (2 \cdot (bx+a) \cdot B^2 \cdot b \cdot i \cdot n^2 / ((bc-ad) \cdot (dx+c)) - (bx+a)^2 \cdot B^2 \cdot d \cdot i \cdot n^2 / ((bc-ad) \cdot (dx+c)^2)) \cdot \log\left(\frac{bx+a}{dx+c}\right)^2 + 2 \cdot ((B^2 \cdot d \cdot i \cdot n^2 - 2 \cdot A \cdot B \cdot d \cdot i \cdot n - 2 \cdot B^2 \cdot d \cdot i \cdot n) \cdot (bx+a)^2 / ((bc-ad) \cdot (dx+c)^2) - 4 \cdot (B^2 \cdot b \cdot i \cdot n^2 - A \cdot B \cdot b \cdot i \cdot n - B^2 \cdot b \cdot i \cdot n) \cdot (bx+a) / ((bc-ad) \cdot (dx+c))) \cdot \log\left(\frac{bx+a}{dx+c}\right) - (B^2 \cdot d \cdot i \cdot n^2 - 2 \cdot A \cdot B \cdot d \cdot i \cdot n - 2 \cdot B^2 \cdot d \cdot i \cdot n + 2 \cdot A^2 \cdot d \cdot i + 4 \cdot A \cdot B \cdot d \cdot i + 2 \cdot B^2 \cdot d \cdot i) \cdot (bx+a)^2 / ((bc-ad) \cdot (dx+c)^2) + 4 \cdot (2 \cdot B^2 \cdot b \cdot i \cdot n^2 - 2 \cdot A \cdot B \cdot b \cdot i \cdot n - 2 \cdot B^2 \cdot b \cdot i \cdot n + A^2 \cdot b \cdot i + 2 \cdot A \cdot B \cdot b \cdot i + B^2 \cdot b \cdot i) \cdot (bx+a) / ((bc-ad) \cdot (dx+c))) \cdot (bc / (bc-ad)^2 - ad / (bc-ad)^2)$

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int \frac{\left(B \ln\left(e\left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)^2}{(dix+ci)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*ln(e*((bx+a)/(dx+c))^n)+A)^2/(d*i*x+c*i)^3,x)

[Out] int((B*ln(e*((bx+a)/(dx+c))^n)+A)^2/(d*i*x+c*i)^3,x)

maxima [B] time = 1.56, size = 861, normalized size = 2.72

$$\frac{1}{2} ABn \left(\frac{2bdx + 3bc - ad}{(bcd^3 - ad^4)i^3x^2 + 2(bc^2d^2 - acd^3)i^3x + (bc^3d - ac^2d^2)i^3} + \frac{2b^2 \log(bx+a)}{(b^2c^2d - 2abcd^2 + a^2d^3)i^3} - \frac{2b^2 \log(a)}{(b^2c^2d - 2abcd^2 + a^2d^3)i^3} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((bx+a)/(dx+c))^n))^2/(d*i*x+c*i)^3,x, algorithm="maxima")

```
[Out] 1/2*A*B*n*((2*b*d*x + 3*b*c - a*d)/((b*c*d^3 - a*d^4)*i^3*x^2 + 2*(b*c^2*d^2 - a*c*d^3)*i^3*x + (b*c^3*d - a*c^2*d^2)*i^3) + 2*b^2*log(b*x + a)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3) - 2*b^2*log(d*x + c)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3) + 1/4*(2*n*((2*b*d*x + 3*b*c - a*d)/((b*c*d^3 - a*d^4)*i^3*x^2 + 2*(b*c^2*d^2 - a*c*d^3)*i^3*x + (b*c^3*d - a*c^2*d^2)*i^3) + 2*b^2*log(b*x + a)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3) - 2*b^2*log(d*x + c)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3))*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) - (7*b^2*c^2 - 8*a*b*c*d + a^2*d^2 + 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a)^2 + 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(d*x + c)^2 + 6*(b^2*c*d - a*b*d^2)*x + 6*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a) - 2*(3*b^2*d^2*x^2 + 6*b^2*c*d*x + 3*b^2*c^2 + 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a))*log(d*x + c))*n^2/(b^2*c^4*d*i^3 - 2*a*b*c^3*d^2*i^3 + a^2*c^2*d^3*i^3 + (b^2*c^2*d^3*i^3 - 2*a*b*c*d^4*i^3 + a^2*d^5*i^3)*x^2 + 2*(b^2*c^3*d^2*i^3 - 2*a*b*c^2*d^3*i^3 + a^2*c*d^4*i^3)*x))*B^2 - 1/2*B^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)^2/(d^3*i^3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3) - A*B*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(d^3*i^3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3) - 1/2*A^2/(d^3*i^3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3)
```

mupad [B] time = 6.67, size = 505, normalized size = 1.59

$$-\ln\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^2\left(\frac{B^2}{2d(c^2i^3+2cdi^3x+d^2i^3x^2)}-\frac{B^2b^2}{2di^3(a^2d^2-2abcd+b^2c^2)}\right)-\frac{2A^2ad-2A^2bc+B^2adn^2-7A^2b^2c^2}{2c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))^2/(c*i + d*i*x)^3,x)
```

```
[Out] - log(e*((a + b*x)/(c + d*x))^n)^2*(B^2/(2*d*(c^2*i^3 + d^2*i^3*x^2 + 2*c*d*i^3*x)) - (B^2*b^2)/(2*d*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))) - ((2*A^2*a*d - 2*A^2*b*c + B^2*a*d*n^2 - 7*B^2*b*c*n^2 - 2*A*B*a*d*n + 6*A*B*b*c*n)/(2*(a*d - b*c)) - (b*x*(3*B^2*d*n^2 - 2*A*B*d*n))/(a*d - b*c))/(2*c^2*d*i^3 + 2*d^3*i^3*x^2 + 4*c*d^2*i^3*x) - log(e*((a + b*x)/(c + d*x))^n)*((A*B)/(c^2*d*i^3 + d^3*i^3*x^2 + 2*c*d^2*i^3*x) + (B^2*b^2*((d^2*i^3*n*x*(a*d - b*c))/b - (d*i^3*n*(a*d - b*c)*(a*d - 2*b*c))/(2*b^2) + (c*d*i^3*n*(a*d - b*c))/(2*b)))/(d*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)*(c^2*d*i^3 + d^3*i^3*x^2 + 2*c*d^2*i^3*x)) - (B*b^2*n*atan(((2*b*d*x + (2*a^2*d^3*i^3 - 2*b^2*c^2*d*i^3)/(2*d*i^3*(a*d - b*c)))*i)/(a*d - b*c))*(2*A - 3*B*n)*i)/(d*i^3*(a*d - b*c)^2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{A^2}{c^3+3c^2dx+3cd^2x^2+d^3x^3} dx + \int \frac{B^2 \log\left(e\left(\frac{a}{c+dx} + \frac{bx}{c+dx}\right)^n\right)^2}{c^3+3c^2dx+3cd^2x^2+d^3x^3} dx + \int \frac{2AB \log\left(e\left(\frac{a}{c+dx} + \frac{bx}{c+dx}\right)^n\right)}{c^3+3c^2dx+3cd^2x^2+d^3x^3} dx}{i^3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(d*i*x+c*i)**3,x)

[Out] (Integral(A**2/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x) + Integral(B**2*log(e*(a/(c + d*x) + b*x/(c + d*x))**n)**2/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x) + Integral(2*A*B*log(e*(a/(c + d*x) + b*x/(c + d*x))**n)/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x))/i**3

$$3.206 \quad \int \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ag+bgx)(ci+dix)^3} dx$$

Optimal. Leaf size=402

$$\frac{b^2 \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A\right)^3}{3Bgi^3n(bc-ad)^3} + \frac{d^2(a+bx)^2 \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A\right)^2}{2gi^3(c+dx)^2(bc-ad)^3} - \frac{Bd^2n(a+bx)^2 \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A\right)}{2gi^3(c+dx)^2(bc-ad)^3} - 2b$$

[Out] $\frac{1}{4}B^2d^2n^2(bx+a)^2(-ad+bc)^3/gi^3/(dx+c)^2 + 4ABdBdn(bx+a)/(-ad+bc)^3/gi^3/(dx+c) - 4bB^2dn(bx+a)\ln(e((bx+a)/(dx+c))^n)/(-ad+bc)^3/gi^3/(dx+c) - 1/2Bd^2n(bx+a)^2(A+B\ln(e((bx+a)/(dx+c))^n))/(-ad+bc)^3/gi^3/(dx+c)^2 + 1/2d^2(bx+a)^2(A+B\ln(e((bx+a)/(dx+c))^n))^2/(-ad+bc)^3/gi^3/(dx+c)^2 - 2b*d*(bx+a)*(A+B\ln(e((bx+a)/(dx+c))^n))^2/(-ad+bc)^3/gi^3/(dx+c) + 1/3b^2(A+B\ln(e((bx+a)/(dx+c))^n))^3/B/(-ad+bc)^3/gi^3/n$

Rubi [C] time = 7.04, antiderivative size = 2025, normalized size of antiderivative = 5.04, number of steps used = 111, number of rules used = 31, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}} = 0.689$, Rules used = {2528, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 12, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2525, 44, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)*(c*i + d*i*x)^3), x]

[Out] $\frac{B^2n^2}{4(b*c - a*d)*g*i^3*(c + d*x)^2} + \frac{7*b*B^2n^2}{2*(b*c - a*d)^2*g*i^3*(c + d*x)} + \frac{7*b^2*B^2n^2*Log[a + b*x]}{2*(b*c - a*d)^3*g*i^3} - \frac{(A*b^2*B*n*Log[a + b*x]^2)}{(b*c - a*d)^3*g*i^3} + \frac{3*b^2*B^2n^2*Log[a + b*x]^2}{2*(b*c - a*d)^3*g*i^3} - \frac{(b^2*B^2*Log[-((b*c - a*d)/(d*(a + b*x))]) * Log[e*((a + b*x)/(c + d*x))^n]^2)}{(b*c - a*d)^3*g*i^3} - \frac{(b^2*B^2*Log[a + b*x] * Log[e*((a + b*x)/(c + d*x))^n]^2)}{(b*c - a*d)^3*g*i^3} - \frac{(B*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))}{2*(b*c - a*d)*g*i^3*(c + d*x)^2} - \frac{(3*b*B*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))}{(b*c - a*d)^2*g*i^3*(c + d*x)} - \frac{(3*b^2*B*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))}{(b*c - a*d)^3*g*i^3} + \frac{(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2}{2*(b*c - a*d)*g*i^3*(c + d*x)^2} + \frac{(b*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)}{(b*c - a*d)^2*g*i^3*(c + d*x)} + \frac{(b^2*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)}{(b*c - a*d)^2*g*i^3*(c + d*x)}$

$$\begin{aligned} & \text{^n])}^2)/((b*c - a*d)^3*g*i^3) - (7*b^2*B^2*n^2*\text{Log}[c + d*x])/((2*(b*c - a*d) \\ & ^3*g*i^3) + (2*A*b^2*B*n*\text{Log}[-(d*(a + b*x))/(b*c - a*d)])*\text{Log}[c + d*x])/((\\ & b*c - a*d)^3*g*i^3) - (3*b^2*B^2*n^2*\text{Log}[-(d*(a + b*x))/(b*c - a*d)])*\text{Log}[\\ & c + d*x])/((b*c - a*d)^3*g*i^3) + (b^2*B^2*\text{Log}[(a + b*x)^n]^2*\text{Log}[c + d*x]) \\ & /((b*c - a*d)^3*g*i^3) + (3*b^2*B*n*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))]^n))* \\ & \text{Log}[c + d*x])/((b*c - a*d)^3*g*i^3) - (b^2*(A + B*\text{Log}[e*((a + b*x)/(c + d*x) \\ &)])^2*\text{Log}[c + d*x])/((b*c - a*d)^3*g*i^3) - (A*b^2*B*n*\text{Log}[c + d*x]^2)/ \\ & ((b*c - a*d)^3*g*i^3) + (3*b^2*B^2*n^2*\text{Log}[c + d*x]^2)/((2*(b*c - a*d)^3*g*i^ \\ & 3) + (b^2*B^2*n^2*\text{Log}[a + b*x]*\text{Log}[c + d*x]^2))/((b*c - a*d)^3*g*i^3) - (b^2 \\ & *B^2*n*\text{Log}[e*((a + b*x)/(c + d*x))]^n*\text{Log}[c + d*x]^2)/((b*c - a*d)^3*g*i^3) \\ & - (b^2*B^2*n^2*\text{Log}[c + d*x]^3)/(3*(b*c - a*d)^3*g*i^3) + (2*A*b^2*B*n*\text{Log}[\\ & a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g*i^3) - (3*b^2*B^2 \\ & *n^2*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g*i^3) - (\\ & b^2*B^2*\text{Log}[(a + b*x)^n]^2*\text{Log}[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g \\ & *i^3) + (2*b^2*B^2*n*\text{Log}[a + b*x]*\text{Log}[c + d*x]*\text{Log}[(c + d*x)^(-n)])/((b*c - \\ & a*d)^3*g*i^3) + (b^2*B^2*\text{Log}[a + b*x]*\text{Log}[(c + d*x)^(-n)]^2)/((b*c - a*d)^ \\ & 3*g*i^3) - (b^2*B^2*\text{Log}[-(d*(a + b*x))/(b*c - a*d)])*\text{Log}[(c + d*x)^(-n)]^2 \\ &)/((b*c - a*d)^3*g*i^3) - (2*b^2*B^2*n*\text{Log}[-(d*(a + b*x))/(b*c - a*d)])*\text{Lo} \\ & g[c + d*x]*(\text{Log}[(a + b*x)^n] - \text{Log}[e*((a + b*x)/(c + d*x))]^n + \text{Log}[(c + d* \\ & x)^(-n)]))/((b*c - a*d)^3*g*i^3) + (2*A*b^2*B*n*\text{PolyLog}[2, -(d*(a + b*x))/ \\ & (b*c - a*d)])/((b*c - a*d)^3*g*i^3) - (3*b^2*B^2*n^2*\text{PolyLog}[2, -(d*(a + \\ & b*x))/(b*c - a*d)])/((b*c - a*d)^3*g*i^3) - (2*b^2*B^2*n*\text{Log}[(a + b*x)^n]* \\ & \text{PolyLog}[2, -(d*(a + b*x))/(b*c - a*d)])/((b*c - a*d)^3*g*i^3) + (2*A*b^2*B \\ & *n*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g*i^3) - (3*b^2*B \\ & ^2*n^2*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g*i^3) + (2*b^ \\ & 2*B^2*n*\text{Log}[(c + d*x)^(-n)]*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - \\ & a*d)^3*g*i^3) - (2*b^2*B^2*n*(\text{Log}[(a + b*x)^n] - \text{Log}[e*((a + b*x)/(c + d*x) \\ &)]^n + \text{Log}[(c + d*x)^(-n)])*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - \\ & a*d)^3*g*i^3) + (2*b^2*B^2*n*\text{Log}[e*((a + b*x)/(c + d*x))]^n*\text{PolyLog}[2, 1 + \\ & (b*c - a*d)/(d*(a + b*x))])/((b*c - a*d)^3*g*i^3) + (2*b^2*B^2*n^2*\text{PolyLog}[\\ & 3, -(d*(a + b*x))/(b*c - a*d)])/((b*c - a*d)^3*g*i^3) + (2*b^2*B^2*n^2*\text{Po} \\ & lyLog[3, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g*i^3) + (2*b^2*B^2*n^2 \\ & *\text{PolyLog}[3, 1 + (b*c - a*d)/(d*(a + b*x))])/((b*c - a*d)^3*g*i^3) \end{aligned}$$
Rule 12

`Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]`

Rule 30

`Int[(x_)^(m_.), x_Symbol] := Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && NeQ[m, -1]`

Rule 44

Int[((a_) + (b_)*(x_))^(m_)*((c_) + (d_)*(x_))^(n_), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])

Rule 2301

Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2302

Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)^(p_)/(x_), x_Symbol] := Dist[1/(b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p}, x]

Rule 2317

Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)^(p_)/((d_) + (e_)*(x_)), x_Symbol] := Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e, Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]

Rule 2344

Int[((a_) + Log[(c_)*(x_)^(n_)])*(b_)^(p_)/((x_)*((d_) + (e_)*(x_))), x_Symbol] := Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]

Rule 2374

Int[(Log[(d_)*((e_) + (f_)*(x_)^(m_))])*((a_) + Log[(c_)*(x_)^(n_)])*(b_)^(p_)/(x_), x_Symbol] := -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0] && EqQ[d*e, 1]

Rule 2375

Int[(Log[(d_)*((e_) + (f_)*(x_)^(m_))^(r_))]*((a_) + Log[(c_)*(x_)^(n_)])*(b_)^(p_)/(x_), x_Symbol] := Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m - 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,

$e, f, r, m, n\}, x] \&\& \text{IGtQ}[p, 0] \&\& \text{NeQ}[d*e, 1]$

Rule 2390

$\text{Int}[(a_.) + \text{Log}[c_.]*((d_) + (e_.)*(x_)^{n_.})*(b_.))^{p_.}*((f_) + (g_.)*(x_)^{q_.}), x_Symbol] \rightarrow \text{Dist}[1/e, \text{Subst}[\text{Int}[(f*x)/d]^q*(a + b*\text{Log}[c*x^n])^p, x], x, d + e*x], x] /; \text{FreeQ}\{a, b, c, d, e, f, g, n, p, q\}, x\} \&\& \text{EqQ}[e*f - d*g, 0]$

Rule 2391

$\text{Int}[\text{Log}[(c_.)*((d_) + (e_.)*(x_)^{n_.})]/(x_), x_Symbol] \rightarrow -\text{Simp}[\text{PolyLog}[2, -(c*e*x^n)]/n, x] /; \text{FreeQ}\{c, d, e, n\}, x\} \&\& \text{EqQ}[c*d, 1]$

Rule 2393

$\text{Int}[(a_.) + \text{Log}[c_.)*((d_) + (e_.)*(x_))]*(b_.)/((f_.) + (g_.)*(x_)), x_Symbol] \rightarrow \text{Dist}[1/g, \text{Subst}[\text{Int}[(a + b*\text{Log}[1 + (c*e*x)/g]]/x, x], x, f + g*x], x] /; \text{FreeQ}\{a, b, c, d, e, f, g\}, x\} \&\& \text{NeQ}[e*f - d*g, 0] \&\& \text{EqQ}[g + c*(e*f - d*g), 0]$

Rule 2394

$\text{Int}[(a_.) + \text{Log}[c_.)*((d_) + (e_.)*(x_)^{n_.})*(b_.)/((f_.) + (g_.)*(x_)), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[(e*(f + g*x))/(e*f - d*g)]*(a + b*\text{Log}[c*(d + e*x)^n]))/g, x] - \text{Dist}[(b*e*n)/g, \text{Int}[\text{Log}[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; \text{FreeQ}\{a, b, c, d, e, f, g, n\}, x\} \&\& \text{NeQ}[e*f - d*g, 0]$

Rule 2396

$\text{Int}[(a_.) + \text{Log}[c_.)*((d_) + (e_.)*(x_)^{n_.})*(b_.))^{p_.}/((f_.) + (g_.)*(x_)), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[(e*(f + g*x))/(e*f - d*g)]*(a + b*\text{Log}[c*(d + e*x)^n])^p)/g, x] - \text{Dist}[(b*e*n*p)/g, \text{Int}[(\text{Log}[(e*(f + g*x))/(e*f - d*g)]*(a + b*\text{Log}[c*(d + e*x)^n])^{p-1})/(d + e*x), x], x] /; \text{FreeQ}\{a, b, c, d, e, f, g, n, p\}, x\} \&\& \text{NeQ}[e*f - d*g, 0] \&\& \text{IGtQ}[p, 1]$

Rule 2411

$\text{Int}[(a_.) + \text{Log}[c_.)*((d_) + (e_.)*(x_)^{n_.})*(b_.))^{p_.}*((f_.) + (g_.)*(x_)^{q_.})*((h_.) + (i_.)*(x_)^{r_.}), x_Symbol] \rightarrow \text{Dist}[1/e, \text{Subst}[\text{Int}[(g*x)/e]^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*\text{Log}[c*x^n])^p, x], x, d + e*x], x] /; \text{FreeQ}\{a, b, c, d, e, f, g, h, i, n, p, q, r\}, x\} \&\& \text{EqQ}[e*f - d*g, 0] \&\& (\text{IGtQ}[p, 0] \parallel \text{IGtQ}[r, 0]) \&\& \text{IntegerQ}[2*r]$

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Symbol]
:> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n]]^p, RFx, x]},
Int[u, x] /; SumQ[u] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol]
:> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e]^m)], x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n]*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x]
*(f + g*Log[h*(i + j*x)^m))]/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] :>
Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n]*(f +
g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m)], x], x, k + l*x], x] /; FreeQ[{a,
b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] :> -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q]^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)
```

```
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_.))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_.)), x_Symbol] := Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q]^r)/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_.))^(p_.)*((c_.) + (d_.)*(x_.))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_.))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_.)), x_Symbol] := Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_.))^(p_.)*((c_.) + (d_.)*(x_.)
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] := With[{g = Simplify[(v - 1)*(c + d
*x))/(a + b*x]}, h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1)/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_.))^(p_.)*((c_.) + (d_.)*(x_.))^(q_.)
)^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_.))^(t_.))^(u_.)]*(v_), x_S
ymbol] := With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
h*x)^t]^u)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/(p*r*(s + 1)*(b*c
- a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q]^r]^s)/(g + h*x), x], x] /; FreeQ[k, x] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.))/((d_.) + (e_.)*(x_.)), x_S
ymbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
```

FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]

Rule 2525

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]

Rule 2528

Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]

Rule 6589

Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_Symbol] := Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d, e, n, p}, x] && EqQ[b*d, a*e]

Rule 6610

Int[(u_)*PolyLog[n_, v_], x_Symbol] := With[{w = DerivativeDivides[v, u*v, x]}, Simp[w*PolyLog[n + 1, v], x] /; !FalseQ[w]] /; FreeQ[n, x]

Rule 6688

Int[u_, x_Symbol] := With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; SimplifyIntegrandQ[v, u, x]]

Rule 6742

Int[u_, x_Symbol] := With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]]

Rubi steps

$$\begin{aligned}
\int \frac{\left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(206c + 206dx)^3(ag + bgx)} dx &= \int \left(\frac{b^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{8741816(bc - ad)^3g(a + bx)} - \frac{d \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{8741816(bc - ad)g(c + dx)^3} - \frac{bd \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{8741816(bc - ad)^2g(c + dx)^2} \right) dx \\
&= \frac{b^3 \int \frac{\left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{a+bx} dx}{8741816(bc - ad)^3g} - \frac{(b^2d) \int \frac{\left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{c+dx} dx}{8741816(bc - ad)^3g} - \frac{(bd) \int \frac{\left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(c+dx)^2} dx}{8741816(bc - ad)^2g} \\
&= \frac{\left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{17483632(bc - ad)g(c + dx)^2} + \frac{b \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{8741816(bc - ad)^2g(c + dx)} + \frac{b^2 \log(a + bx)}{8741816(bc - ad)^2g} \\
&= \frac{\left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{17483632(bc - ad)g(c + dx)^2} + \frac{b \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{8741816(bc - ad)^2g(c + dx)} + \frac{b^2 \log(a + bx)}{8741816(bc - ad)^2g} \\
&= \frac{\left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{17483632(bc - ad)g(c + dx)^2} + \frac{b \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{8741816(bc - ad)^2g(c + dx)} + \frac{b^2 \log(a + bx)}{8741816(bc - ad)^2g} \\
&= \frac{\left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{17483632(bc - ad)g(c + dx)^2} + \frac{b \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{8741816(bc - ad)^2g(c + dx)} + \frac{b^2 \log(a + bx)}{8741816(bc - ad)^2g} \\
&= -\frac{Bn \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{17483632(bc - ad)g(c + dx)^2} - \frac{3bBn \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{8741816(bc - ad)^2g(c + dx)} - \frac{3b^2Bn \log(a + bx)}{8741816(bc - ad)^2g} \\
&= -\frac{b^2B^2 \log(a + bx) \log^2 \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{8741816(bc - ad)^3g} - \frac{Bn \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{17483632(bc - ad)g(c + dx)^2} - \frac{3bBn \log(a + bx)}{8741816(bc - ad)^2g} \\
&= -\frac{b^2B^2 \log \left(-\frac{bc-ad}{d(a+bx)} \right) \log^2 \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{8741816(bc - ad)^3g} - \frac{b^2B^2 \log(a + bx) \log^2 \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{8741816(bc - ad)^3g} \\
&= \frac{B^2n^2}{34967264(bc - ad)g(c + dx)^2} + \frac{7bB^2n^2}{17483632(bc - ad)^2g(c + dx)} + \frac{7b^2B^2n^2 \log(a + bx)}{17483632(bc - ad)^2g} \\
&= \frac{B^2n^2}{34967264(bc - ad)g(c + dx)^2} + \frac{7bB^2n^2}{17483632(bc - ad)^2g(c + dx)} + \frac{7b^2B^2n^2 \log(a + bx)}{17483632(bc - ad)^2g}
\end{aligned}$$

Mathematica [B] time = 1.37, size = 971, normalized size = 2.42

$$4b^2B^2n^2 \log^3\left(\frac{a+bx}{c+dx}\right) - \frac{6Bn\left(-2Ac^2b^2-2Ad^2x^2b^2+3Bd^2nx^2b^2-4Acdbx^2+4Bcdnxb^2-2B(c+dx)^2 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)b^2+2Bn(c+dx)^2 \log\left(\frac{a+bx}{c+dx}\right)b^2+4\right)}{(c+dx)^2}$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)*(c*i + d*i*x)^3), x]

[Out] (4*b^2*B^2*n^2*Log[(a + b*x)/(c + d*x)]^3 - (6*B*n*Log[(a + b*x)/(c + d*x)]^2*(-2*A*b^2*c^2 + 4*a*b*B*c*d*n - a^2*B*d^2*n - 4*A*b^2*c*d*x + 4*b^2*B*c*d*n*x + 2*a*b*B*d^2*n*x - 2*A*b^2*d^2*x^2 + 3*b^2*B*d^2*n*x^2 - 2*b^2*B*(c + d*x)^2*Log[e*((a + b*x)/(c + d*x))^n] + 2*b^2*B*n*(c + d*x)^2*Log[(a + b*x)/(c + d*x)])))/(c + d*x)^2 - (6*B*(b*c - a*d)*n*Log[(a + b*x)/(c + d*x)]*(-6*A*b*c + 2*a*A*d + 7*b*B*c*n - a*B*d*n - 4*A*b*d*x + 6*b*B*d*n*x + 2*B*(-3*b*c + a*d - 2*b*d*x)*Log[e*((a + b*x)/(c + d*x))^n] + 2*B*n*(3*b*c - a*d + 2*b*d*x)*Log[(a + b*x)/(c + d*x)])))/(c + d*x)^2 + (3*(b*c - a*d)^2*(2*A^2 - 2*A*B*n + B^2*n^2 + 2*B^2*Log[e*((a + b*x)/(c + d*x))^n]^2 + 2*B*n*(-2*A + B*n)*Log[(a + b*x)/(c + d*x)] + 2*B^2*n^2*Log[(a + b*x)/(c + d*x)]^2 - 2*B*Log[e*((a + b*x)/(c + d*x))^n]*(-2*A + B*n + 2*B*n*Log[(a + b*x)/(c + d*x)])))/(c + d*x)^2 + (6*b*(b*c - a*d)*(2*A^2 - 6*A*B*n + 7*B^2*n^2 + 2*B^2*Log[e*((a + b*x)/(c + d*x))^n]^2 + 2*B*n*(-2*A + 3*B*n)*Log[(a + b*x)/(c + d*x)] + 2*B^2*n^2*Log[(a + b*x)/(c + d*x)]^2 - 2*B*Log[e*((a + b*x)/(c + d*x))^n]*(-2*A + 3*B*n + 2*B*n*Log[(a + b*x)/(c + d*x)])))/(c + d*x) + 6*b^2*Log[a + b*x]*(2*A^2 - 6*A*B*n + 7*B^2*n^2 + 2*B^2*Log[e*((a + b*x)/(c + d*x))^n]^2 + 2*B*n*(-2*A + 3*B*n)*Log[(a + b*x)/(c + d*x)] + 2*B^2*n^2*Log[(a + b*x)/(c + d*x)]^2 - 2*B*Log[e*((a + b*x)/(c + d*x))^n]*(-2*A + 3*B*n + 2*B*n*Log[(a + b*x)/(c + d*x)])) - 6*b^2*(2*A^2 - 6*A*B*n + 7*B^2*n^2 + 2*B^2*Log[e*((a + b*x)/(c + d*x))^n]^2 + 2*B*n*(-2*A + 3*B*n)*Log[(a + b*x)/(c + d*x)] + 2*B^2*n^2*Log[(a + b*x)/(c + d*x)]^2 - 2*B*Log[e*((a + b*x)/(c + d*x))^n]*(-2*A + 3*B*n + 2*B*n*Log[(a + b*x)/(c + d*x)])))*Log[c + d*x]/(12*(b*c - a*d)^3*g*i^3)

fricas [B] time = 1.09, size = 1076, normalized size = 2.68

$$18A^2b^2c^2 - 24A^2abcd + 6A^2a^2d^2 + 4\left(B^2b^2d^2n^2x^2 + 2B^2b^2cdn^2x + B^2b^2c^2n^2\right) \log\left(\frac{bx+a}{dx+c}\right)^3 + 3\left(15B^2b^2c^2 - 16\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)/(d*i*x+c*i)^3,x, algorithm="fricas")

```
[Out] 1/12*(18*A^2*b^2*c^2 - 24*A^2*a*b*c*d + 6*A^2*a^2*d^2 + 4*(B^2*b^2*d^2*n^2*x^2 + 2*B^2*b^2*c*d*n^2*x + B^2*b^2*c^2*n^2)*log((b*x + a)/(d*x + c))^3 + 3*(15*B^2*b^2*c^2 - 16*B^2*a*b*c*d + B^2*a^2*d^2)*n^2 + 6*(3*B^2*b^2*c^2 - 4*B^2*a*b*c*d + B^2*a^2*d^2 + 2*(B^2*b^2*c*d - B^2*a*b*d^2)*x + 2*(B^2*b^2*d^2*x^2 + 2*B^2*b^2*c*d*x + B^2*b^2*c^2)*log((b*x + a)/(d*x + c)))*log(e)^2 + 6*(2*A*B*b^2*c^2*n - (4*B^2*a*b*c*d - B^2*a^2*d^2)*n^2 - (3*B^2*b^2*d^2*n^2 - 2*A*B*b^2*d^2*n)*x^2 + 2*(2*A*B*b^2*c*d*n - (2*B^2*b^2*c*d + B^2*a*b*d^2)*n^2)*x)*log((b*x + a)/(d*x + c))^2 - 6*(7*A*B*b^2*c^2 - 8*A*B*a*b*c*d + A*B*a^2*d^2)*n + 6*(2*A^2*b^2*c*d - 2*A^2*a*b*d^2 + 7*(B^2*b^2*c*d - B^2*a*b*d^2)*n^2 - 6*(A*B*b^2*c*d - A*B*a*b*d^2)*n)*x + 6*(6*A*B*b^2*c^2 - 8*A*B*a*b*c*d + 2*A*B*a^2*d^2 + 2*(B^2*b^2*d^2*n*x^2 + 2*B^2*b^2*c*d*n*x + B^2*b^2*c^2*n)*log((b*x + a)/(d*x + c))^2 - (7*B^2*b^2*c^2 - 8*B^2*a*b*c*d + B^2*a^2*d^2)*n + 2*(2*A*B*b^2*c*d - 2*A*B*a*b*d^2 - 3*(B^2*b^2*c*d - B^2*a*b*d^2)*n)*x + 2*(2*A*B*b^2*c^2 - (3*B^2*b^2*d^2*n - 2*A*B*b^2*d^2)*x^2 - (4*B^2*a*b*c*d - B^2*a^2*d^2)*n + 2*(2*A*B*b^2*c*d - (2*B^2*b^2*c*d + B^2*a*b*d^2)*n)*x)*log((b*x + a)/(d*x + c))*log(e) + 6*(2*A^2*b^2*c^2 + (8*B^2*a*b*c*d - B^2*a^2*d^2)*n^2 + (7*B^2*b^2*d^2*n^2 - 6*A*B*b^2*d^2*n + 2*A^2*b^2*d^2)*x^2 - 2*(4*A*B*a*b*c*d - A*B*a^2*d^2)*n + 2*(2*A^2*b^2*c*d + (4*B^2*b^2*c*d + 3*B^2*a*b*d^2)*n^2 - 2*(2*A*B*b^2*c*d + A*B*a*b*d^2)*n)*x)*log((b*x + a)/(d*x + c)))/((b^3*c^3*d^2 - 3*a*b^2*c^2*d^3 + 3*a^2*b*c*d^4 - a^3*d^5)*g*i^3*x^2 + 2*(b^3*c^4*d - 3*a*b^2*c^3*d^2 + 3*a^2*b*c^2*d^3 - a^3*c*d^4)*g*i^3*x + (b^3*c^5 - 3*a*b^2*c^4*d + 3*a^2*b*c^3*d^2 - a^3*c^2*d^3)*g*i^3)
```

giac [A] time = 8.67, size = 664, normalized size = 1.65

$$\frac{1}{12} \left(\frac{4B^2b^2in^2 \log\left(\frac{bx+a}{dx+c}\right)^3}{b^2c^2g - 2abcdg + a^2d^2g} - 6 \left(\frac{4(bx+a)B^2bdin^2}{(b^2c^2g - 2abcdg + a^2d^2g)(dx+c)} - \frac{(bx+a)^2B^2d^2in^2}{(b^2c^2g - 2abcdg + a^2d^2g)(dx+c)^2} - \frac{2}{b^2c} \right) \right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)/(d*i*x+c*i)^3,x, a lgorithm="giac")
```

```
[Out] 1/12*(4*B^2*b^2*i*n^2*log((b*x + a)/(d*x + c))^3/(b^2*c^2*g - 2*a*b*c*d*g + a^2*d^2*g) - 6*(4*(b*x + a)*B^2*b*d*i*n^2/((b^2*c^2*g - 2*a*b*c*d*g + a^2*d^2*g)*(d*x + c)) - (b*x + a)^2*B^2*d^2*i*n^2/((b^2*c^2*g - 2*a*b*c*d*g + a^2*d^2*g)*(d*x + c)^2) - 2*(A*B*b^2*i*n + B^2*b^2*i*n)/(b^2*c^2*g - 2*a*b*c*d*g + a^2*d^2*g))*log((b*x + a)/(d*x + c))^2 - 6*((B^2*d^2*i*n^2 - 2*A*B*d^2*i*n - 2*B^2*d^2*i*n)*(b*x + a)^2/((b^2*c^2*g - 2*a*b*c*d*g + a^2*d^2*g)*(d*x + c)^2) - 8*(B^2*b*d*i*n^2 - A*B*b*d*i*n - B^2*b*d*i*n)*(b*x + a)/((b^2*c^2*g - 2*a*b*c*d*g + a^2*d^2*g)*(d*x + c)))*log((b*x + a)/(d*x + c)) - 1*2*(A^2*b^2 + 2*A*B*b^2 + B^2*b^2)*log((b*x + a)/(d*x + c))/(b^2*c^2*g*i - 2*a*b*c*d*g*i + a^2*d^2*g*i) + 3*(B^2*d^2*i*n^2 - 2*A*B*d^2*i*n - 2*B^2*d^2*i*n + 2*A^2*d^2*i + 4*A*B*d^2*i + 2*B^2*d^2*i)*(b*x + a)^2/((b^2*c^2*g - 2
```


$a*b*c*d*g + a^2*d^2*g)*(d*x + c)^2) - 24*(2*B^2*b*d*i*n^2 - 2*A*B*b*d*i*n - 2*B^2*b*d*i*n + A^2*b*d*i + 2*A*B*b*d*i + B^2*b*d*i)*(b*x + a)/((b^2*c^2*g - 2*a*b*c*d*g + a^2*d^2*g)*(d*x + c)))*(b*c/(b*c - a*d)^2 - a*d/(b*c - a*d)^2)$

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{\left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)^2}{(bgx + ag)(dix + ci)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)/(d*i*x+c*i)^3,x)

[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)/(d*i*x+c*i)^3,x)

maxima [B] time = 2.75, size = 2126, normalized size = 5.29

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)/(d*i*x+c*i)^3,x, algorithm="maxima")

[Out] $1/2*B^2*((2*b*d*x + 3*b*c - a*d)/((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)*g*i^3*x^2 + 2*(b^2*c^3*d - 2*a*b*c^2*d^2 + a^2*c*d^3)*g*i^3*x + (b^2*c^4 - 2*a*b*c^3*d + a^2*c^2*d^2)*g*i^3) + 2*b^2*log(b*x + a)/((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g*i^3) - 2*b^2*log(d*x + c)/((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g*i^3))*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)^2 + A*B*((2*b*d*x + 3*b*c - a*d)/((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)*g*i^3*x^2 + 2*(b^2*c^3*d - 2*a*b*c^2*d^2 + a^2*c*d^3)*g*i^3*x + (b^2*c^4 - 2*a*b*c^3*d + a^2*c^2*d^2)*g*i^3) + 2*b^2*log(b*x + a)/((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g*i^3) - 2*b^2*log(d*x + c)/((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g*i^3))*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/12*((45*b^2*c^2 - 48*a*b*c*d + 3*a^2*d^2 + 4*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a)^3 - 4*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(d*x + c)^3 + 18*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a)^2 + 6*(3*b^2*d^2*x^2 + 6*b^2*c*d*x + 3*b^2*c^2 + 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a))*log(d*x + c)^2 + 42*(b^2*c*d - a*b*d^2)*x + 42*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a) - 6*(7*b^2*d^2*x^2 + 14*b^2*c*d*x + 7*b^2*c^2 + 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a)^2 + 6*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a))*log(d*x + c))^n^2/(b^3*c^5*g*i^3 - 3*a*b^2*c^4*d*g*i^3 + 3*a^2*b*c^3*d^2*g*i^3 - a^3*c^2*d^3*g*i^3 + (b^3*c^3*d^2*g*i^3 - 3*a*b^2*c^2*d^3*g*i^3 + 3*a^2*b*c*d^4$

```

*g*i^3 - a^3*d^5*g*i^3)*x^2 + 2*(b^3*c^4*d*g*i^3 - 3*a*b^2*c^3*d^2*g*i^3 +
3*a^2*b*c^2*d^3*g*i^3 - a^3*c*d^4*g*i^3)*x) - 6*(7*b^2*c^2 - 8*a*b*c*d + a^
2*d^2 + 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a)^2 + 2*(b^2*d^2
*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(d*x + c)^2 + 6*(b^2*c*d - a*b*d^2)*x + 6*
(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a) - 2*(3*b^2*d^2*x^2 + 6*b
^2*c*d*x + 3*b^2*c^2 + 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a)
)*log(d*x + c))*n*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^3*c^5*g*i^3 - 3
*a*b^2*c^4*d*g*i^3 + 3*a^2*b*c^3*d^2*g*i^3 - a^3*c^2*d^3*g*i^3 + (b^3*c^3*d
^2*g*i^3 - 3*a*b^2*c^2*d^3*g*i^3 + 3*a^2*b*c*d^4*g*i^3 - a^3*d^5*g*i^3)*x^2
+ 2*(b^3*c^4*d*g*i^3 - 3*a*b^2*c^3*d^2*g*i^3 + 3*a^2*b*c^2*d^3*g*i^3 - a^3
*c*d^4*g*i^3)*x))*B^2 - 1/2*(7*b^2*c^2 - 8*a*b*c*d + a^2*d^2 + 2*(b^2*d^2*x
^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a)^2 + 2*(b^2*d^2*x^2 + 2*b^2*c*d*x +
b^2*c^2)*log(d*x + c)^2 + 6*(b^2*c*d - a*b*d^2)*x + 6*(b^2*d^2*x^2 + 2*b^2
*c*d*x + b^2*c^2)*log(b*x + a) - 2*(3*b^2*d^2*x^2 + 6*b^2*c*d*x + 3*b^2*c^2
+ 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a))*log(d*x + c))*A*B*
n/(b^3*c^5*g*i^3 - 3*a*b^2*c^4*d*g*i^3 + 3*a^2*b*c^3*d^2*g*i^3 - a^3*c^2*d^
3*g*i^3 + (b^3*c^3*d^2*g*i^3 - 3*a*b^2*c^2*d^3*g*i^3 + 3*a^2*b*c*d^4*g*i^3
- a^3*d^5*g*i^3)*x^2 + 2*(b^3*c^4*d*g*i^3 - 3*a*b^2*c^3*d^2*g*i^3 + 3*a^2*b
*c^2*d^3*g*i^3 - a^3*c*d^4*g*i^3)*x) + 1/2*A^2*((2*b*d*x + 3*b*c - a*d)/((b
^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)*g*i^3*x^2 + 2*(b^2*c^3*d - 2*a*b*c^2*d^
2 + a^2*c*d^3)*g*i^3*x + (b^2*c^4 - 2*a*b*c^3*d + a^2*c^2*d^2)*g*i^3) + 2*b
^2*log(b*x + a)/((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g*i^3)
- 2*b^2*log(d*x + c)/((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*
g*i^3))

```

mupad [B] time = 8.73, size = 1007, normalized size = 2.50

$$\ln\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^2 \left(\frac{b^2(3B^2n-2AB)}{2gi^3n(ad-bc)(a^2d^2-2abcd+b^2c^2)} + \frac{B^2b^2\left(\frac{cg^3n(ad-bc)}{2b} - \frac{g^3n(ad-bc)(ad-2b)}{2b^2}\right)}{gi^3n(ad-bc)(a^2d^2-2abcd+b^2c^2)} \right) (gc^2)$$

Verification of antiderivative is not currently implemented for this CAS.

```

[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))^2/((a*g + b*g*x)*(c*i + d*i*x)^3
),x)

```

```

[Out] log(e*((a + b*x)/(c + d*x))^n)^2*((b^2*(3*B^2*n - 2*A*B))/(2*g*i^3*n*(a*d -
b*c)*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (B^2*b^2*((c*g*i^3*n*(a*d - b*c))/
(2*b) - (g*i^3*n*(a*d - b*c)*(a*d - 2*b*c))/(2*b^2) + (d*g*i^3*n*x*(a*d - b
*c))/b))/((g*i^3*n*(a*d - b*c)*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)*(c^2*g*i^3 +
d^2*g*i^3*x^2 + 2*c*d*g*i^3*x))) - ((2*A^2*a*d - 6*A^2*b*c + B^2*a*d*n^2 -
15*B^2*b*c*n^2 - 2*A*B*a*d*n + 14*A*B*b*c*n)/(2*(a*d - b*c)) - (x*(2*A^2*b*
d + 7*B^2*b*d*n^2 - 6*A*B*b*d*n))/(a*d - b*c))/(x^2*(2*a*d^3*g*i^3 - 2*b*c*

```

$$\begin{aligned}
& d^2 g^i^3) + x(4 a^2 c d^2 g^i^3 - 4 b^2 c^2 d g^i^3) - 2 b^2 c^3 g^i^3 + 2 a^2 c^2 d g^i^3) - \log(e((a + b x)/(c + d x))^n) * ((B^2 n)/(x^2 (a^2 d^3 g^i^3 - b^2 c^2 d g^i^3) + x(2 a^2 c d^2 g^i^3 - 2 b^2 c^2 d g^i^3) - b^2 c^3 g^i^3 + a^2 c^2 d g^i^3) + (b^2 (3 B^2 n - 2 A B) * ((c g^i^3 n * (a d - b c)^2)/(2 b) - (g^i^3 n * (a d - b c)^2 * (a d - 2 b c))/(2 b^2) + (d g^i^3 n * x * (a d - b c)^2)/b)) / (g^i^3 n * (a d - b c) * (a^2 d^2 + b^2 c^2 - 2 a b c d) * (x^2 (a^2 d^3 g^i^3 - b^2 c^2 d g^i^3) + x(2 a^2 c d^2 g^i^3 - 2 b^2 c^2 d g^i^3) - b^2 c^3 g^i^3 + a^2 c^2 d g^i^3))) + (b^2 * \operatorname{atan}((b^2 * ((a^3 d^3 g^i^3 + b^3 c^3 g^i^3 - a b^2 c^2 d g^i^3) - a^2 b c d^2 g^i^3)/(a^2 d^2 g^i^3 + b^2 c^2 g^i^3 - 2 a b c d g^i^3) + 2 b d x) * (A^2 + (7 B^2 n^2)/2 - 3 A B n) * (a^2 d^2 g^i^3 + b^2 c^2 g^i^3 - 2 a b c d g^i^3) * 2i) / (g^i^3 * (a d - b c)^3 * (2 A^2 b^2 + 7 B^2 b^2 n^2 - 6 A B b^2 n))) * (A^2 + (7 B^2 n^2)/2 - 3 A B n) * 2i) / (g^i^3 * (a d - b c)^3) - (B^2 b^2 * \log(e((a + b x)/(c + d x))^n)^3) / (3 g^i^3 n * (a d - b c) * (a^2 d^2 + b^2 c^2 - 2 a b c d))
\end{aligned}$$

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(b*g*x+a*g)/(d*i*x+c*i)**3,x)

[Out] Timed out

$$3.207 \quad \int \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ag+bgx)^2(ci+dix)^3} dx$$

Optimal. Leaf size=562

$$\frac{b^3(c+dx)\left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A\right)^2}{g^2 i^3 (a+bx)(bc-ad)^4} - \frac{2b^3 B n(c+dx)\left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A\right)}{g^2 i^3 (a+bx)(bc-ad)^4} - \frac{b^2 d\left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A\right)^3}{B g^2 i^3 n (bc-ad)^4} d^3$$

[Out] $-1/4*B^2*d^3*n^2*(b*x+a)^2/(-a*d+b*c)^4/g^2/i^3/(d*x+c)^2-6*A*b*B*d^2*n*(b*x+a)/(-a*d+b*c)^4/g^2/i^3/(d*x+c)-2*b^3*B^2*n^2*(d*x+c)/(-a*d+b*c)^4/g^2/i^3/(b*x+a)-6*b*B^2*d^2*n*(b*x+a)*\ln(e*((b*x+a)/(d*x+c))^n)/(-a*d+b*c)^4/g^2/i^3/(d*x+c)+1/2*B*d^3*n*(b*x+a)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^4/g^2/i^3/(d*x+c)^2-2*b^3*B*n*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^4/g^2/i^3/(b*x+a)-1/2*d^3*(b*x+a)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^4/g^2/i^3/(d*x+c)^2+3*b*d^2*(b*x+a)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^4/g^2/i^3/(d*x+c)-b^3*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^4/g^2/i^3/(b*x+a)-b^2*d*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^3/B/(-a*d+b*c)^4/g^2/i^3/n$

Rubi [C] time = 8.13, antiderivative size = 2207, normalized size of antiderivative = 3.93, number of steps used = 135, number of rules used = 31, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}} = 0.689$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)^2*(c*i + d*i*x)^3), x]

[Out] $(-2*b^2*B^2*n^2)/((b*c - a*d)^3*g^2*i^3*(a + b*x)) - (B^2*d*n^2)/(4*(b*c - a*d)^2*g^2*i^3*(c + d*x)^2) - (11*b*B^2*d*n^2)/(2*(b*c - a*d)^3*g^2*i^3*(c + d*x)) - (15*b^2*B^2*d*n^2*Log[a + b*x])/((2*(b*c - a*d)^4*g^2*i^3) + (3*A*b^2*B*d*n*Log[a + b*x]^2)/((b*c - a*d)^4*g^2*i^3) - (3*b^2*B^2*d*n^2*Log[a + b*x]^2)/(2*(b*c - a*d)^4*g^2*i^3) + (3*b^2*B^2*d*Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*((a + b*x)/(c + d*x))^n]^2)/((b*c - a*d)^4*g^2*i^3) + (3*b^2*B^2*d*Log[a + b*x]*Log[e*((a + b*x)/(c + d*x))^n]^2)/((b*c - a*d)^4*g^2*i^3) - (2*b^2*B*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((b*c - a*d)^3*g^2*i^3*(a + b*x)) + (B*d*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((2*(b*c - a*d)^2*g^2*i^3*(c + d*x)^2) + (5*b*B*d*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))$

$$\begin{aligned}
& \dots) / ((b^2c - a^2d)^3 g^{2i^3} (c + dx)) + (3b^2 B^2 d^n \text{Log}[a + bx] (A + B \text{Log}[e((a + bx)/(c + dx))^n])) / ((b^2c - a^2d)^4 g^{2i^3} - (b^2 (A + B \text{Log}[e((a + bx)/(c + dx))^n])^2) / ((b^2c - a^2d)^3 g^{2i^3} (a + bx)) - (d (A + B \text{Log}[e((a + bx)/(c + dx))^n])^2) / (2(b^2c - a^2d)^2 g^{2i^3} (c + dx)^2) - (2b^2 d (A + B \text{Log}[e((a + bx)/(c + dx))^n])^2) / ((b^2c - a^2d)^3 g^{2i^3} (c + dx)) - (3b^2 d \text{Log}[a + bx] (A + B \text{Log}[e((a + bx)/(c + dx))^n])^2) / ((b^2c - a^2d)^4 g^{2i^3} + (15b^2 B^2 d^n \text{Log}[c + dx]) / (2(b^2c - a^2d)^4 g^{2i^3} - (6A b^2 B^2 d^n \text{Log}[-((d(a + bx))/(b^2c - a^2d))] \text{Log}[c + dx]) / ((b^2c - a^2d)^4 g^{2i^3} + (3b^2 B^2 d^n \text{Log}[-((d(a + bx))/(b^2c - a^2d))] \text{Log}[c + dx]) / ((b^2c - a^2d)^4 g^{2i^3} - (3b^2 B^2 d \text{Log}[(a + bx)^n]^2 \text{Log}[c + dx]) / ((b^2c - a^2d)^4 g^{2i^3} - (3b^2 B^2 d^n (A + B \text{Log}[e((a + bx)/(c + dx))^n]) \text{Log}[c + dx]) / ((b^2c - a^2d)^4 g^{2i^3} + (3b^2 d (A + B \text{Log}[e((a + bx)/(c + dx))^n])^2 \text{Log}[c + dx]) / ((b^2c - a^2d)^4 g^{2i^3} + (3A b^2 B^2 d^n \text{Log}[c + dx]^2) / ((b^2c - a^2d)^4 g^{2i^3} - (3b^2 B^2 d^n \text{Log}[c + dx]^2) / (2(b^2c - a^2d)^4 g^{2i^3} - (3b^2 B^2 d^n \text{Log}[a + bx] \text{Log}[c + dx]^2) / ((b^2c - a^2d)^4 g^{2i^3} + (3b^2 B^2 d^n \text{Log}[e((a + bx)/(c + dx))^n] \text{Log}[c + dx]^2) / ((b^2c - a^2d)^4 g^{2i^3} + (b^2 B^2 d^n \text{Log}[c + dx]^3) / ((b^2c - a^2d)^4 g^{2i^3} - (6A b^2 B^2 d^n \text{Log}[a + bx] \text{Log}[(b(c + dx))/(b^2c - a^2d)]) / ((b^2c - a^2d)^4 g^{2i^3} + (3b^2 B^2 d^n \text{Log}[a + bx] \text{Log}[(b(c + dx))/(b^2c - a^2d)]) / ((b^2c - a^2d)^4 g^{2i^3} + (3b^2 B^2 d \text{Log}[(a + bx)^n]^2 \text{Log}[(b(c + dx))/(b^2c - a^2d)]) / ((b^2c - a^2d)^4 g^{2i^3} - (6b^2 B^2 d^n \text{Log}[a + bx] \text{Log}[c + dx] \text{Log}[(c + dx)^{-n}]) / ((b^2c - a^2d)^4 g^{2i^3} - (3b^2 B^2 d \text{Log}[a + bx] \text{Log}[(c + dx)^{-n}]^2) / ((b^2c - a^2d)^4 g^{2i^3} + (3b^2 B^2 d \text{Log}[-((d(a + bx))/(b^2c - a^2d))] \text{Log}[(c + dx)^{-n}]^2) / ((b^2c - a^2d)^4 g^{2i^3} + (6b^2 B^2 d^n \text{Log}[-((d(a + bx))/(b^2c - a^2d))] \text{Log}[c + dx] (\text{Log}[(a + bx)^n] - \text{Log}[e((a + bx)/(c + dx))^n] + \text{Log}[(c + dx)^{-n}])) / ((b^2c - a^2d)^4 g^{2i^3} - (6A b^2 B^2 d^n \text{PolyLog}[2, -((d(a + bx))/(b^2c - a^2d))]) / ((b^2c - a^2d)^4 g^{2i^3} + (3b^2 B^2 d^n \text{PolyLog}[2, -((d(a + bx))/(b^2c - a^2d))]) / ((b^2c - a^2d)^4 g^{2i^3} + (6b^2 B^2 d^n \text{Log}[(a + bx)^n] \text{PolyLog}[2, -((d(a + bx))/(b^2c - a^2d))]) / ((b^2c - a^2d)^4 g^{2i^3} - (6A b^2 B^2 d^n \text{PolyLog}[2, (b(c + dx))/(b^2c - a^2d)]) / ((b^2c - a^2d)^4 g^{2i^3} + (3b^2 B^2 d^n \text{PolyLog}[2, (b(c + dx))/(b^2c - a^2d)]) / ((b^2c - a^2d)^4 g^{2i^3} - (6b^2 B^2 d^n \text{Log}[(c + dx)^{-n}] \text{PolyLog}[2, (b(c + dx))/(b^2c - a^2d)]) / ((b^2c - a^2d)^4 g^{2i^3} + (6b^2 B^2 d^n (\text{Log}[(a + bx)^n] - \text{Log}[e((a + bx)/(c + dx))^n] + \text{Log}[(c + dx)^{-n}]) \text{PolyLog}[2, (b(c + dx))/(b^2c - a^2d)]) / ((b^2c - a^2d)^4 g^{2i^3} - (6b^2 B^2 d^n \text{Log}[e((a + bx)/(c + dx))^n] \text{PolyLog}[2, 1 + (b^2c - a^2d)/(d(a + bx))]) / ((b^2c - a^2d)^4 g^{2i^3} - (6b^2 B^2 d^n \text{PolyLog}[3, -((d(a + bx))/(b^2c - a^2d))]) / ((b^2c - a^2d)^4 g^{2i^3} - (6b^2 B^2 d^n \text{PolyLog}[3, (b(c + dx))/(b^2c - a^2d)]) / ((b^2c - a^2d)^4 g^{2i^3} - (6b^2 B^2 d^n \text{PolyLog}[3, 1 + (b^2c - a^2d)/(d(a + bx))]) / ((b^2c - a^2d)^4 g^{2i^3})
\end{aligned}$$

Rule 12

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

Rule 30

Int[(x_)^(m_.), x_Symbol] := Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && NeQ[m, -1]

Rule 44

Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] := Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m + n + 2, 0])

Rule 2301

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] := Simp[(a + b*Log[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]

Rule 2302

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] := Dist[1/(b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p}, x]

Rule 2317

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol] := Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e, Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]

Rule 2344

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))), x_Symbol] := Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && IGtQ[p, 0]

Rule 2374

Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.))/(x_), x_Symbol] := -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]

&& EqQ[d*e, 1]

Rule 2375

Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*(a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)]/(x_), x_Symbol] := Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m - 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d, e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*((f_) + (g_.)*(x_)^(q_.)), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2396

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])^p/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] := Dist[1/e, Subst[Int[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFX_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFX, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFX, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] := Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(e*i - d*j)/e + (j*x)/e]^m), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] := Simp[Log[x]*(a + b*Log[c*(d + e*x)^n]*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Log[x]*(a + b*Log[c*(d + e*x)^n])/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x]*(f + g*Log[h*(i + j*x)^m])/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] := Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n]*(f + g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] := -Simp[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/h, x] + Dist[(p*r*s
```


$(b*c - a*d)/h$, $\text{Int}[(\text{Log}[-((b*c - a*d)/(d*(a + b*x)))]*\text{Log}[e*(f*(a + b*x))^p*(c + d*x)^q]^r]^{(s - 1)}/((a + b*x)*(c + d*x)), x], x] /;$ $\text{FreeQ}\{a, b, c, d, e, f, g, h, p, q, r, s\}, x\} \&\& \text{NeQ}[b*c - a*d, 0] \&\& \text{EqQ}[p + q, 0] \&\& \text{EqQ}[b*g - a*h, 0] \&\& \text{IGtQ}[s, 0]$

Rule 2499

$\text{Int}[(\text{Log}[(e_*)*((f_*)*((a_*) + (b_*)*(x_))^{(p_*)*((c_*) + (d_*)*(x_))^{(q_*)})^{(r_*)}]*(s_*) + \text{Log}[(i_*)*((g_*) + (h_*)*(x_))^{(n_*)}*(t_*)^{(m_*)}]/((j_*) + (k_*)*(x_)), x_Symbol] :> \text{Simp}[(s + t*\text{Log}[i*(g + h*x)^n])^{(m + 1)}*\text{Log}[e*(f*(a + b*x)^p*(c + d*x)^q]^r)/(k*n*t*(m + 1)), x] + (-\text{Dist}[(b*p*r)/(k*n*t*(m + 1)), \text{Int}[(s + t*\text{Log}[i*(g + h*x)^n])^{(m + 1)}/(a + b*x), x], x] - \text{Dist}[(d*q*r)/(k*n*t*(m + 1)), \text{Int}[(s + t*\text{Log}[i*(g + h*x)^n])^{(m + 1)}/(c + d*x), x], x]) /;$ $\text{FreeQ}\{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r\}, x\} \&\& \text{NeQ}[b*c - a*d, 0] \&\& \text{EqQ}[h*j - g*k, 0] \&\& \text{IGtQ}[m, 0]$

Rule 2500

$\text{Int}[(\text{Log}[(e_*)*((f_*)*((a_*) + (b_*)*(x_))^{(p_*)*((c_*) + (d_*)*(x_))^{(q_*)})^{(r_*)}]*(s_*) + \text{Log}[(i_*)*((g_*) + (h_*)*(x_))^{(n_*)}*(t_*)])^{(j_*) + (k_*)*(x_)}, x_Symbol] :> \text{Dist}[\text{Log}[e*(f*(a + b*x)^p*(c + d*x)^q]^r] - \text{Log}[(a + b*x)^{(p*r)}] - \text{Log}[(c + d*x)^{(q*r)}], \text{Int}[(s + t*\text{Log}[i*(g + h*x)^n])^{(j + k*x)}, x], x] + (\text{Int}[(\text{Log}[(a + b*x)^{(p*r)}])*(s + t*\text{Log}[i*(g + h*x)^n])^{(j + k*x)}, x] + \text{Int}[(\text{Log}[(c + d*x)^{(q*r)}])*(s + t*\text{Log}[i*(g + h*x)^n])^{(j + k*x)}, x]) /;$ $\text{FreeQ}\{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r\}, x\} \&\& \text{NeQ}[b*c - a*d, 0]$

Rule 2506

$\text{Int}[\text{Log}[v]*\text{Log}[(e_*)*((f_*)*((a_*) + (b_*)*(x_))^{(p_*)*((c_*) + (d_*)*(x_))^{(q_*)})^{(r_*)}]^{(s_*)}*(u_), x_Symbol] :> \text{With}\{g = \text{Simplify}[(v - 1)*(c + d*x)/(a + b*x)], h = \text{Simplify}[u*(a + b*x)*(c + d*x)]\}, -\text{Simp}[(h*\text{PolyLog}[2, 1 - v]*\text{Log}[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/(b*c - a*d), x] + \text{Dist}[h*p*r*s, \text{Int}[(\text{PolyLog}[2, 1 - v]*\text{Log}[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1)/((a + b*x)*(c + d*x)), x], x] /;$ $\text{FreeQ}\{g, h\}, x\} /;$ $\text{FreeQ}\{a, b, c, d, e, f, p, q, r, s\}, x\} \&\& \text{NeQ}[b*c - a*d, 0] \&\& \text{IGtQ}[s, 0] \&\& \text{EqQ}[p + q, 0]$

Rule 2507

$\text{Int}[\text{Log}[(e_*)*((f_*)*((a_*) + (b_*)*(x_))^{(p_*)*((c_*) + (d_*)*(x_))^{(q_*)})^{(r_*)}]^{(s_*)}*\text{Log}[(i_*)*((j_*)*((g_*) + (h_*)*(x_))^{(t_*)})^{(u_*)}*(v_), x_Symbol] :> \text{With}\{k = \text{Simplify}[v*(a + b*x)*(c + d*x)]\}, \text{Simp}[(k*\text{Log}[i*(j*(g + h*x)^t]^u)*\text{Log}[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^{(s + 1)})/(p*r*(s + 1)*(b*c - a*d)), x] - \text{Dist}[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), \text{Int}[\text{Log}[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^{(s + 1)}/(g + h*x), x], x] /;$ $\text{FreeQ}[k, x] /;$ $\text{FreeQ}\{$

a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
EqQ[p + q, 0] && NeQ[s, -1]

Rule 2524

Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^n)/e, x] - Dist[(b*n*p)/e, Int[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0]

Rule 2525

Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]

Rule 2528

Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]

Rule 6589

Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_Symbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d, e, n, p}, x] && EqQ[b*d, a*e]

Rule 6610

Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v, x]}, Simp[w*PolyLog[n + 1, v], x] /; !FalseQ[w]] /; FreeQ[n, x]

Rule 6688

Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; SimplifyIntegrandQ[v, u, x]]

Rule 6742

```
Int[u_, x_Symbol] :=> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]  
]
```

Rubi steps

$$\begin{aligned}
\int \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(207c + 207dx)^3(ag + bgx)^2} dx &= \int \left[\frac{b^3 \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{8869743(bc - ad)^3g^2(a + bx)^2} - \frac{b^3d \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{2956581(bc - ad)^4g^2(a + bx)} + \frac{d^2 \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{8869743(bc - ad)^3g^2(c + dx)^2} \right] dx \\
&= -\frac{(b^3d) \int \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{a+bx} dx}{2956581(bc - ad)^4g^2} + \frac{(b^2d^2) \int \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{c+dx} dx}{2956581(bc - ad)^4g^2} + \frac{b^3 \int \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{a+bx} dx}{8869743(bc - ad)^3g^2(a + bx)} \\
&= -\frac{b^2 \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{8869743(bc - ad)^3g^2(a + bx)} - \frac{d \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{17739486(bc - ad)^2g^2(c + dx)^2} - \frac{2bd \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{8869743(bc - ad)^3g^2(a + bx)} \\
&= -\frac{b^2 \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{8869743(bc - ad)^3g^2(a + bx)} - \frac{d \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{17739486(bc - ad)^2g^2(c + dx)^2} - \frac{2bd \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{8869743(bc - ad)^3g^2(a + bx)} \\
&= -\frac{b^2 \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{8869743(bc - ad)^3g^2(a + bx)} - \frac{d \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{17739486(bc - ad)^2g^2(c + dx)^2} - \frac{2bd \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{8869743(bc - ad)^3g^2(a + bx)} \\
&= -\frac{b^2 \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{8869743(bc - ad)^3g^2(a + bx)} - \frac{d \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{17739486(bc - ad)^2g^2(c + dx)^2} - \frac{2bd \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{8869743(bc - ad)^3g^2(a + bx)} \\
&= -\frac{2b^2Bn \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{8869743(bc - ad)^3g^2(a + bx)} + \frac{Bdn \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{17739486(bc - ad)^2g^2(c + dx)^2} + \frac{5bBdn \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{8869743(bc - ad)^3g^2(a + bx)} \\
&= \frac{b^2B^2d \log(a + bx) \log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{2956581(bc - ad)^4g^2} - \frac{2b^2Bn \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{8869743(bc - ad)^3g^2(a + bx)} + \frac{Bdn \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{17739486(bc - ad)^2g^2(c + dx)^2} \\
&= \frac{b^2B^2d \log\left(-\frac{bc-ad}{d(a+bx)}\right) \log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{2956581(bc - ad)^4g^2} + \frac{b^2B^2d \log(a + bx) \log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{2956581(bc - ad)^4g^2} \\
&= -\frac{2b^2B^2n^2}{8869743(bc - ad)^3g^2(a + bx)} - \frac{B^2dn^2}{35478972(bc - ad)^2g^2(c + dx)^2} - \frac{2b^2B^2n^2}{8869743(bc - ad)^3g^2(a + bx)} \\
&= -\frac{2b^2B^2n^2}{8869743(bc - ad)^3g^2(a + bx)} - \frac{B^2dn^2}{35478972(bc - ad)^2g^2(c + dx)^2} - \frac{2b^2B^2n^2}{8869743(bc - ad)^3g^2(a + bx)}
\end{aligned}$$

Mathematica [B] time = 2.15, size = 1334, normalized size = 2.37

$$4b^2B^2dn^2(a+bx)(c+dx)^2 \log^3\left(\frac{a+bx}{c+dx}\right) + 2Bn\left(6Ad^3x^3b^3 - 3Bd^3nx^3b^3 + 12Acd^2x^2b^3 + 2Bc^3nb^3 + 6Ac^2dxb^3\right)$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)^2*(c*i + d*i*x)^3), x]

[Out]
$$\begin{aligned} & -1/4*(4*b^2*B^2*d*n^2*(a + b*x)*(c + d*x)^2*\text{Log}[(a + b*x)/(c + d*x)]^3 + 2*B*n*\text{Log}[(a + b*x)/(c + d*x)]^2*(6*a*A*b^2*c^2*d + 2*b^3*B*c^3*n - 6*a^2*b*B*c*d^2*n + a^3*B*d^3*n + 6*A*b^3*c^2*d*x + 12*a*A*b^2*c*d^2*x + 6*b^3*B*c^2*d*n*x - 12*a*b^2*B*c*d^2*n*x - 3*a^2*b*B*d^3*n*x + 12*A*b^3*c*d^2*x^2 + 6*a*A*b^2*d^3*x^2 - 9*a*b^2*B*d^3*n*x^2 + 6*A*b^3*d^3*x^3 - 3*b^3*B*d^3*n*x^3 + 6*b^2*B*d*(a + b*x)*(c + d*x)^2*\text{Log}[e*((a + b*x)/(c + d*x))^n] - 6*b^2*B*d*n*(a + b*x)*(c + d*x)^2*\text{Log}[(a + b*x)/(c + d*x)] + 4*b^2*(b*c - a*d)*(c + d*x)^2*(A^2 + 2*A*B*n + 2*B^2*n^2 + B^2*\text{Log}[e*((a + b*x)/(c + d*x))^n]^2 - 2*B*n*(A + B*n)*\text{Log}[(a + b*x)/(c + d*x)] + B^2*n^2*\text{Log}[(a + b*x)/(c + d*x)]^2 + 2*B*\text{Log}[e*((a + b*x)/(c + d*x))^n]*(A + B*n - B*n*\text{Log}[(a + b*x)/(c + d*x])) + 2*B*(b*c - a*d)*n*\text{Log}[(a + b*x)/(c + d*x)]*(2*b*d*(a + b*x)*(c + d*x)*(4*A - 5*B*n + 4*B*\text{Log}[e*((a + b*x)/(c + d*x))^n] - 4*B*n*\text{Log}[(a + b*x)/(c + d*x)]) + d*(b*c - a*d)*(a + b*x)*(2*A - B*n + 2*B*\text{Log}[e*((a + b*x)/(c + d*x))^n] - 2*B*n*\text{Log}[(a + b*x)/(c + d*x)]) + 4*b^2*(c + d*x)^2*(A + B*n + B*\text{Log}[e*((a + b*x)/(c + d*x))^n] - B*n*\text{Log}[(a + b*x)/(c + d*x])) + d*(b*c - a*d)^2*(a + b*x)*(2*A^2 - 2*A*B*n + B^2*n^2 + 2*B^2*\text{Log}[e*((a + b*x)/(c + d*x))^n]^2 + 2*B*n*(-2*A + B*n)*\text{Log}[(a + b*x)/(c + d*x)] + 2*B^2*n^2*\text{Log}[(a + b*x)/(c + d*x)]^2 - 2*B*\text{Log}[e*((a + b*x)/(c + d*x))^n]*(-2*A + B*n + 2*B*n*\text{Log}[(a + b*x)/(c + d*x])) + 6*b^2*d*(a + b*x)*(c + d*x)^2*\text{Log}[a + b*x]*(2*A^2 - 2*A*B*n + 5*B^2*n^2 + 2*B^2*\text{Log}[e*((a + b*x)/(c + d*x))^n]^2 + 2*B*n*(-2*A + B*n)*\text{Log}[(a + b*x)/(c + d*x)] + 2*B^2*n^2*\text{Log}[(a + b*x)/(c + d*x)]^2 - 2*B*\text{Log}[e*((a + b*x)/(c + d*x))^n]*(-2*A + B*n + 2*B*n*\text{Log}[(a + b*x)/(c + d*x])) + 2*b*d*(b*c - a*d)*(a + b*x)*(c + d*x)*(4*A^2 - 10*A*B*n + 11*B^2*n^2 + 4*B^2*\text{Log}[e*((a + b*x)/(c + d*x))^n]^2 + 2*B*n*(-4*A + 5*B*n)*\text{Log}[(a + b*x)/(c + d*x)] + 4*B^2*n^2*\text{Log}[(a + b*x)/(c + d*x)]^2 - 2*B*\text{Log}[e*((a + b*x)/(c + d*x))^n]*(-4*A + 5*B*n + 4*B*n*\text{Log}[(a + b*x)/(c + d*x)])) - 6*b^2*d*(a + b*x)*(c + d*x)^2*(2*A^2 - 2*A*B*n + 5*B^2*n^2 + 2*B^2*\text{Log}[e*((a + b*x)/(c + d*x))^n]^2 + 2*B*n*(-2*A + B*n)*\text{Log}[(a + b*x)/(c + d*x)] + 2*B^2*n^2*\text{Log}[(a + b*x)/(c + d*x)]^2 - 2*B*\text{Log}[e*((a + b*x)/(c + d*x))^n]*(-2*A + B*n + 2*B*n*\text{Log}[(a + b*x)/(c + d*x]))*\text{Log}[c + d*x]/((b*c - a*d)^4*g^2*i^3*(a + b*x)*(c + d*x)^2) \end{aligned}$$

fricas [B] time = 0.74, size = 2057, normalized size = 3.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^2/(d*i*x+c*i)^3,x,
algorithm="fricas")
```

```
[Out] -1/4*(4*A^2*b^3*c^3 + 6*A^2*a*b^2*c^2*d - 12*A^2*a^2*b*c*d^2 + 2*A^2*a^3*d^3
+ 4*(B^2*b^3*d^3*n^2*x^3 + B^2*a*b^2*c^2*d*n^2 + (2*B^2*b^3*c*d^2 + B^2*a
*b^2*d^3)*n^2*x^2 + (B^2*b^3*c^2*d + 2*B^2*a*b^2*c*d^2)*n^2*x)*log((b*x + a
)/(d*x + c))^3 + (8*B^2*b^3*c^3 + 15*B^2*a*b^2*c^2*d - 24*B^2*a^2*b*c*d^2 +
B^2*a^3*d^3)*n^2 + 6*(2*A^2*b^3*c*d^2 - 2*A^2*a*b^2*d^3 + 5*(B^2*b^3*c*d^2
- B^2*a*b^2*d^3)*n^2 - 2*(A*B*b^3*c*d^2 - A*B*a*b^2*d^3)*n)*x^2 + 2*(2*B^2
*b^3*c^3 + 3*B^2*a*b^2*c^2*d - 6*B^2*a^2*b*c*d^2 + B^2*a^3*d^3 + 6*(B^2*b^3
*c*d^2 - B^2*a*b^2*d^3)*x^2 + 3*(3*B^2*b^3*c^2*d - 2*B^2*a*b^2*c*d^2 - B^2*
a^2*b*d^3)*x + 6*(B^2*b^3*d^3*x^3 + B^2*a*b^2*c^2*d + (2*B^2*b^3*c*d^2 + B^
2*a*b^2*d^3)*x^2 + (B^2*b^3*c^2*d + 2*B^2*a*b^2*c*d^2)*x)*log((b*x + a)/(d*
x + c))) *log(e)^2 + 2*(6*A*B*a*b^2*c^2*d*n - 3*(B^2*b^3*d^3*n^2 - 2*A*B*b^3
*d^3*n)*x^3 + (2*B^2*b^3*c^3 - 6*B^2*a^2*b*c*d^2 + B^2*a^3*d^3)*n^2 - 3*(3*
B^2*a*b^2*d^3*n^2 - 2*(2*A*B*b^3*c*d^2 + A*B*a*b^2*d^3)*n)*x^2 + 3*((2*B^2*
b^3*c^2*d - 4*B^2*a*b^2*c*d^2 - B^2*a^2*b*d^3)*n^2 + 2*(A*B*b^3*c^2*d + 2*A
*B*a*b^2*c*d^2)*n)*x)*log((b*x + a)/(d*x + c))^2 + 2*(4*A*B*b^3*c^3 - 15*A*
B*a*b^2*c^2*d + 12*A*B*a^2*b*c*d^2 - A*B*a^3*d^3)*n + 3*(6*A^2*b^3*c^2*d -
4*A^2*a*b^2*c*d^2 - 2*A^2*a^2*b*d^3 + (13*B^2*b^3*c^2*d - 6*B^2*a*b^2*c*d^2
- 7*B^2*a^2*b*d^3)*n^2 - 2*(A*B*b^3*c^2*d + 2*A*B*a*b^2*c*d^2 - 3*A*B*a^2*
b*d^3)*n)*x + 2*(4*A*B*b^3*c^3 + 6*A*B*a*b^2*c^2*d - 12*A*B*a^2*b*c*d^2 + 2
*A*B*a^3*d^3 + 6*(2*A*B*b^3*c*d^2 - 2*A*B*a*b^2*d^3 - (B^2*b^3*c*d^2 - B^2*
a*b^2*d^3)*n)*x^2 + 6*(B^2*b^3*d^3*n*x^3 + B^2*a*b^2*c^2*d*n + (2*B^2*b^3*c
*d^2 + B^2*a*b^2*d^3)*n*x^2 + (B^2*b^3*c^2*d + 2*B^2*a*b^2*c*d^2)*n*x)*log(
(b*x + a)/(d*x + c))^2 + (4*B^2*b^3*c^3 - 15*B^2*a*b^2*c^2*d + 12*B^2*a^2*b
*c*d^2 - B^2*a^3*d^3)*n + 3*(6*A*B*b^3*c^2*d - 4*A*B*a*b^2*c*d^2 - 2*A*B*a^
2*b*d^3 - (B^2*b^3*c^2*d + 2*B^2*a*b^2*c*d^2 - 3*B^2*a^2*b*d^3)*n)*x + 2*(6
*A*B*a*b^2*c^2*d - 3*(B^2*b^3*d^3*n - 2*A*B*b^3*d^3)*x^3 - 3*(3*B^2*a*b^2*d
^3*n - 4*A*B*b^3*c*d^2 - 2*A*B*a*b^2*d^3)*x^2 + (2*B^2*b^3*c^3 - 6*B^2*a^2*
b*c*d^2 + B^2*a^3*d^3)*n + 3*(2*A*B*b^3*c^2*d + 4*A*B*a*b^2*c*d^2 + (2*B^2*
b^3*c^2*d - 4*B^2*a*b^2*c*d^2 - B^2*a^2*b*d^3)*n)*x)*log((b*x + a)/(d*x + c
)))*log(e) + 2*(6*A^2*a*b^2*c^2*d + 3*(5*B^2*b^3*d^3*n^2 - 2*A*B*b^3*d^3*n
+ 2*A^2*b^3*d^3)*x^3 + (4*B^2*b^3*c^3 + 12*B^2*a^2*b*c*d^2 - B^2*a^3*d^3)*n
^2 - 3*(6*A*B*a*b^2*d^3*n - 4*A^2*b^3*c*d^2 - 2*A^2*a*b^2*d^3 - (8*B^2*b^3*
c*d^2 + 7*B^2*a*b^2*d^3)*n^2)*x^2 + 2*(2*A*B*b^3*c^3 - 6*A*B*a^2*b*c*d^2 +
A*B*a^3*d^3)*n + 3*(2*A^2*b^3*c^2*d + 4*A^2*a*b^2*c*d^2 + (4*B^2*b^3*c^2*d
+ 8*B^2*a*b^2*c*d^2 + 3*B^2*a^2*b*d^3)*n^2 + 2*(2*A*B*b^3*c^2*d - 4*A*B*a*b
^2*c*d^2 - A*B*a^2*b*d^3)*n)*x)*log((b*x + a)/(d*x + c)))/((b^5*c^4*d^2 - 4
*a*b^4*c^3*d^3 + 6*a^2*b^3*c^2*d^4 - 4*a^3*b^2*c*d^5 + a^4*b*d^6)*g^2*i^3*x
^3 + (2*b^5*c^5*d - 7*a*b^4*c^4*d^2 + 8*a^2*b^3*c^3*d^3 - 2*a^3*b^2*c^2*d^4
- 2*a^4*b*c*d^5 + a^5*d^6)*g^2*i^3*x^2 + (b^5*c^6 - 2*a*b^4*c^5*d - 2*a^2*
b^3*c^4*d^2 + 8*a^3*b^2*c^3*d^3 - 7*a^4*b*c^2*d^4 + 2*a^5*c*d^5)*g^2*i^3*x
```

+ (a*b^4*c^6 - 4*a^2*b^3*c^5*d + 6*a^3*b^2*c^4*d^2 - 4*a^4*b*c^3*d^3 + a^5*c^2*d^4)*g^2*i^3)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^2/(d*i*x+c*i)^3,x,
algorithm="giac")

[Out] Timed out

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{\left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)^2}{(bgx + ag)^2 (dix + ci)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^2/(d*i*x+c*i)^3,x)

[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^2/(d*i*x+c*i)^3,x)

maxima [B] time = 4.83, size = 4199, normalized size = 7.47

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^2/(d*i*x+c*i)^3,x,
algorithm="maxima")

[Out] -1/2*B^2*((6*b^2*d^2*x^2 + 2*b^2*c^2 + 5*a*b*c*d - a^2*d^2 + 3*(3*b^2*c*d + a*b*d^2)*x)/((b^4*c^3*d^2 - 3*a*b^3*c^2*d^3 + 3*a^2*b^2*c*d^4 - a^3*b*d^5)*g^2*i^3*x^3 + (2*b^4*c^4*d - 5*a*b^3*c^3*d^2 + 3*a^2*b^2*c^2*d^3 + a^3*b*c*d^4 - a^4*d^5)*g^2*i^3*x^2 + (b^4*c^5 - a*b^3*c^4*d - 3*a^2*b^2*c^3*d^2 + 5*a^3*b*c^2*d^3 - 2*a^4*c*d^4)*g^2*i^3*x + (a*b^3*c^5 - 3*a^2*b^2*c^4*d + 3*a^3*b*c^3*d^2 - a^4*c^2*d^3)*g^2*i^3) + 6*b^2*d*log(b*x + a)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^2*i^3)) * log(e*(b*x/(d*x + c) + a/(d*x + c))^n)^2 - A*B*((6*b^2*d^2*x^2 + 2*b^2*c^2 + 5*a*b*c*d - a^2*d^2 + 3*(3*b^2*c*d + a*b*d^2)*x)/((b^4*c^3*d^2 - 3*a*b^3*c^2*d^3 + 3*a^2*b^2*c*d^4 - a^3*b*d^5)*g^2*i^3*x^3

$$\begin{aligned}
& i^3 - 2a^2b^3c^4d^2g^2i^3 + 8a^3b^2c^3d^3g^2i^3 - 7a^4b^2c^2d^4g^2i^3 + 2a^5c^4d^5g^2i^3) * x) * B^2 - 1/2(4b^3c^3 - 15a^2b^2c^2d \\
& + 12a^2b^2c^2d^2 - a^3d^3 - 6(b^3c^2d^2 - ab^2d^3) * x^2 - 6(b^3d^3 * x^3 + ab^2c^2d + (2b^3c^2d^2 + ab^2d^3) * x^2 + (b^3c^2d + 2a^2b^2c^2d^2) * x) * \log(b * x + a)^2 - 6(b^3d^3 * x^3 + ab^2c^2d + (2b^3c^2d^2 + ab^2d^3) * x^2 + (b^3c^2d + 2a^2b^2c^2d^2) * x) * \log(d * x + c)^2 - 3(b^3c^2d + 2 \\
& * ab^2c^2d^2 - 3a^2b^2d^3) * x - 6(b^3d^3 * x^3 + ab^2c^2d + (2b^3c^2d^2 + ab^2d^3) * x^2 + (b^3c^2d + 2a^2b^2c^2d^2) * x) * \log(b * x + a) + 6(b^3d^3 * x^3 + ab^2c^2d + (2b^3c^2d^2 + ab^2d^3) * x^2 + (b^3c^2d + 2a^2b^2c^2d^2) * x) * \log(b * x + a) * \log(d * x + c)) * A * B * n / (a^4b^4c^6 * \\
& g^2i^3 - 4a^2b^3c^5d^4g^2i^3 + 6a^3b^2c^4d^2g^2i^3 - 4a^4b^2c^3d^3g^2i^3 + a^5c^2d^4g^2i^3 + (b^5c^4d^2g^2i^3 - 4a^2b^4c^3d^3g^2i^3 + 6a^2b^3c^2d^4g^2i^3 - 4a^3b^2c^2d^5g^2i^3 + a^4b^2d^6g^2i^3) * x^3 + (2b^5c^5d^4g^2i^3 - 7a^2b^4c^4d^2g^2i^3 + 8a^2b^3c^3d^3g^2i^3 - 2a^3b^2c^2d^4g^2i^3 - 2a^4b^2c^2d^5g^2i^3 + a^5d^6g^2i^3) * x^2 + (b^5c^6g^2i^3 - 2a^2b^4c^5d^4g^2i^3 - 2a^2b^3c^4d^2g^2i^3 + 8a^3b^2c^3d^3g^2i^3 - 7a^4b^2c^2d^4g^2i^3 + 2a^5c^2d^5g^2i^3) * x) - 1/2A^2 * ((6b^2d^2 * x^2 + 2b^2c^2 + 5a^2b^2c^2d - a^2d^2 + 3(3b^2c^2d + ab^2d^2) * x) / ((b^4c^3d^2 - 3a^2b^3c^2d^3 + 3a^2b^2c^2d^4 - a^3b^2d^5) * g^2i^3 * x^3 + (2b^4c^4d - 5a^2b^3c^3d^2 + 3a^2b^2c^2d^3 + a^3b^2c^2d^4 - a^4d^5) * g^2i^3 * x^2 + (b^4c^5 - a^2b^3c^4d - 3a^2b^2c^3d^2 + 5a^3b^2c^2d^3 - 2a^4c^2d^4) * g^2i^3 * x + (a^2b^3c^5 - 3a^2b^2c^4d + 3a^3b^2c^3d^2 - a^4c^2d^3) * g^2i^3) + 6b^2d * \log(b * x + a) / ((b^4c^4 - 4a^2b^3c^3d + 6a^2b^2c^2d^2 - 4a^3b^2c^2d^3 + a^4d^4) * g^2i^3) - 6b^2d * \log(d * x + c) / ((b^4c^4 - 4a^2b^3c^3d + 6a^2b^2c^2d^2 - 4a^3b^2c^2d^3 + a^4d^4) * g^2i^3))
\end{aligned}$$

mupad [B] time = 10.14, size = 1785, normalized size = 3.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{int}((A + B * \log(e * ((a + b * x) / (c + d * x))^n))^2 / ((a * g + b * g * x)^2 * (c * i + d * i * x)^3), x)$

[Out] $((4A^2b^2c^2 - 2A^2a^2d^2 - B^2a^2d^2n^2 + 8B^2b^2c^2n^2 + 10A^2a^2b^2c^2d + 2A^2B^2a^2d^2n + 8A^2B^2b^2c^2n + 23B^2a^2b^2c^2d^2n^2 - 22A^2B^2a^2b^2c^2d^2n) / (2(a * d - b * c)) + (3x^2 * (2A^2b^2d^2 + 5B^2b^2d^2n^2 - 2A^2B^2b^2d^2n)) / (a * d - b * c) + (3x * (2A^2a^2b^2d^2 + 6A^2b^2c^2d + 7B^2a^2b^2d^2n^2 + 13B^2b^2c^2d^2n^2 - 6A^2B^2a^2b^2d^2n - 2A^2B^2b^2c^2d^2n)) / (2 * (a * d - b * c))) / (x * (2b^3c^4g^2i^3 + 4a^3c^3d^3g^2i^3 - 6a^2b^2c^2d^2g^2i^3) + x^2 * (2a^3d^4g^2i^3 + 4b^3c^3d^3g^2i^3 - 6a^2b^2c^2d^2g^2i^3) + x^3 * (2b^3c^2d^2g^2i^3 + 2a^2b^2d^4g^2i^3 - 4a^2b^2c^2d^3g^2i^3) + 2a^3c^2d^2g^2i^3 + 2a^2b^2c^4g^2i^3 - 4a^2b^2c^3d^2g^2i^3)$

$$\begin{aligned}
& 2i^3) - \log(e*((a + b*x)/(c + d*x))^n)^2 * ((B^2*(a*d + 2*b*c))/(2*(a^2*d^2 \\
& + b^2*c^2 - 2*a*b*c*d)) + (3*B^2*b*d*x)/(2*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d) \\
&)) / (x*(b*c^2*g^2*i^3 + 2*a*c*d*g^2*i^3) + x^2*(a*d^2*g^2*i^3 + 2*b*c*d*g^2* \\
& i^3) + a*c^2*g^2*i^3 + b*d^2*g^2*i^3*x^3) + (3*B*b^2*d*(2*A - B*n))/(2*g^2* \\
& i^3*n*(a*d - b*c)^4) - (3*B^2*b^2*d*(d*g^2*i^3*n*x^2*(a*d - b*c) + (a*c*g^2 \\
& *i^3*n*(a*d - b*c))/b + (g^2*i^3*n*x*(a*d + b*c)*(a*d - b*c))/b))/(g^2*i^3* \\
& n*(a*d - b*c)^4*(x*(b*c^2*g^2*i^3 + 2*a*c*d*g^2*i^3) + x^2*(a*d^2*g^2*i^3 + \\
& 2*b*c*d*g^2*i^3) + a*c^2*g^2*i^3 + b*d^2*g^2*i^3*x^3)) - \log(e*((a + b*x) \\
& / (c + d*x))^n) * ((x*((3*B^2*b*d*n)/2 + 3*A*B*b*d) - (B^2*a*d*n)/2 + 2*B^2*b* \\
& c*n + A*B*a*d + 2*A*B*b*c)/(x*(b^3*c^4*g^2*i^3 + 2*a^3*c*d^3*g^2*i^3 - 3*a^ \\
& 2*b*c^2*d^2*g^2*i^3) + x^2*(a^3*d^4*g^2*i^3 + 2*b^3*c^3*d*g^2*i^3 - 3*a*b^2* \\
& c^2*d^2*g^2*i^3) + x^3*(b^3*c^2*d^2*g^2*i^3 + a^2*b*d^4*g^2*i^3 - 2*a*b^2* \\
& c^3*d^3*g^2*i^3) + a^3*c^2*d^2*g^2*i^3 + a*b^2*c^4*g^2*i^3 - 2*a^2*b*c^3*d*g^ \\
& 2*i^3) - (3*B*b^2*d*(2*A - B*n)*(d*g^2*i^3*n*x^2*(a*d - b*c)^3 + (g^2*i^3*n \\
& *x*(a*d + b*c)*(a*d - b*c)^3)/b + (a*c*g^2*i^3*n*(a*d - b*c)^3)/b))/(g^2*i^ \\
& 3*n*(a*d - b*c)^4*(x*(b^3*c^4*g^2*i^3 + 2*a^3*c*d^3*g^2*i^3 - 3*a^2*b*c^2*d \\
& ^2*g^2*i^3) + x^2*(a^3*d^4*g^2*i^3 + 2*b^3*c^3*d*g^2*i^3 - 3*a*b^2*c^2*d^2* \\
& g^2*i^3) + x^3*(b^3*c^2*d^2*g^2*i^3 + a^2*b*d^4*g^2*i^3 - 2*a*b^2*c^3*d^3*g^2 \\
& *i^3) + a^3*c^2*d^2*g^2*i^3 + a*b^2*c^4*g^2*i^3 - 2*a^2*b*c^3*d*g^2*i^3)) \\
& + (b^2*d*atan((b^2*d*(2*A^2 + 5*B^2*n^2 - 2*A*B*n)*(2*a^4*d^4*g^2*i^3 - 2*b \\
& ^4*c^4*g^2*i^3 + 4*a*b^3*c^3*d*g^2*i^3 - 4*a^3*b*c*d^3*g^2*i^3)*3i)/(2*g^2* \\
& i^3*(a*d - b*c)^4*(6*A^2*b^2*d + 15*B^2*b^2*d*n^2 - 6*A*B*b^2*d*n)) + (b^3* \\
& d^2*x*(2*A^2 + 5*B^2*n^2 - 2*A*B*n)*(a^3*d^3*g^2*i^3 - b^3*c^3*g^2*i^3 + 3* \\
& a*b^2*c^2*d*g^2*i^3 - 3*a^2*b*c*d^2*g^2*i^3)*6i)/(g^2*i^3*(a*d - b*c)^4*(6* \\
& A^2*b^2*d + 15*B^2*b^2*d*n^2 - 6*A*B*b^2*d*n)))*(2*A^2 + 5*B^2*n^2 - 2*A*B* \\
& n)*3i)/(g^2*i^3*(a*d - b*c)^4) - (B^2*b^2*d*log(e*((a + b*x)/(c + d*x))^n) \\
& ^3)/(g^2*i^3*n*(a*d - b*c)^4)
\end{aligned}$$

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))^n))**2/(b*g*x+a*g)**2/(d*i*x+c*i)**3, x)
```

```
[Out] Timed out
```

$$3.208 \quad \int \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ag+bgx)^3(ci+dix)^3} dx$$

Optimal. Leaf size=732

$$\frac{b^4(c+dx)^2 \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A\right)^2}{2g^3i^3(a+bx)^2(bc-ad)^5} - \frac{b^4Bn(c+dx)^2 \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A\right)}{2g^3i^3(a+bx)^2(bc-ad)^5} + \frac{4b^3d(c+dx) \left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{g^3i^3(a+bx)(bc-ad)^5}$$

[Out] $\frac{1}{4}B^2d^4n^2(bx+a)^2/(-ad+bc)^5/g^3/i^3/(dx+c)^2+8ABdB^3n^2(bx+a)/(-ad+bc)^5/g^3/i^3/(dx+c)+8b^3B^2d^3n^2(bx+a)/(-ad+bc)^5/g^3/i^3/(bx+a)-1/4b^4B^2n^2(dx+c)^2/(-ad+bc)^5/g^3/i^3/(bx+a)^2+8b^3B^2d^3n^2(bx+a)*\ln(e*((bx+a)/(dx+c))^n)/(-ad+bc)^5/g^3/i^3/(dx+c)-1/2Bd^4n^2(bx+a)^2*(A+B*\ln(e*((bx+a)/(dx+c))^n))/(-ad+bc)^5/g^3/i^3/(dx+c)^2+8b^3B*d*n^2*(dx+c)*(A+B*\ln(e*((bx+a)/(dx+c))^n))/(-ad+bc)^5/g^3/i^3/(bx+a)-1/2b^4B*n^2*(dx+c)^2*(A+B*\ln(e*((bx+a)/(dx+c))^n))/(-ad+bc)^5/g^3/i^3/(bx+a)^2+1/2d^4*(bx+a)^2*(A+B*\ln(e*((bx+a)/(dx+c))^n))^2/(-ad+bc)^5/g^3/i^3/(dx+c)^2-4b^3d^3*(bx+a)*(A+B*\ln(e*((bx+a)/(dx+c))^n))^2/(-ad+bc)^5/g^3/i^3/(dx+c)+4b^3*d*(dx+c)*(A+B*\ln(e*((bx+a)/(dx+c))^n))^2/(-ad+bc)^5/g^3/i^3/(bx+a)-1/2b^4*(dx+c)^2*(A+B*\ln(e*((bx+a)/(dx+c))^n))^2/(-ad+bc)^5/g^3/i^3/(bx+a)^2+2b^2*d^2*(A+B*\ln(e*((bx+a)/(dx+c))^n))^3/B/(-ad+bc)^5/g^3/i^3/n$

Rubi [C] time = 9.23, antiderivative size = 2041, normalized size of antiderivative = 2.79, number of steps used = 163, number of rules used = 31, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}} = 0.689$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

[In] $\text{Int}[(A + B*\text{Log}[e*((a + bx)/(c + dx))^n])^2/((a*g + b*g*x)^3*(c*i + d*i*x)^3), x]$

[Out] $-(b^2*B^2*n^2)/(4*(b*c - a*d)^3*g^3*i^3*(a + b*x)^2) + (15*b^2*B^2*d*n^2)/(2*(b*c - a*d)^4*g^3*i^3*(a + b*x)) + (B^2*d^2*n^2)/(4*(b*c - a*d)^3*g^3*i^3*(c + d*x)^2) + (15*b*B^2*d^2*n^2)/(2*(b*c - a*d)^4*g^3*i^3*(c + d*x)) + (15*b^2*B^2*d^2*n^2*\text{Log}[a + b*x])/((b*c - a*d)^5*g^3*i^3) - (6*A*b^2*B*d^2*n^2*\text{Log}[a + b*x]^2)/((b*c - a*d)^5*g^3*i^3) - (6*b^2*B^2*d^2*\text{Log}[-((b*c - a*d)/(d*(a + b*x))])*\text{Log}[e*((a + b*x)/(c + d*x))^n]^2)/((b*c - a*d)^5*g^3*i^3) - (6*b^2*B^2*d^2*\text{Log}[a + b*x]*\text{Log}[e*((a + b*x)/(c + d*x))^n]^2)/((b*c - a*d)$

$$\begin{aligned}
& ^5g^3i^3) - (b^2B^n(A + B\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(2*(b*c - a*d)^3g^3i^3(a + b*x)^2) + (7*b^2B*d^n(A + B\text{Log}[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)^4g^3i^3(a + b*x)) - (B*d^2n(A + B\text{Log}[e*((a + b*x)/(c + d*x))^n]))/(2*(b*c - a*d)^3g^3i^3(c + d*x)^2) - (7*b*B*d^2n(A + B\text{Log}[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)^4g^3i^3(c + d*x)) - (b^2*(A + B\text{Log}[e*((a + b*x)/(c + d*x))^n])^2)/(2*(b*c - a*d)^3g^3i^3(a + b*x)^2) + (3*b^2*d*(A + B\text{Log}[e*((a + b*x)/(c + d*x))^n])^2)/((b*c - a*d)^4g^3i^3(a + b*x)) + (d^2*(A + B\text{Log}[e*((a + b*x)/(c + d*x))^n])^2)/(2*(b*c - a*d)^3g^3i^3(c + d*x)^2) + (3*b*d^2*(A + B\text{Log}[e*((a + b*x)/(c + d*x))^n])^2)/((b*c - a*d)^4g^3i^3(c + d*x)) + (6*b^2*d^2*\text{Log}[a + b*x]*(A + B\text{Log}[e*((a + b*x)/(c + d*x))^n])^2)/((b*c - a*d)^5g^3i^3) - (15*b^2*B^2*d^2*n^2*\text{Log}[c + d*x])/((b*c - a*d)^5g^3i^3) + (12*A*b^2*B*d^2*n*\text{Log}[-(d*(a + b*x))/(b*c - a*d)]*\text{Log}[c + d*x])/((b*c - a*d)^5g^3i^3) + (6*b^2*B^2*d^2*\text{Log}[(a + b*x)^n]^2*\text{Log}[c + d*x])/((b*c - a*d)^5g^3i^3) - (6*b^2*d^2*(A + B\text{Log}[e*((a + b*x)/(c + d*x))^n])^2*\text{Log}[c + d*x])/((b*c - a*d)^5g^3i^3) - (6*A*b^2*B*d^2*n*\text{Log}[c + d*x]^2)/((b*c - a*d)^5g^3i^3) + (6*b^2*B^2*d^2*n^2*\text{Log}[a + b*x]*\text{Log}[c + d*x]^2)/((b*c - a*d)^5g^3i^3) - (6*b^2*B^2*d^2*n*\text{Log}[e*((a + b*x)/(c + d*x))^n]*\text{Log}[c + d*x]^2)/((b*c - a*d)^5g^3i^3) - (2*b^2*B^2*d^2*n^2*\text{Log}[c + d*x]^3)/((b*c - a*d)^5g^3i^3) + (12*A*b^2*B*d^2*n*\text{Log}[a + b*x]*\text{Log}[(b*(c + d*x))/(b*c - a*d)]/((b*c - a*d)^5g^3i^3) - (6*b^2*B^2*d^2*\text{Log}[(a + b*x)^n]^2*\text{Log}[(b*(c + d*x))/(b*c - a*d)]/((b*c - a*d)^5g^3i^3) + (12*b^2*B^2*d^2*n*\text{Log}[a + b*x]*\text{Log}[c + d*x]*\text{Log}[(c + d*x)^(-n)])/((b*c - a*d)^5g^3i^3) + (6*b^2*B^2*d^2*\text{Log}[a + b*x]*\text{Log}[(c + d*x)^(-n)]^2)/((b*c - a*d)^5g^3i^3) - (6*b^2*B^2*d^2*\text{Log}[-(d*(a + b*x))/(b*c - a*d)]*\text{Log}[(c + d*x)^(-n)]^2)/((b*c - a*d)^5g^3i^3) - (12*b^2*B^2*d^2*n*\text{Log}[-(d*(a + b*x))/(b*c - a*d)]*\text{Log}[c + d*x]*(\text{Log}[(a + b*x)^n] - \text{Log}[e*((a + b*x)/(c + d*x))^n] + \text{Log}[(c + d*x)^(-n)]))/((b*c - a*d)^5g^3i^3) + (12*A*b^2*B*d^2*n*\text{PolyLog}[2, -(d*(a + b*x))/(b*c - a*d)]/((b*c - a*d)^5g^3i^3) - (12*b^2*B^2*d^2*n*\text{Log}[(a + b*x)^n]*\text{PolyLog}[2, -(d*(a + b*x))/(b*c - a*d)]/((b*c - a*d)^5g^3i^3) + (12*A*b^2*B*d^2*n*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]/((b*c - a*d)^5g^3i^3) + (12*b^2*B^2*d^2*n*\text{Log}[(c + d*x)^(-n)]*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]/((b*c - a*d)^5g^3i^3) - (12*b^2*B^2*d^2*n*(\text{Log}[(a + b*x)^n] - \text{Log}[e*((a + b*x)/(c + d*x))^n] + \text{Log}[(c + d*x)^(-n)])*\text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)]/((b*c - a*d)^5g^3i^3) + (12*b^2*B^2*d^2*n*\text{Log}[e*((a + b*x)/(c + d*x))^n]*\text{PolyLog}[2, 1 + (b*c - a*d)/(d*(a + b*x))]/((b*c - a*d)^5g^3i^3) + (12*b^2*B^2*d^2*n^2*\text{PolyLog}[3, -(d*(a + b*x))/(b*c - a*d)]/((b*c - a*d)^5g^3i^3) + (12*b^2*B^2*d^2*n^2*\text{PolyLog}[3, (b*(c + d*x))/(b*c - a*d)]/((b*c - a*d)^5g^3i^3) + (12*b^2*B^2*d^2*n^2*\text{PolyLog}[3, 1 + (b*c - a*d)/(d*(a + b*x))]/((b*c - a*d)^5g^3i^3)
\end{aligned}$$

Rule 12

```

Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !MatchQ[u, (b_)*(v_)] /; FreeQ[b, x]

```

Rule 30

$\text{Int}[(x_)^{(m_)}, x_Symbol] \rightarrow \text{Simp}[x^{(m+1)}/(m+1), x] /; \text{FreeQ}[m, x] \ \&\& \ \text{NeQ}[m, -1]$

Rule 44

$\text{Int}[(a_ + (b_)*(x_))^{(m_)}*((c_ + (d_)*(x_))^{(n_)}), x_Symbol] \rightarrow \text{Int}[\text{ExpandIntegrand}[(a + b*x)^m*(c + d*x)^n, x], x] /; \text{FreeQ}\{a, b, c, d\}, x] \ \&\& \ \text{NeQ}[b*c - a*d, 0] \ \&\& \ \text{ILtQ}[m, 0] \ \&\& \ \text{IntegerQ}[n] \ \&\& \ !(\text{IGtQ}[n, 0] \ \&\& \ \text{LtQ}[m + n + 2, 0])$

Rule 2301

$\text{Int}[(a_ + \text{Log}[(c_)*(x_)]^{(n_)}*(b_)]/(x_), x_Symbol] \rightarrow \text{Simp}[(a + b*\text{Log}[c*x^n])^2/(2*b*n), x] /; \text{FreeQ}\{a, b, c, n\}, x]$

Rule 2302

$\text{Int}[(a_ + \text{Log}[(c_)*(x_)]^{(n_)}*(b_))^{(p_)}]/(x_), x_Symbol] \rightarrow \text{Dist}[1/(b*n), \text{Subst}[\text{Int}[x^p, x], x, a + b*\text{Log}[c*x^n]], x] /; \text{FreeQ}\{a, b, c, n, p\}, x]$

Rule 2317

$\text{Int}[(a_ + \text{Log}[(c_)*(x_)]^{(n_)}*(b_))^{(p_)}]/((d_ + (e_)*(x_))), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[1 + (e*x)/d]*(a + b*\text{Log}[c*x^n])^p)/e, x] - \text{Dist}[(b*n*p)/e, \text{Int}[(\text{Log}[1 + (e*x)/d]*(a + b*\text{Log}[c*x^n])^{(p-1)})/x, x], x] /; \text{FreeQ}\{a, b, c, d, e, n\}, x] \ \&\& \ \text{IGtQ}[p, 0]$

Rule 2344

$\text{Int}[(a_ + \text{Log}[(c_)*(x_)]^{(n_)}*(b_))^{(p_)}]/((x_)*((d_ + (e_)*(x_)))), x_Symbol] \rightarrow \text{Dist}[1/d, \text{Int}[(a + b*\text{Log}[c*x^n])^p/x, x], x] - \text{Dist}[e/d, \text{Int}[(a + b*\text{Log}[c*x^n])^p/(d + e*x), x], x] /; \text{FreeQ}\{a, b, c, d, e, n\}, x] \ \&\& \ \text{IGtQ}[p, 0]$

Rule 2374

$\text{Int}[(\text{Log}[(d_)*((e_ + (f_)*(x_)]^{(m_)})))]*((a_ + \text{Log}[(c_)*(x_)]^{(n_)}*(b_))^{(p_)}]/(x_), x_Symbol] \rightarrow -\text{Simp}[(\text{PolyLog}[2, -(d*f*x^m)]*(a + b*\text{Log}[c*x^n])^p)/m, x] + \text{Dist}[(b*n*p)/m, \text{Int}[(\text{PolyLog}[2, -(d*f*x^m)]*(a + b*\text{Log}[c*x^n])^{(p-1)})/x, x], x] /; \text{FreeQ}\{a, b, c, d, e, f, m, n\}, x] \ \&\& \ \text{IGtQ}[p, 0] \ \&\& \ \text{EqQ}[d*e, 1]$

Rule 2375

Int[(Log[(d_.)*((e_.) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.))/(x_), x_Symbol] := Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m - 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d, e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_.) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*((f_.) + (g_.)*(x_)^(q_.)), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && EqQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_.)*((d_.) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_.) + Log[(c_.)*((d_.) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*(e*f - d*g), 0]

Rule 2394

Int[((a_.) + Log[(c_.)*((d_.) + (e_.)*(x_)^(n_.))]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]

Rule 2396

Int[((a_.) + Log[(c_.)*((d_.) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])^p/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]

Rule 2411

Int[((a_.) + Log[(c_.)*((d_.) + (e_.)*(x_)^(n_.))]*(b_.))^(p_.)*((f_.) + (g_

```
.)*(x_)^(q_)*((h_) + (i_)*(x_)^(r_), x_Symbol] := Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_)^(n_))]*(b_))^(p_)*(RFx_), x_Sy
mbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_)^(n_))]*(b_))^(p_)*((f_) + Log
[(h_)*((i_) + (j_)*(x_)^(m_))]*(g_))*((k_) + (l_)*(x_)^(r_), x_Sym
bol] := Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_) + Log[(c_)*((d_) + (e_)*(x_)^(n_))]*(b_))*((f_) + Log[(h_)
]*((i_) + (j_)*(x_)^(m_)))*(g_)))/(x_), x_Symbol] := Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m)))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_) + Log[(c_)*((d_) + (e_)*(x_)^(n_))]*(b_))*((f_) + Log[(h_)
]*((i_) + (j_)*(x_)^(m_)))*(g_))*((k_) + (l_)*(x_)^(r_), x_Symbol] :=
Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2488

```
Int[Log[(e_)*((f_)*((a_) + (b_)*(x_)^(p_))*((c_) + (d_)*(x_)^(q_))
^(r_)]^(s_)/((g_) + (h_)*(x_)), x_Symbol] := -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q]^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
```

[b*g - a*h, 0] && IGtQ[s, 0]

Rule 2499

Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r)/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dist[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x), x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r}, x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]

Rule 2500

Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r] - Log[(a + b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x), x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ[b*c - a*d, 0]

Rule 2506

Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[(v - 1)*(c + d*x)/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/(b*c - a*d), x] + Dist[h*p*r*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1)/(a + b*x)*(c + d*x), x], x] /; FreeQ[{g, h}, x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]

Rule 2507

Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_Symbol] :> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g + h*x)^t]^u)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/(p*r*(s + 1)*(b*c - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s/(g + h*x), x], x] /; FreeQ[k, x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && NeQ[s, -1]

Rule 2524

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_Symbol]
:> Simp[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^n)/e, x] - Dist[(b*n*p)/e,
Int[(Log[d + e*x]*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.),
x_Symbol]
:> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^n)/(e*(m + 1)), x] - Dist[(b*n*p)/(e*(m + 1)),
Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(a + b*Log[c*Rfx^p])^(n - 1)*D[Rfx, x])/Rfx, x], x], x] /;
FreeQ[{a, b, c, d, e, m, p}, x] && RationalFunctionQ[Rfx, x] && IGtQ[n, 0] && (EqQ[n, 1] || IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(Rfx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol]
:> With[{u = ExpandIntegrand[(a + b*Log[c*Rfx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u]] /;
FreeQ[{a, b, c, p}, x] && RationalFunctionQ[Rfx, x] && RationalFunctionQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_Symbol]
:> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol]
:> With[{w = DerivativeDivides[v, u*v, x]}, Simp[w*PolyLog[n + 1, v], x] /; !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol]
:> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; SimplifyIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol]
:> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]]
```

Rubi steps

$$\begin{aligned}
\int \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(208c + 208dx)^3(ag + bgx)^3} dx &= \int \left[\frac{b^3 \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{8998912(bc - ad)^3 g^3 (a + bx)^3} - \frac{3b^3 d \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{8998912(bc - ad)^4 g^3 (a + bx)^2} + \frac{3b^3}{44} \right. \\
&= \frac{(3b^3 d^2) \int \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{a+bx} dx}{4499456(bc - ad)^5 g^3} - \frac{(3b^2 d^3) \int \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{c+dx} dx}{4499456(bc - ad)^5 g^3} - \frac{(3b^3 d)}{8} \\
&= -\frac{b^2 \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{17997824(bc - ad)^3 g^3 (a + bx)^2} + \frac{3b^2 d \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{8998912(bc - ad)^4 g^3 (a + bx)} + \frac{d^2}{1799} \\
&= -\frac{b^2 \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{17997824(bc - ad)^3 g^3 (a + bx)^2} + \frac{3b^2 d \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{8998912(bc - ad)^4 g^3 (a + bx)} + \frac{d^2}{1799} \\
&= -\frac{b^2 \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{17997824(bc - ad)^3 g^3 (a + bx)^2} + \frac{3b^2 d \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{8998912(bc - ad)^4 g^3 (a + bx)} + \frac{d^2}{1799} \\
&= -\frac{b^2 \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{17997824(bc - ad)^3 g^3 (a + bx)^2} + \frac{3b^2 d \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{8998912(bc - ad)^4 g^3 (a + bx)} + \frac{d^2}{1799} \\
&= -\frac{b^2 B n \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{17997824(bc - ad)^3 g^3 (a + bx)^2} + \frac{7b^2 B d n \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{8998912(bc - ad)^4 g^3 (a + bx)} - \frac{B a}{1799} \\
&= -\frac{3b^2 B^2 d^2 \log(a + bx) \log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{4499456(bc - ad)^5 g^3} - \frac{b^2 B n \left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{17997824(bc - ad)^3 g^3 (a + bx)^2} \\
&= -\frac{3b^2 B^2 d^2 \log\left(-\frac{bc-ad}{d(a+bx)}\right) \log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{4499456(bc - ad)^5 g^3} - \frac{3b^2 B^2 d^2 \log(a + bx) \log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{4499456(bc - ad)^5 g^3} \\
&= -\frac{b^2 B^2 n^2}{35995648(bc - ad)^3 g^3 (a + bx)^2} + \frac{15b^2 B^2 d n^2}{17997824(bc - ad)^4 g^3 (a + bx)} + \frac{3599}{3599} \\
&= -\frac{b^2 B^2 n^2}{35995648(bc - ad)^3 g^3 (a + bx)^2} + \frac{15b^2 B^2 d n^2}{17997824(bc - ad)^4 g^3 (a + bx)} + \frac{3599}{3599}
\end{aligned}$$

Mathematica [B] time = 2.67, size = 1653, normalized size = 2.26

result too large to display

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)^3*(c*i + d*i*x)^3), x]

[Out] $(8*b^2*B^2*d^2*n^2*(a + b*x)^2*(c + d*x)^2*\text{Log}[(a + b*x)/(c + d*x)]^3 + 2*B*n*\text{Log}[(a + b*x)/(c + d*x)]^2*(12*a^2*A*b^2*c^2*d^2 - b^4*B*c^4*n + 8*a*b^3*B*c^3*d*n - 8*a^3*b*B*c*d^3*n + a^4*B*d^4*n + 24*a*A*b^3*c^2*d^2*x + 24*a^2*A*b^2*c*d^3*x + 4*b^4*B*c^3*d*n*x + 24*a*b^3*B*c^2*d^2*n*x - 24*a^2*b^2*B*c*d^3*n*x - 4*a^3*b*B*d^4*n*x + 12*A*b^4*c^2*d^2*x^2 + 48*a*A*b^3*c*d^3*x^2 + 12*a^2*A*b^2*d^4*x^2 + 18*b^4*B*c^2*d^2*n*x^2 - 18*a^2*b^2*B*d^4*n*x^2 + 24*A*b^4*c*d^3*x^3 + 24*a*A*b^3*d^4*x^3 + 12*b^4*B*c*d^3*n*x^3 - 12*a*b^3*B*d^4*n*x^3 + 12*A*b^4*d^4*x^4 + 12*b^2*B*d^2*(a + b*x)^2*(c + d*x)^2*\text{Log}[e*((a + b*x)/(c + d*x))^n] - 12*b^2*B*d^2*n*(a + b*x)^2*(c + d*x)^2*\text{Log}[(a + b*x)/(c + d*x)]) + 12*b^2*d^2*(a + b*x)^2*(c + d*x)^2*\text{Log}[a + b*x]*(2*A^2 + 5*B^2*n^2 + 4*A*B*(\text{Log}[e*((a + b*x)/(c + d*x))^n] - n*\text{Log}[(a + b*x)/(c + d*x)]) + 2*B^2*(\text{Log}[e*((a + b*x)/(c + d*x))^n] - n*\text{Log}[(a + b*x)/(c + d*x)])^2) + 2*b^2*d*(b*c - a*d)*(a + b*x)*(c + d*x)^2*(6*A^2 + 14*A*B*n + 15*B^2*n^2 + 6*B^2*\text{Log}[e*((a + b*x)/(c + d*x))^n]^2 - 2*B*n*(6*A + 7*B*n)*\text{Log}[(a + b*x)/(c + d*x)] + 6*B^2*n^2*\text{Log}[(a + b*x)/(c + d*x)]^2 + 2*B*\text{Log}[e*((a + b*x)/(c + d*x))^n]*(6*A + 7*B*n - 6*B*n*\text{Log}[(a + b*x)/(c + d*x)])) - b^2*(b*c - a*d)^2*(c + d*x)^2*(2*A^2 + 2*A*B*n + B^2*n^2 + 2*B^2*\text{Log}[e*((a + b*x)/(c + d*x))^n]^2 - 2*B*n*(2*A + B*n)*\text{Log}[(a + b*x)/(c + d*x)] + 2*B^2*n^2*\text{Log}[(a + b*x)/(c + d*x)]^2 + 2*B*\text{Log}[e*((a + b*x)/(c + d*x))^n]*(2*A + B*n - 2*B*n*\text{Log}[(a + b*x)/(c + d*x)])) + 2*B*(b*c - a*d)*n*\text{Log}[(a + b*x)/(c + d*x)]*(2*b*d^2*(a + b*x)^2*(c + d*x)*(6*A - 7*B*n + 6*B*\text{Log}[e*((a + b*x)/(c + d*x))^n] - 6*B*n*\text{Log}[(a + b*x)/(c + d*x)]) + 2*b^2*d*(a + b*x)*(c + d*x)^2*(6*A + 7*B*n + 6*B*\text{Log}[e*((a + b*x)/(c + d*x))^n] - 6*B*n*\text{Log}[(a + b*x)/(c + d*x)])) + d^2*(b*c - a*d)*(a + b*x)^2*(2*A - B*n + 2*B*\text{Log}[e*((a + b*x)/(c + d*x))^n] - 2*B*n*\text{Log}[(a + b*x)/(c + d*x)])) - b^2*(b*c - a*d)*(c + d*x)^2*(2*A + B*n + 2*B*\text{Log}[e*((a + b*x)/(c + d*x))^n] - 2*B*n*\text{Log}[(a + b*x)/(c + d*x)])) + d^2*(b*c - a*d)^2*(a + b*x)^2*(2*A^2 - 2*A*B*n + B^2*n^2 + 2*B^2*\text{Log}[e*((a + b*x)/(c + d*x))^n]^2 + 2*B*n*(-2*A + B*n)*\text{Log}[(a + b*x)/(c + d*x)] + 2*B^2*n^2*\text{Log}[(a + b*x)/(c + d*x)]^2 - 2*B*\text{Log}[e*((a + b*x)/(c + d*x))^n]*(-2*A + B*n + 2*B*n*\text{Log}[(a + b*x)/(c + d*x)])) + 2*b*d^2*(b*c - a*d)*(a + b*x)^2*(c + d*x)*(6*A^2 - 14*A*B*n + 15*B^2*n^2 + 6*B^2*\text{Log}[e*((a + b*x)/(c + d*x))^n]^2 + 2*B*n*(-6*A + 7*B*n)*\text{Log}[(a + b*x)/(c + d*x)] + 6*B^2*n^2*\text{Log}[(a + b*x)/(c + d*x)]^2 - 2*B*\text{Log}[e*((a + b*x)/(c + d*x))^n]*(-6*A + 7*B*n + 6*B*n*\text{Log}[(a + b*x)/(c + d*x)])) - 12*b^2*d^2*(a + b*x)^2*(c + d*x)^2*(2*A^2 + 5*B^2*n^2 + 4*A*B*(\text{Log}[e*((a + b*x)/(c + d*x))^n] - n*\text{Log}[(a + b*x)/(c + d*x)]) + 2*B^2*(\text{Log}[e*((a + b*x)/(c + d*x))^n] - n*\text{Log}[(a + b$

$x)/(c + d*x)]^2 * \text{Log}[c + d*x] / (4*(b*c - a*d)^5 * g^3 * i^3 * (a + b*x)^2 * (c + d*x)^2)$

fricas [B] time = 1.32, size = 3062, normalized size = 4.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^3/(d*i*x+c*i)^3,x,
algorithm="fricas")

[Out]
$$\begin{aligned} & -1/4*(2*A^2*b^4*c^4 - 16*A^2*a*b^3*c^3*d + 16*A^2*a^3*b*c*d^3 - 2*A^2*a^4*d^4 \\ & - 12*(2*A^2*b^4*c*d^3 - 2*A^2*a*b^3*d^4 + 5*(B^2*b^4*c*d^3 - B^2*a*b^3*d^4)*n^2)*x^3 - 8*(B^2*b^4*d^4*n^2*x^4 + B^2*a^2*b^2*c^2*d^2*n^2 + 2*(B^2*b^4*c*d^3 + B^2*a*b^3*d^4)*n^2*x^3 + (B^2*b^4*c^2*d^2 + 4*B^2*a*b^3*c*d^3 + B^2*a^2*b^2*d^4)*n^2*x^2 + 2*(B^2*a*b^3*c^2*d^2 + B^2*a^2*b^2*c*d^3)*n^2*x)* \\ & \log((b*x + a)/(d*x + c))^3 + (B^2*b^4*c^4 - 32*B^2*a*b^3*c^3*d + 32*B^2*a^3*b*c*d^3 - B^2*a^4*d^4)*n^2 - 6*(6*A^2*b^4*c^2*d^2 - 6*A^2*a^2*b^2*d^4 + 15*(B^2*b^4*c^2*d^2 - B^2*a^2*b^2*d^4)*n^2 + 4*(A*B*b^4*c^2*d^2 - 2*A*B*a*b^3*c*d^3 + A*B*a^2*b^2*d^4)*n)*x^2 + 2*(B^2*b^4*c^4 - 8*B^2*a*b^3*c^3*d + 8*B^2*a^3*b*c*d^3 - B^2*a^4*d^4 - 12*(B^2*b^4*c*d^3 - B^2*a*b^3*d^4)*x^3 - 18*(B^2*b^4*c^2*d^2 - B^2*a^2*b^2*d^4)*x^2 - 4*(B^2*b^4*c^3*d + 6*B^2*a*b^3*c^2*d^2 - 6*B^2*a^2*b^2*c*d^3 - B^2*a^3*b*d^4)*x - 12*(B^2*b^4*d^4*x^4 + B^2*a^2*b^2*c^2*d^2 + 2*(B^2*b^4*c*d^3 + B^2*a*b^3*d^4)*x^3 + (B^2*b^4*c^2*d^2 + 4*B^2*a*b^3*c*d^3 + B^2*a^2*b^2*d^4)*x^2 + 2*(B^2*a*b^3*c^2*d^2 + B^2*a^2*b^2*c*d^3)*x)*\log((b*x + a)/(d*x + c))*\log(e)^2 - 2*(12*A*B*b^4*d^4*n*x^4 + 12*A*B*a^2*b^2*c^2*d^2*n + 12*((B^2*b^4*c*d^3 - B^2*a*b^3*d^4)*n^2 + 2*(A*B*b^4*c*d^3 + A*B*a*b^3*d^4)*n)*x^3 - (B^2*b^4*c^4 - 8*B^2*a*b^3*c^3*d + 8*B^2*a^3*b*c*d^3 - B^2*a^4*d^4)*n^2 + 6*(3*(B^2*b^4*c^2*d^2 - B^2*a^2*b^2*d^4)*n^2 + 2*(A*B*b^4*c^2*d^2 + 4*A*B*a*b^3*c*d^3 + A*B*a^2*b^2*d^4)*n)*x^2 + 4*((B^2*b^4*c^3*d + 6*B^2*a*b^3*c^2*d^2 - 6*B^2*a^2*b^2*c*d^3 - B^2*a^3*b*d^4)*n^2 + 6*(A*B*a*b^3*c^2*d^2 + A*B*a^2*b^2*c*d^3)*n)*x*\log((b*x + a)/(d*x + c))^2 + 2*(A*B*b^4*c^4 - 16*A*B*a*b^3*c^3*d + 30*A*B*a^2*b^2*c^2*d^2 - 16*A*B*a^3*b*c*d^3 + A*B*a^4*d^4)*n - 4*(2*A^2*b^4*c^3*d + 12*A^2*a*b^3*c^2*d^2 - 12*A^2*a^2*b^2*c*d^3 - 2*A^2*a^3*b*d^4 + (7*B^2*b^4*c^3*d + 24*B^2*a*b^3*c^2*d^2 - 24*B^2*a^2*b^2*c*d^3 - 7*B^2*a^3*b*d^4)*n^2 + 6*(A*B*b^4*c^3*d - A*B*a*b^3*c^2*d^2 - A*B*a^2*b^2*c*d^3 + A*B*a^3*b*d^4)*n)*x + 2*(2*A*B*b^4*c^4 - 16*A*B*a*b^3*c^3*d + 16*A*B*a^3*b*c*d^3 - 2*A*B*a^4*d^4 - 24*(A*B*b^4*c*d^3 - A*B*a*b^3*d^4)*x^3 - 12*(3*A*B*b^4*c^2*d^2 - 3*A*B*a^2*b^2*d^4 + (B^2*b^4*c^2*d^2 - 2*B^2*a*b^3*c*d^3 + B^2*a^2*b^2*d^4)*n)*x^2 - 12*(B^2*b^4*d^4*n*x^4 + B^2*a^2*b^2*c^2*d^2*n + 2*(B^2*b^4*c*d^3 + B^2*a*b^3*d^4)*n*x^3 + (B^2*b^4*c^2*d^2 + 4*B^2*a*b^3*c*d^3 + B^2*a^2*b^2*d^4)*n*x^2 + 2*(B^2*a*b^3*c^2*d^2 + B^2*a^2*b^2*c*d^3)*n*x)*\log((b*x + a)/(d*x + c))^2 + (B^2*b^4*c^4 - 16*B^2*a*b^3*c^3*d + 30*B^2*a^2*b^2*c^2*d^2 - 16*B^2*a^3*b*c*d^3 + B^2*a^4*d^4)*n - 4*(2*A*B*b^4*c^3*d + 12*A*B*a*b^3*c^2*d^2 - 12*A*$$

$$\begin{aligned}
& B^2 a^2 b^2 c^2 d^3 - 2 A B a^3 b^2 d^4 + 3 (B^2 b^4 c^3 d - B^2 a b^3 c^2 d^2 - \\
& B^2 a^2 b^2 c^2 d^3 + B^2 a^3 b^2 d^4) n) x - 2 (12 A B b^4 d^4 x^4 + 12 A B a^2 \\
& b^2 c^2 d^2 + 12 (2 A B b^4 c^2 d^3 + 2 A B a b^3 d^4 + (B^2 b^4 c^2 d^3 - B^2 \\
& a^2 b^3 d^4) n) x^3 + 6 (2 A B b^4 c^2 d^2 + 8 A B a b^3 c^2 d^3 + 2 A B a^2 b^2 \\
& d^4 + 3 (B^2 b^4 c^2 d^2 - B^2 a^2 b^2 d^4) n) x^2 - (B^2 b^4 c^4 - 8 B^2 \\
& a^2 b^3 c^3 d + 8 B^2 a^3 b^2 c^2 d^3 - B^2 a^4 d^4) n + 4 (6 A B a b^3 c^2 d^2 \\
& + 6 A B a^2 b^2 c^2 d^3 + (B^2 b^4 c^3 d + 6 B^2 a b^3 c^2 d^2 - 6 B^2 a^2 b^2 \\
& c^2 d^3 - B^2 a^3 b^2 d^4) n) x) \log((b x + a)/(d x + c)) \log(e) - 2 (12 A \\
& a^2 b^2 c^2 d^2 + 6 (5 B^2 b^4 d^4 n^2 + 2 A^2 b^4 d^4) x^4 + 12 (2 A^2 b^4 c^2 d^3 \\
& + 2 A^2 a b^3 d^4 + 5 (B^2 b^4 c^2 d^3 + B^2 a b^3 d^4) n^2 + 2 (A B b^4 c^2 d^3 \\
& - A B a b^3 d^4) n) x^3 - (B^2 b^4 c^4 - 16 B^2 a b^3 c^3 d - 1 \\
& 6 B^2 a^3 b^2 c^2 d^3 + B^2 a^4 d^4) n^2 + 6 (2 A^2 b^4 c^2 d^2 + 8 A^2 a b^3 c^2 \\
& d^3 + 2 A^2 a^2 b^2 d^4 + (7 B^2 b^4 c^2 d^2 + 16 B^2 a b^3 c^2 d^3 + 7 B^2 a^2 \\
& b^2 d^4) n^2 + 6 (A B b^4 c^2 d^2 - A B a^2 b^2 d^4) n) x^2 - 2 (A B b^4 \\
& c^4 - 8 A B a b^3 c^3 d + 8 A B a^3 b^2 c^2 d^3 - A B a^4 d^4) n + 4 (6 A^2 a \\
& b^3 c^2 d^2 + 6 A^2 a^2 b^2 c^2 d^3 + 3 (B^2 b^4 c^3 d + 4 B^2 a b^3 c^2 d^2 \\
& + 4 B^2 a^2 b^2 c^2 d^3 + B^2 a^3 b^2 d^4) n^2 + 2 (A B b^4 c^3 d + 6 A B a b^3 \\
& c^2 d^2 - 6 A B a^2 b^2 c^2 d^3 - A B a^3 b^2 d^4) n) x) \log((b x + a)/(d x + \\
& c)) / ((b^7 c^5 d^2 - 5 a b^6 c^4 d^3 + 10 a^2 b^5 c^3 d^4 - 10 a^3 b^4 c^2 \\
& d^5 + 5 a^4 b^3 c^2 d^6 - a^5 b^2 d^7) g^3 i^3 x^4 + 2 (b^7 c^6 d - 4 a b^6 c^5 \\
& d^2 + 5 a^2 b^5 c^4 d^3 - 5 a^4 b^3 c^2 d^5 + 4 a^5 b^2 c^2 d^6 - a^6 b^2 d^7) \\
& g^3 i^3 x^3 + (b^7 c^7 - a b^6 c^6 d - 9 a^2 b^5 c^5 d^2 + 25 a^3 b^4 c^4 \\
& d^3 - 25 a^4 b^3 c^3 d^4 + 9 a^5 b^2 c^2 d^5 + a^6 b^2 c^2 d^7) g^3 i^3 x^2 + 2 (a b^6 c^7 \\
& - 4 a^2 b^5 c^6 d + 5 a^3 b^4 c^5 d^2 - 5 a^5 b^2 c^3 d^4 + 4 a^6 b^2 c^2 d^5 - \\
& a^7 c^2 d^6) g^3 i^3 x + (a^2 b^5 c^7 - 5 a^3 b^4 c^6 d + 10 a^4 b^3 c^5 d^2 - 10 a^5 b^2 c^4 \\
& d^3 + 5 a^6 b^2 c^3 d^4 - a^7 c^2 d^5) g^3 i^3)
\end{aligned}$$

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^3/(d*i*x+c*i)^3,x,
algorithm="giac")

[Out] Timed out

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{\left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)^2}{(bgx + ag)^3 (dix + ci)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*ln(e*((b*x+a)/(d*x+c)))^n)+A)^2/(b*g*x+a*g)^3/(d*i*x+c*i)^3,x)

[Out] int((B*ln(e*((b*x+a)/(d*x+c)))^n)+A)^2/(b*g*x+a*g)^3/(d*i*x+c*i)^3,x)

maxima [B] time = 5.56, size = 5594, normalized size = 7.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c)))^n))^2/(b*g*x+a*g)^3/(d*i*x+c*i)^3,x,
algorithm="maxima")

[Out]
$$\frac{1}{2}B^2 \left((12b^3d^3x^3 - b^3c^3 + 7ab^2c^2d + 7a^2b^2cd^2 - a^3d^3 + 18(b^3cd^2 + ab^2d^3)x^2 + 4(b^3c^2d + 7ab^2cd^2 + a^2bd^3)x \right) / \left((b^6c^4d^2 - 4ab^5c^3d^3 + 6a^2b^4c^2d^4 - 4a^3b^3cd^5 + a^4b^2d^6)g^3i^3x^4 + 2(b^6c^5d - 3ab^5c^4d^2 + 2a^2b^4c^3d^3 + 2a^3b^3c^2d^4 - 3a^4b^2cd^5 + a^5bd^6)g^3i^3x^3 + (b^6c^6 - 9a^2b^4c^4d^2 + 16a^3b^3c^3d^3 - 9a^4b^2c^2d^4 + a^6d^6)g^3i^3x^2 + 2(ab^5c^6 - 3a^2b^4c^5d + 2a^3b^3c^4d^2 + 2a^4b^2c^3d^3 - 3a^5b^2cd^4 + a^6cd^5)g^3i^3x + (a^2b^4c^6 - 4a^3b^3c^5d + 6a^4b^2c^4d^2 - 4a^5b^2cd^3 + a^6c^2d^4)g^3i^3 \right) + 12b^2d^2 \log(bx + a) / \left((b^5c^5 - 5ab^4c^4d + 10a^2b^3c^3d^2 - 10a^3b^2c^2d^3 + 5a^4b^2cd^4 - a^5d^5)g^3i^3 \right) - 12b^2d^2 \log(dx + c) / \left((b^5c^5 - 5ab^4c^4d + 10a^2b^3c^3d^2 - 10a^3b^2c^2d^3 + 5a^4b^2cd^4 - a^5d^5)g^3i^3 \right) * \log(e*(bx/(dx + c)) + a/(dx + c))^n \right)^2 + AB \left((12b^3d^3x^3 - b^3c^3 + 7ab^2c^2d + 7a^2b^2cd^2 - a^3d^3 + 18(b^3cd^2 + ab^2d^3)x^2 + 4(b^3c^2d + 7ab^2cd^2 + a^2bd^3)x \right) / \left((b^6c^4d^2 - 4ab^5c^3d^3 + 6a^2b^4c^2d^4 - 4a^3b^3cd^5 + a^4b^2d^6)g^3i^3x^4 + 2(b^6c^5d - 3ab^5c^4d^2 + 2a^2b^4c^3d^3 + 2a^3b^3c^2d^4 - 3a^4b^2cd^5 + a^5bd^6)g^3i^3x^3 + (b^6c^6 - 9a^2b^4c^4d^2 + 16a^3b^3c^3d^3 - 9a^4b^2c^2d^4 + a^6d^6)g^3i^3x^2 + 2(ab^5c^6 - 3a^2b^4c^5d + 2a^3b^3c^4d^2 + 2a^4b^2c^3d^3 - 3a^5b^2cd^4 + a^6cd^5)g^3i^3x + (a^2b^4c^6 - 4a^3b^3c^5d + 6a^4b^2c^4d^2 - 4a^5b^2cd^3 + a^6c^2d^4)g^3i^3 \right) + 12b^2d^2 \log(bx + a) / \left((b^5c^5 - 5ab^4c^4d + 10a^2b^3c^3d^2 - 10a^3b^2c^2d^3 + 5a^4b^2cd^4 - a^5d^5)g^3i^3 \right) - 12b^2d^2 \log(dx + c) / \left((b^5c^5 - 5ab^4c^4d + 10a^2b^3c^3d^2 - 10a^3b^2c^2d^3 + 5a^4b^2cd^4 - a^5d^5)g^3i^3 \right) * \log(e*(bx/(dx + c)) + a/(dx + c))^n - \frac{1}{4} \left((b^4c^4 - 32ab^3c^3d + 32a^3b^3cd^3 - a^4d^4 - 60(b^4cd^3 - ab^3d^4)x^3 - 8(b^4d^4x^4 + a^2b^2c^2d^2 + 2(b^4cd^3 + ab^3d^4)x^3 + (b^4c^2d^2 + 4ab^3cd^3 + a^2b^2d^4)x^2 + 2(ab^3c^2d^2 + a^2b^2cd^3)x) * \log(bx + a)^3 - 24(b^4d^4x^4 + a^2b^2c^2d^2 + 2(b^4cd^3 + ab^3d^4)x^3 + (b^4c^2d^2 + 4ab^3cd^3 + a^2b^2d^4)x^2 + 2(ab^3c^2d^2 + a^2b^2cd^3)x) * \log(bx + a) * \log(dx + c)^2 + 8(b^4d^4x^4 + a^2b^2c^2d^2 + 2(b^4cd^3 + ab^3d^4)x^3 + (b^4c^2d^2 + 4ab^3cd^3 + a^2b^2d^4)x^2 + 2(ab^3c^2d^2 + a^2b^2cd^3)x) * \log(bx + a) * \log(dx + c) \right) + 8(b^4d^4x^4 + a^2b^2c^2d^2 + 2(b^4cd^3 + ab^3d^4)x^3 + (b^4c^2d^2 + 4ab^3cd^3 + a^2b^2d^4)x^2 + 2(ab^3c^2d^2 + a^2b^2cd^3)x) * \log(bx + a) * \log(dx + c) \right)$$

$$\begin{aligned}
& d^2 + 4ab^3cd^3 + a^2b^2d^4)x^2 + 2*(ab^3c^2d^2 + a^2b^2cd^3)* \\
& x)*\log(dx + c)^3 - 90*(b^4c^2d^2 - a^2b^2d^4)x^2 - 4*(7b^4c^3d + 2 \\
& 4ab^3c^2d^2 - 24a^2b^2cd^3 - 7a^3bd^4)x - 60*(b^4d^4x^4 + a^2 \\
& *b^2c^2d^2 + 2*(b^4cd^3 + ab^3d^4)x^3 + (b^4c^2d^2 + 4ab^3cd^3 \\
& + a^2b^2d^4)x^2 + 2*(ab^3c^2d^2 + a^2b^2cd^3)*x)*\log(bx + a) + 1 \\
& 2*(5b^4d^4x^4 + 5a^2b^2c^2d^2 + 10*(b^4cd^3 + ab^3d^4)x^3 + 5*(\\
& b^4c^2d^2 + 4ab^3cd^3 + a^2b^2d^4)x^2 + 2*(b^4d^4x^4 + a^2b^2c \\
& ^2d^2 + 2*(b^4cd^3 + ab^3d^4)x^3 + (b^4c^2d^2 + 4ab^3cd^3 + a^2 \\
& *b^2d^4)x^2 + 2*(ab^3c^2d^2 + a^2b^2cd^3)*x)*\log(bx + a)^2 + 10*(a \\
& *b^3c^2d^2 + a^2b^2cd^3)*x)*\log(dx + c))^n/(a^2b^5c^7g^3i^3 - 5 \\
& *a^3b^4c^6dg^3i^3 + 10a^4b^3c^5d^2g^3i^3 - 10a^5b^2c^4d^3g^ \\
& 3i^3 + 5a^6b^3c^3d^4g^3i^3 - a^7c^2d^5g^3i^3 + (b^7c^5d^2g^3i^ \\
& 3 - 5ab^6c^4d^3g^3i^3 + 10a^2b^5c^3d^4g^3i^3 - 10a^3b^4c^2d^ \\
& ^5g^3i^3 + 5a^4b^3cd^6g^3i^3 - a^5b^2d^7g^3i^3)*x^4 + 2*(b^7c^ \\
& 6dg^3i^3 - 4ab^6c^5d^2g^3i^3 + 5a^2b^5c^4d^3g^3i^3 - 5a^4b \\
& ^3c^2d^5g^3i^3 + 4a^5b^2cd^6g^3i^3 - a^6bd^7g^3i^3)*x^3 + (b^ \\
& 7c^7g^3i^3 - ab^6c^6dg^3i^3 - 9a^2b^5c^5d^2g^3i^3 + 25a^3b^ \\
& 4c^4d^3g^3i^3 - 25a^4b^3c^3d^4g^3i^3 + 9a^5b^2c^2d^5g^3i^3 \\
& + a^6b^3cd^6g^3i^3 - a^7d^7g^3i^3)*x^2 + 2*(ab^6c^7g^3i^3 - 4a^2 \\
& *b^5c^6dg^3i^3 + 5a^3b^4c^5d^2g^3i^3 - 5a^5b^2c^3d^4g^3i^3 \\
& + 4a^6b^3c^2d^5g^3i^3 - a^7cd^6g^3i^3)*x) + 2*(b^4c^4 - 16ab^3c \\
& ^3d + 30a^2b^2c^2d^2 - 16a^3b^3cd^3 + a^4d^4 - 12*(b^4c^2d^2 - 2* \\
& ab^3cd^3 + a^2b^2d^4)x^2 + 12*(b^4d^4x^4 + a^2b^2c^2d^2 + 2*(b^4 \\
& *cd^3 + ab^3d^4)x^3 + (b^4c^2d^2 + 4ab^3cd^3 + a^2b^2d^4)x^2 + \\
& 2*(ab^3c^2d^2 + a^2b^2cd^3)*x)*\log(bx + a)^2 - 24*(b^4d^4x^4 + a^ \\
& 2b^2c^2d^2 + 2*(b^4cd^3 + ab^3d^4)x^3 + (b^4c^2d^2 + 4ab^3cd^ \\
& 3 + a^2b^2d^4)x^2 + 2*(ab^3c^2d^2 + a^2b^2cd^3)*x)*\log(bx + a)*\lo \\
& g(dx + c) + 12*(b^4d^4x^4 + a^2b^2c^2d^2 + 2*(b^4cd^3 + ab^3d^4)* \\
& x^3 + (b^4c^2d^2 + 4ab^3cd^3 + a^2b^2d^4)x^2 + 2*(ab^3c^2d^2 + \\
& a^2b^2cd^3)*x)*\log(dx + c)^2 - 12*(b^4c^3d - ab^3c^2d^2 - a^2b^2* \\
& cd^3 + a^3bd^4)*x)*n*\log(e*(bx/(dx + c) + a/(dx + c))^n)/(a^2b^5c^7 \\
& *g^3i^3 - 5a^3b^4c^6dg^3i^3 + 10a^4b^3c^5d^2g^3i^3 - 10a^5b^ \\
& 2c^4d^3g^3i^3 + 5a^6b^3c^3d^4g^3i^3 - a^7c^2d^5g^3i^3 + (b^7c^ \\
& 5d^2g^3i^3 - 5ab^6c^4d^3g^3i^3 + 10a^2b^5c^3d^4g^3i^3 - 10a \\
& ^3b^4c^2d^5g^3i^3 + 5a^4b^3cd^6g^3i^3 - a^5b^2d^7g^3i^3)*x^4 \\
& + 2*(b^7c^6dg^3i^3 - 4ab^6c^5d^2g^3i^3 + 5a^2b^5c^4d^3g^3i^ \\
& ^3 - 5a^4b^3c^2d^5g^3i^3 + 4a^5b^2cd^6g^3i^3 - a^6bd^7g^3i^ \\
& 3)*x^3 + (b^7c^7g^3i^3 - ab^6c^6dg^3i^3 - 9a^2b^5c^5d^2g^3i^3 \\
& + 25a^3b^4c^4d^3g^3i^3 - 25a^4b^3c^3d^4g^3i^3 + 9a^5b^2c^2* \\
& d^5g^3i^3 + a^6b^3cd^6g^3i^3 - a^7d^7g^3i^3)*x^2 + 2*(ab^6c^7g^3 \\
& *i^3 - 4a^2b^5c^6dg^3i^3 + 5a^3b^4c^5d^2g^3i^3 - 5a^5b^2c^3* \\
& d^4g^3i^3 + 4a^6b^3c^2d^5g^3i^3 - a^7cd^6g^3i^3)*x))B^2 - 1/2*(b \\
& ^4c^4 - 16ab^3c^3d + 30a^2b^2c^2d^2 - 16a^3b^3cd^3 + a^4d^4 - 1 \\
& 2*(b^4c^2d^2 - 2ab^3cd^3 + a^2b^2d^4)x^2 + 12*(b^4d^4x^4 + a^2b \\
& ^2c^2d^2 + 2*(b^4cd^3 + ab^3d^4)x^3 + (b^4c^2d^2 + 4ab^3cd^3 +
\end{aligned}$$

$$\begin{aligned}
& a^2 b^2 d^4 x^2 + 2(a b^3 c^2 d^2 + a^2 b^2 c d^3) x \log(b x + a)^2 - 2 \\
& 4(b^4 d^4 x^4 + a^2 b^2 c^2 d^2 + 2(b^4 c d^3 + a b^3 d^4) x^3 + (b^4 c^2 \\
& d^2 + 4 a b^3 c d^3 + a^2 b^2 d^4) x^2 + 2(a b^3 c^2 d^2 + a^2 b^2 c d^3) \\
& x) \log(b x + a) \log(d x + c) + 12(b^4 d^4 x^4 + a^2 b^2 c^2 d^2 + 2(b^4 c \\
& d^3 + a b^3 d^4) x^3 + (b^4 c^2 d^2 + 4 a b^3 c d^3 + a^2 b^2 d^4) x^2 + \\
& 2(a b^3 c^2 d^2 + a^2 b^2 c d^3) x) \log(d x + c)^2 - 12(b^4 c^3 d - a b^3 \\
& c^2 d^2 - a^2 b^2 c d^3 + a^3 b d^4) x) A B n / (a^2 b^5 c^7 g^3 i^3 - 5 a^3 \\
& b^4 c^6 d g^3 i^3 + 10 a^4 b^3 c^5 d^2 g^3 i^3 - 10 a^5 b^2 c^4 d^3 g^3 i^3 \\
& + 5 a^6 b c^3 d^4 g^3 i^3 - a^7 c^2 d^5 g^3 i^3 + (b^7 c^5 d^2 g^3 i^3 - \\
& 5 a b^6 c^4 d^3 g^3 i^3 + 10 a^2 b^5 c^3 d^4 g^3 i^3 - 10 a^3 b^4 c^2 d^5 g \\
& ^3 i^3 + 5 a^4 b^3 c d^6 g^3 i^3 - a^5 b^2 d^7 g^3 i^3) x^4 + 2(b^7 c^6 d * \\
& g^3 i^3 - 4 a b^6 c^5 d^2 g^3 i^3 + 5 a^2 b^5 c^4 d^3 g^3 i^3 - 5 a^4 b^3 c \\
& ^2 d^5 g^3 i^3 + 4 a^5 b^2 c d^6 g^3 i^3 - a^6 b d^7 g^3 i^3) x^3 + (b^7 c^7 \\
& g^3 i^3 - a b^6 c^6 d g^3 i^3 - 9 a^2 b^5 c^5 d^2 g^3 i^3 + 25 a^3 b^4 c^4 \\
& d^3 g^3 i^3 - 25 a^4 b^3 c^3 d^4 g^3 i^3 + 9 a^5 b^2 c^2 d^5 g^3 i^3 + a^6 \\
& b c d^6 g^3 i^3 - a^7 d^7 g^3 i^3) x^2 + 2(a b^6 c^7 g^3 i^3 - 4 a^2 b^5 \\
& c^6 d g^3 i^3 + 5 a^3 b^4 c^5 d^2 g^3 i^3 - 5 a^5 b^2 c^3 d^4 g^3 i^3 + 4 a \\
& a^6 b c^2 d^5 g^3 i^3 - a^7 c d^6 g^3 i^3) x) + 1/2 A^2 ((12 b^3 d^3 x^3 - \\
& b^3 c^3 + 7 a b^2 c^2 d + 7 a^2 b c d^2 - a^3 d^3 + 18(b^3 c d^2 + a b^2 d \\
& ^3) x^2 + 4(b^3 c^2 d + 7 a b^2 c d^2 + a^2 b d^3) x) / ((b^6 c^4 d^2 - 4 a a \\
& b^5 c^3 d^3 + 6 a^2 b^4 c^2 d^4 - 4 a^3 b^3 c d^5 + a^4 b^2 d^6) g^3 i^3 x^4 \\
& + 2(b^6 c^5 d - 3 a b^5 c^4 d^2 + 2 a^2 b^4 c^3 d^3 + 2 a^3 b^3 c^2 d^4 \\
& - 3 a^4 b^2 c d^5 + a^5 b d^6) g^3 i^3 x^3 + (b^6 c^6 - 9 a^2 b^4 c^4 d^2 + \\
& 16 a^3 b^3 c^3 d^3 - 9 a^4 b^2 c^2 d^4 + a^6 d^6) g^3 i^3 x^2 + 2(a b^5 c \\
& ^6 - 3 a^2 b^4 c^5 d + 2 a^3 b^3 c^4 d^2 + 2 a^4 b^2 c^3 d^3 - 3 a^5 b c^2 \\
& d^4 + a^6 c d^5) g^3 i^3 x + (a^2 b^4 c^6 - 4 a^3 b^3 c^5 d + 6 a^4 b^2 c^4 \\
& d^2 - 4 a^5 b c^3 d^3 + a^6 c^2 d^4) g^3 i^3) + 12 b^2 d^2 \log(b x + a) / ((\\
& b^5 c^5 - 5 a b^4 c^4 d + 10 a^2 b^3 c^3 d^2 - 10 a^3 b^2 c^2 d^3 + 5 a^4 b \\
& c d^4 - a^5 d^5) g^3 i^3) - 12 b^2 d^2 \log(d x + c) / ((b^5 c^5 - 5 a b^4 c^4 \\
& d + 10 a^2 b^3 c^3 d^2 - 10 a^3 b^2 c^2 d^3 + 5 a^4 b c d^4 - a^5 d^5) g^3 \\
& i^3)
\end{aligned}$$

mupad [B] time = 11.67, size = 2419, normalized size = 3.30

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{int}((A + B \log(e((a + b x)/(c + d x))^n))^2 / ((a g + b g x)^3 (c i + d i x)^3), x)$

[Out] $((3 x^2 (6 A^2 a b^2 d^3 + 6 A^2 b^3 c d^2 + 15 B^2 a b^2 d^3 n^2 + 15 B^2 b^3 c d^2 n^2 - 4 A B a b^2 d^3 n + 4 A B b^3 c d^2 n)) / (a d - b c) - (2 A^2 a^3 d^3 + 2 A^2 b^3 c^3 + B^2 a^3 d^3 n^2 + B^2 b^3 c^3 n^2 - 14 A^2 a b^2 c^2 d - 14 A^2 a^2 b c d^2 - 2 A B a^3 d^3 n + 2 A B b^3 c^3 n - 31 B^2 a b^2 c^2 d n^2 - 31 B^2 a^2 b c d^2 n^2 - 30 A B a b^2 c^2 d n + 30 A B a^2$

$$\begin{aligned}
& *b*c*d^2*n)/(2*(a*d - b*c)) + (2*x*(2*A^2*a^2*b*d^3 + 2*A^2*b^3*c^2*d + 14* \\
& A^2*a*b^2*c*d^2 + 7*B^2*a^2*b*d^3*n^2 + 7*B^2*b^3*c^2*d*n^2 + 31*B^2*a*b^2* \\
& c*d^2*n^2 - 6*A*B*a^2*b*d^3*n + 6*A*B*b^3*c^2*d*n))/(a*d - b*c) + (6*x^3*(2 \\
& *A^2*b^3*d^3 + 5*B^2*b^3*d^3*n^2))/(a*d - b*c)/(x^4*(2*a^3*b^2*d^5*g^3*i^3 \\
& - 2*b^5*c^3*d^2*g^3*i^3 + 6*a*b^4*c^2*d^3*g^3*i^3 - 6*a^2*b^3*c*d^4*g^3*i^ \\
& 3) - x*(4*a*b^4*c^5*g^3*i^3 - 4*a^5*c*d^4*g^3*i^3 - 8*a^2*b^3*c^4*d*g^3*i^3 \\
& + 8*a^4*b*c^2*d^3*g^3*i^3) + x^3*(4*a^4*b*d^5*g^3*i^3 - 4*b^5*c^4*d*g^3*i^ \\
& 3 + 8*a*b^4*c^3*d^2*g^3*i^3 - 8*a^3*b^2*c*d^4*g^3*i^3) + x^2*(2*a^5*d^5*g^3 \\
& *i^3 - 2*b^5*c^5*g^3*i^3 - 2*a*b^4*c^4*d*g^3*i^3 + 2*a^4*b*c*d^4*g^3*i^3 + \\
& 16*a^2*b^3*c^3*d^2*g^3*i^3 - 16*a^3*b^2*c^2*d^3*g^3*i^3) - 2*a^2*b^3*c^5*g^ \\
& 3*i^3 + 2*a^5*c^2*d^3*g^3*i^3 + 6*a^3*b^2*c^4*d*g^3*i^3 - 6*a^4*b*c^3*d^2*g \\
& ^3*i^3) + \log(e*((a + b*x)/(c + d*x))^n)^2*((x*((3*B^2*b*d*(a*d + b*c)^2)/(\\
& a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2 - (B^2*b*d)/(a^2*d^2 + b^2*c^2 - 2*a*b*c*d \\
&)) + (6*B^2*a*b^2*c*d^2)/(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2 - (B^2*(a*d + b* \\
& c))/(2*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (6*B^2*b^3*d^3*x^3)/(a^2*d^2 + b^ \\
& 2*c^2 - 2*a*b*c*d)^2 + (9*B^2*b^2*d^2*x^2*(a*d + b*c))/(a^2*d^2 + b^2*c^2 - \\
& 2*a*b*c*d)^2 + (3*B^2*a*b*c*d*(a*d + b*c))/(a^2*d^2 + b^2*c^2 - 2*a*b*c*d) \\
& ^2)/(x*(2*a*b*c^2*g^3*i^3 + 2*a^2*c*d*g^3*i^3) + x^3*(2*a*b*d^2*g^3*i^3 + 2 \\
& *b^2*c*d*g^3*i^3) + x^2*(a^2*d^2*g^3*i^3 + b^2*c^2*g^3*i^3 + 4*a*b*c*d*g^3* \\
& i^3) + a^2*c^2*g^3*i^3 + b^2*d^2*g^3*i^3*x^4) - (6*A*B*b^2*d^2)/(g^3*i^3*n* \\
& (a*d - b*c)^5) + (\log(e*((a + b*x)/(c + d*x))^n)*(x*((6*(a*d + b*c)*(A*B*a \\
& *b*d^2 + A*B*b^2*c*d - B^2*a*b*d^2*n + B^2*b^2*c*d*n))/(a*d - b*c) - 2*A*B* \\
& a*b*d^2 + 2*A*B*b^2*c*d + (12*A*B*a*b^2*c*d^2)/(a*d - b*c)) + x^2*((6*b*d*(\\
& A*B*a*b*d^2 + A*B*b^2*c*d - B^2*a*b*d^2*n + B^2*b^2*c*d*n))/(a*d - b*c) + (\\
& 12*A*B*b^2*d^2*(a*d + b*c))/(a*d - b*c)) + (6*a*c*(A*B*a*b*d^2 + A*B*b^2*c* \\
& d - B^2*a*b*d^2*n + B^2*b^2*c*d*n))/(a*d - b*c) - A*B*a^2*d^2 + A*B*b^2*c^2 \\
& + (B^2*a^2*d^2*n)/2 + (B^2*b^2*c^2*n)/2 + (12*A*B*b^3*d^3*x^3)/(a*d - b*c) \\
& - B^2*a*b*c*d*n))/(x^4*(a^3*b^2*d^5*g^3*i^3 - b^5*c^3*d^2*g^3*i^3 + 3*a*b^ \\
& 4*c^2*d^3*g^3*i^3 - 3*a^2*b^3*c*d^4*g^3*i^3) - x*(2*a*b^4*c^5*g^3*i^3 - 2*a \\
& ^5*c*d^4*g^3*i^3 - 4*a^2*b^3*c^4*d*g^3*i^3 + 4*a^4*b*c^2*d^3*g^3*i^3) + x^3 \\
& *(2*a^4*b*d^5*g^3*i^3 - 2*b^5*c^4*d*g^3*i^3 + 4*a*b^4*c^3*d^2*g^3*i^3 - 4*a \\
& ^3*b^2*c*d^4*g^3*i^3) + x^2*(a^5*d^5*g^3*i^3 - b^5*c^5*g^3*i^3 - a*b^4*c^4* \\
& d*g^3*i^3 + a^4*b*c*d^4*g^3*i^3 + 8*a^2*b^3*c^3*d^2*g^3*i^3 - 8*a^3*b^2*c^2 \\
& *d^3*g^3*i^3) - a^2*b^3*c^5*g^3*i^3 + a^5*c^2*d^3*g^3*i^3 + 3*a^3*b^2*c^4*d \\
& *g^3*i^3 - 3*a^4*b*c^3*d^2*g^3*i^3) + (b^2*d^2*atan((b^2*d^2*((a^5*d^5*g^3* \\
& i^3 + b^5*c^5*g^3*i^3 - 3*a*b^4*c^4*d*g^3*i^3 - 3*a^4*b*c*d^4*g^3*i^3 + 2*a \\
& ^2*b^3*c^3*d^2*g^3*i^3 + 2*a^3*b^2*c^2*d^3*g^3*i^3))/(a^4*d^4*g^3*i^3 + b^4* \\
& c^4*g^3*i^3 - 4*a*b^3*c^3*d*g^3*i^3 - 4*a^3*b*c*d^3*g^3*i^3 + 6*a^2*b^2*c^2 \\
& *d^2*g^3*i^3) + 2*b*d*x)*(2*A^2 + 5*B^2*n^2)*(a^4*d^4*g^3*i^3 + b^4*c^4*g^3 \\
& *i^3 - 4*a*b^3*c^3*d*g^3*i^3 - 4*a^3*b*c*d^3*g^3*i^3 + 6*a^2*b^2*c^2*d^2*g^ \\
& 3*i^3)*3i)/(g^3*i^3*(6*A^2*b^2*d^2 + 15*B^2*b^2*d^2*n^2)*(a*d - b*c)^5)*(2 \\
& *A^2 + 5*B^2*n^2)*6i)/(g^3*i^3*(a*d - b*c)^5) - (2*B^2*b^2*d^2*log(e*((a + \\
& b*x)/(c + d*x))^n)^3)/(g^3*i^3*n*(a*d - b*c)^5)
\end{aligned}$$

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(b*g*x+a*g)**3/(d*i*x+c*i)**3, x)
```

```
[Out] Timed out
```

$$3.209 \quad \int \frac{\left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag+bgx)^4 (ci+dix)^3} dx$$

Optimal. Leaf size=908

$$\frac{2B^2n^2(c+dx)^3b^5}{27(bc-ad)^6g^4i^3(a+bx)^3} - \frac{(c+dx)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 b^5}{3(bc-ad)^6g^4i^3(a+bx)^3} - \frac{2Bn(c+dx)^3 \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) b^5}{9(bc-ad)^6g^4i^3(a+bx)^3} + \frac{4}{4}$$

[Out] $-1/4*B^2*d^5*n^2*(b*x+a)^2/(-a*d+b*c)^6/g^4/i^3/(d*x+c)^2-10*A*b*B*d^4*n*(b*x+a)/(-a*d+b*c)^6/g^4/i^3/(d*x+c)+10*b*B^2*d^4*n^2*(b*x+a)/(-a*d+b*c)^6/g^4/i^3/(d*x+c)-20*b^3*B^2*d^2*n^2*(d*x+c)/(-a*d+b*c)^6/g^4/i^3/(b*x+a)+5/4*b^4*B^2*d*n^2*(d*x+c)^2/(-a*d+b*c)^6/g^4/i^3/(b*x+a)^2-2/27*b^5*B^2*n^2*(d*x+c)^3/(-a*d+b*c)^6/g^4/i^3/(b*x+a)^3-10*b*B^2*d^4*n*(b*x+a)*\ln(e*((b*x+a)/(d*x+c))^n)/(-a*d+b*c)^6/g^4/i^3/(d*x+c)+1/2*B*d^5*n*(b*x+a)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^6/g^4/i^3/(d*x+c)^2-20*b^3*B*d^2*n*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^6/g^4/i^3/(b*x+a)+5/2*b^4*B*d*n*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^6/g^4/i^3/(b*x+a)^2-2/9*b^5*B*n*(d*x+c)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^6/g^4/i^3/(b*x+a)^3-1/2*d^5*(b*x+a)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^6/g^4/i^3/(d*x+c)^2+5*b*d^4*(b*x+a)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^6/g^4/i^3/(d*x+c)-10*b^3*d^2*(d*x+c)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^6/g^4/i^3/(b*x+a)+5/2*b^4*d*(d*x+c)^2*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^6/g^4/i^3/(b*x+a)^2-1/3*b^5*(d*x+c)^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^6/g^4/i^3/(b*x+a)^3-10/3*b^2*d^3*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^3/B/(-a*d+b*c)^6/g^4/i^3/n$

Rubi [C] time = 10.51, antiderivative size = 2610, normalized size of antiderivative = 2.87, number of steps used = 195, number of rules used = 31, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}} = 0.689$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)^4*(c*i + d*i*x)^3), x]

[Out] $(-2*b^2*B^2*n^2)/(27*(b*c - a*d)^3*g^4*i^3*(a + b*x)^3) + (37*b^2*B^2*d*n^2)/(36*(b*c - a*d)^4*g^4*i^3*(a + b*x)^2) - (319*b^2*B^2*d^2*n^2)/(18*(b*c - a*d)^5*g^4*i^3*(a + b*x)) - (B^2*d^3*n^2)/(4*(b*c - a*d)^4*g^4*i^3*(c + d*x)^2) - (19*b*B^2*d^3*n^2)/(2*(b*c - a*d)^5*g^4*i^3*(c + d*x)) - (245*b^2*B$

$$\begin{aligned}
& ^2*d^3*n^2*Log[a + b*x])/(9*(b*c - a*d)^6*g^4*i^3) + (10*A*b^2*B*d^3*n*Log[\\
& a + b*x]^2)/((b*c - a*d)^6*g^4*i^3) + (10*b^2*B^2*d^3*n^2*Log[a + b*x]^2)/(\\
& 3*(b*c - a*d)^6*g^4*i^3) + (10*b^2*B^2*d^3*Log[-((b*c - a*d)/(d*(a + b*x)) \\
&]*Log[e*((a + b*x)/(c + d*x))^n]^2)/((b*c - a*d)^6*g^4*i^3) + (10*b^2*B^2*d \\
& ^3*Log[a + b*x]*Log[e*((a + b*x)/(c + d*x))^n]^2)/((b*c - a*d)^6*g^4*i^3) - \\
& (2*b^2*B*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(9*(b*c - a*d)^3*g^4*i^ \\
& 3*(a + b*x)^3) + (11*b^2*B*d*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(6*(\\
& b*c - a*d)^4*g^4*i^3*(a + b*x)^2) - (47*b^2*B*d^2*n*(A + B*Log[e*((a + b*x) \\
& /((c + d*x))^n]))/(3*(b*c - a*d)^5*g^4*i^3*(a + b*x)) + (B*d^3*n*(A + B*Log[\\
& e*((a + b*x)/(c + d*x))^n]))/(2*(b*c - a*d)^4*g^4*i^3*(c + d*x)^2) + (9*b*B \\
& *d^3*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)^5*g^4*i^3*(c + \\
& d*x)) - (20*b^2*B*d^3*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) \\
&)/(3*(b*c - a*d)^6*g^4*i^3) - (b^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 \\
&)/(3*(b*c - a*d)^3*g^4*i^3*(a + b*x)^3) + (3*b^2*d*(A + B*Log[e*((a + b*x)/ \\
& (c + d*x))^n])^2)/(2*(b*c - a*d)^4*g^4*i^3*(a + b*x)^2) - (6*b^2*d^2*(A + B \\
& *Log[e*((a + b*x)/(c + d*x))^n])^2)/((b*c - a*d)^5*g^4*i^3*(a + b*x)) - (d^ \\
& 3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(2*(b*c - a*d)^4*g^4*i^3*(c + d \\
& *x)^2) - (4*b*d^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/((b*c - a*d)^5* \\
& g^4*i^3*(c + d*x)) - (10*b^2*d^3*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + \\
& d*x))^n])^2)/((b*c - a*d)^6*g^4*i^3) + (245*b^2*B^2*d^3*n^2*Log[c + d*x])/ \\
& (9*(b*c - a*d)^6*g^4*i^3) - (20*A*b^2*B*d^3*n*Log[-((d*(a + b*x))/(b*c - a*d \\
&))]*Log[c + d*x])/((b*c - a*d)^6*g^4*i^3) - (20*b^2*B^2*d^3*n^2*Log[-((d*(a \\
& + b*x))/(b*c - a*d))]*Log[c + d*x])/((b*c - a*d)^6*g^4*i^3) - (10*b^2*B^ \\
& 2*d^3*Log[(a + b*x)^n]^2*Log[c + d*x])/((b*c - a*d)^6*g^4*i^3) + (20*b^2*B* \\
& d^3*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x])/((b*c - a*d)^6 \\
& *g^4*i^3) + (10*b^2*d^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2*Log[c + d* \\
& x])/((b*c - a*d)^6*g^4*i^3) + (10*A*b^2*B*d^3*n*Log[c + d*x]^2)/((b*c - a*d \\
&)^6*g^4*i^3) + (10*b^2*B^2*d^3*n^2*Log[c + d*x]^2)/(3*(b*c - a*d)^6*g^4*i^3 \\
&) - (10*b^2*B^2*d^3*n^2*Log[a + b*x]*Log[c + d*x]^2)/((b*c - a*d)^6*g^4*i^3 \\
&) + (10*b^2*B^2*d^3*n*Log[e*((a + b*x)/(c + d*x))^n]*Log[c + d*x]^2)/((b*c \\
& - a*d)^6*g^4*i^3) + (10*b^2*B^2*d^3*n^2*Log[c + d*x]^3)/(3*(b*c - a*d)^6*g^ \\
& 4*i^3) - (20*A*b^2*B*d^3*n*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)]/((b \\
& *c - a*d)^6*g^4*i^3) - (20*b^2*B^2*d^3*n^2*Log[a + b*x]*Log[(b*(c + d*x))/ \\
& (b*c - a*d)]/((b*c - a*d)^6*g^4*i^3) + (10*b^2*B^2*d^3*Log[(a + b*x)^n]^2 \\
& *Log[(b*(c + d*x))/(b*c - a*d)]/((b*c - a*d)^6*g^4*i^3) - (20*b^2*B^2*d^3* \\
& n*Log[a + b*x]*Log[c + d*x]*Log[(c + d*x)^(-n)]/((b*c - a*d)^6*g^4*i^3) - \\
& (10*b^2*B^2*d^3*Log[a + b*x]*Log[(c + d*x)^(-n)]^2)/((b*c - a*d)^6*g^4*i^3) \\
& + (10*b^2*B^2*d^3*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[(c + d*x)^(-n)]^2 \\
&)/((b*c - a*d)^6*g^4*i^3) + (20*b^2*B^2*d^3*n*Log[-((d*(a + b*x))/(b*c - a*d \\
&))]*Log[c + d*x]*(Log[(a + b*x)^n] - Log[e*((a + b*x)/(c + d*x))^n] + Log[(\\
& c + d*x)^(-n)]))/((b*c - a*d)^6*g^4*i^3) - (20*A*b^2*B*d^3*n*PolyLog[2, -((\\
& d*(a + b*x))/(b*c - a*d))]/((b*c - a*d)^6*g^4*i^3) - (20*b^2*B^2*d^3*n^2*P \\
& olyLog[2, -((d*(a + b*x))/(b*c - a*d))]/((b*c - a*d)^6*g^4*i^3) + (20*b^ \\
& 2*B^2*d^3*n*Log[(a + b*x)^n]*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))]/((b* \\
& c - a*d)^6*g^4*i^3) - (20*A*b^2*B*d^3*n*PolyLog[2, (b*(c + d*x))/(b*c - a*d
\end{aligned}$$

$$\frac{1}{(b^2c - a^2d)^6 g^4 i^3} - \frac{(20b^2B^2d^3n^2 \text{PolyLog}[2, (b(c + dx)) / (b^2c - a^2d)])}{(3(b^2c - a^2d)^6 g^4 i^3) - (20b^2B^2d^3n \text{Log}[(c + dx)^{-n}] \text{PolyLog}[2, (b(c + dx)) / (b^2c - a^2d)])}{(b^2c - a^2d)^6 g^4 i^3} + (20b^2B^2d^3n (\text{Log}[(a + bx)^n] - \text{Log}[e((a + bx)/(c + dx))^n] + \text{Log}[(c + dx)^{-n}]) \text{PolyLog}[2, (b(c + dx)) / (b^2c - a^2d)])}{(b^2c - a^2d)^6 g^4 i^3} - (20b^2B^2d^3n \text{Log}[e((a + bx)/(c + dx))^n] \text{PolyLog}[2, 1 + (b^2c - a^2d)/(d(a + bx))])}{(b^2c - a^2d)^6 g^4 i^3} - (20b^2B^2d^3n^2 \text{PolyLog}[3, -((d(a + bx))/(b^2c - a^2d))])}{(b^2c - a^2d)^6 g^4 i^3} - (20b^2B^2d^3n^2 \text{PolyLog}[3, (b(c + dx))/(b^2c - a^2d)])}{(b^2c - a^2d)^6 g^4 i^3} - (20b^2B^2d^3n^2 \text{PolyLog}[3, 1 + (b^2c - a^2d)/(d(a + bx))])}{(b^2c - a^2d)^6 g^4 i^3}$$

Rule 12

$$\text{Int}[(a_*)(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] \text{ /; FreeQ}[a, x] \ \&\& \ !\text{MatchQ}[u, (b_*)(v_)] \text{ /; FreeQ}[b, x]$$

Rule 30

$$\text{Int}[(x_)^{(m_.)}, x_Symbol] \rightarrow \text{Simp}[x^{(m + 1)}/(m + 1), x] \text{ /; FreeQ}[m, x] \ \&\& \ \text{NeQ}[m, -1]$$

Rule 44

$$\text{Int}[(a_*) + (b_*)(x_)^{(m_.)} * ((c_.) + (d_*)(x_)^{(n_.)}), x_Symbol] \rightarrow \text{Int}[\text{ExpandIntegrand}[(a + bx)^m (c + dx)^n, x], x] \text{ /; FreeQ}[\{a, b, c, d\}, x] \ \&\& \ \text{NeQ}[b^2c - a^2d, 0] \ \&\& \ \text{ILtQ}[m, 0] \ \&\& \ \text{IntegerQ}[n] \ \&\& \ !(\text{IGtQ}[n, 0] \ \&\& \ \text{LtQ}[m + n + 2, 0])$$

Rule 2301

$$\text{Int}[(a_*) + \text{Log}[(c_*)(x_)^{(n_.)}] * (b_*) / (x_), x_Symbol] \rightarrow \text{Simp}[(a + b \text{Log}[c * x^n])^2 / (2 * b * n), x] \text{ /; FreeQ}[\{a, b, c, n\}, x]$$

Rule 2302

$$\text{Int}[(a_*) + \text{Log}[(c_*)(x_)^{(n_.)}] * (b_*)^{(p_.)} / (x_), x_Symbol] \rightarrow \text{Dist}[1/(b^n), \text{Subst}[\text{Int}[x^p, x], x, a + b \text{Log}[c * x^n]], x] \text{ /; FreeQ}[\{a, b, c, n, p\}, x]$$

Rule 2317

$$\text{Int}[(a_*) + \text{Log}[(c_*)(x_)^{(n_.)}] * (b_*)^{(p_.)} / ((d_*) + (e_*)(x_)), x_Symbol] \rightarrow \text{Simp}[(\text{Log}[1 + (e * x)/d] * (a + b \text{Log}[c * x^n])^p) / e, x] - \text{Dist}[(b * n * p) / e, \text{Int}[(\text{Log}[1 + (e * x)/d] * (a + b \text{Log}[c * x^n])^{(p - 1)}) / x, x], x] \text{ /; FreeQ}[\{a, b$$

, c, d, e, n}, x] && IGtQ[p, 0]

Rule 2344

Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
x_Symbol] := Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]

Rule 2374

Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*(a_.) + Log[(c_.)*(x_)^(n_.)]*(b
.))^(p.)/(x_), x_Symbol] := -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]

Rule 2375

Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]^(r_.))*((a_.) + Log[(c_.)*(x_)^(n
.)]*(b.))^(p_.)/(x_), x_Symbol] := Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]

Rule 2390

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] := Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]

Rule 2391

Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] := -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]

Rule 2393

Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] := Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
, x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.)*(x_)), x_Symbol] := Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])^p/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + (g_.)*(x_))^(q_)*((h_.) + (i_.)*(x_))^(r_), x_Symbol] := Dist[1/e, Subst[Int[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*(RFx_), x_Symbol] := With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]}, Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_), x_Symbol] := Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(e*i - d*j)/e + (j*x)/e]^m), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] := Simp[Log[x]*(a + b*Log[c*(d + e*x)^n]*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Log[x]*(a + b*Log[c*(d + e*x)^n])/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x]*(f + g*Log[h*(i + j*x)^m))]/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
```


, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]

Rule 2440

Int[((a_.) + Log[(c_.)*((d_.) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.) *((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Symbol] := Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n)]*(f + g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]

Rule 2488

Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] := -Simp[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/h, x] + Dist[(p*r*s*(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1)/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c, d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ[b*g - a*h, 0] && IGtQ[s, 0]

Rule 2499

Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]*(s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.) + (k_.)*(x_)), x_Symbol] := Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r])/((k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dist[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x), x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r}, x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]

Rule 2500

Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]*(s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))/((j_.) + (k_.)*(x_)), x_Symbol] := Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r] - Log[(a + b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x), x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ[b*c - a*d, 0]

Rule 2506

Int[Log[v_] * Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))

```
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] := With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1)/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)
^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^u]*(v_), x_S
ymbol] := With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
h*x)^t]^u)*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s + 1)/(p*r*(s + 1)*(b*c
- a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q]^r]^s + 1)/(g + h*x), x], x] /; FreeQ[k, x] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^n_)/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^n_)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] := Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^n_)*(RGx_), x_Symbol] := With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] := Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
```

, e, n, p}, x] && EqQ[b*d, a*e]

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] := With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /; !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] := With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] := With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(209c + 209dx)^3(ag + bgx)^4} dx = -\frac{2b^2B^2n^2}{246491883(bc - ad)^3g^4(a + bx)^3} + \frac{37b^2B^2dn^2}{328655844(bc - ad)^4g^4(a + bx)^2} - \frac{1}{1}$$

Mathematica [B] time = 4.25, size = 2138, normalized size = 2.35

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)^4*(c*i +
d*i*x)^3),x]
```

```
[Out] -1/108*(360*b^2*B^2*d^3*n^2*(a + b*x)^3*(c + d*x)^2*Log[(a + b*x)/(c + d*x)
]^3 + 18*B*n*Log[(a + b*x)/(c + d*x)]^2*(60*a^3*A*b^2*c^2*d^3 + 2*b^5*B*c^5
*n - 15*a*b^4*B*c^4*d*n + 60*a^2*b^3*B*c^3*d^2*n - 30*a^4*b*B*c*d^4*n + 3*a
^5*B*d^5*n + 180*a^2*A*b^3*c^2*d^3*x + 120*a^3*A*b^2*c*d^4*x - 5*b^5*B*c^4*
d*n*x + 60*a*b^4*B*c^3*d^2*n*x + 180*a^2*b^3*B*c^2*d^3*n*x - 120*a^3*b^2*B*
c*d^4*n*x - 15*a^4*b*B*d^5*n*x + 180*a*A*b^4*c^2*d^3*x^2 + 360*a^2*A*b^3*c*
d^4*x^2 + 60*a^3*A*b^2*d^5*x^2 + 20*b^5*B*c^3*d^2*n*x^2 + 270*a*b^4*B*c^2*d
^3*n*x^2 - 90*a^3*b^2*B*d^5*n*x^2 + 60*A*b^5*c^2*d^3*x^3 + 360*a*A*b^4*c*d^
4*x^3 + 180*a^2*A*b^3*d^5*x^3 + 110*b^5*B*c^2*d^3*n*x^3 + 180*a*b^4*B*c*d^4
*n*x^3 - 90*a^2*b^3*B*d^5*n*x^3 + 120*A*b^5*c*d^4*x^4 + 180*a*A*b^4*d^5*x^4
```

$$\begin{aligned}
& + 100*b^5*B*c*d^4*n*x^4 + 60*A*b^5*d^5*x^5 + 20*b^5*B*d^5*n*x^5 + 60*b^2*B \\
& *d^3*(a + b*x)^3*(c + d*x)^2*\text{Log}[e*((a + b*x)/(c + d*x))^n] - 60*b^2*B*d^3* \\
& n*(a + b*x)^3*(c + d*x)^2*\text{Log}[(a + b*x)/(c + d*x)] + 6*b^2*d^2*(b*c - a*d) \\
& *(a + b*x)^2*(c + d*x)^2*(108*A^2 + 282*A*B*n + 319*B^2*n^2 + 108*B^2*\text{Log}[e \\
& *((a + b*x)/(c + d*x))^n]^2 - 6*B*n*(36*A + 47*B*n)*\text{Log}[(a + b*x)/(c + d*x) \\
&] + 108*B^2*n^2*\text{Log}[(a + b*x)/(c + d*x)]^2 + 6*B*\text{Log}[e*((a + b*x)/(c + d*x) \\
&)^n]*(36*A + 47*B*n - 36*B*n*\text{Log}[(a + b*x)/(c + d*x)])) - 3*b^2*d*(b*c - a* \\
& d)^2*(a + b*x)*(c + d*x)^2*(54*A^2 + 66*A*B*n + 37*B^2*n^2 + 54*B^2*\text{Log}[e*(\\
& (a + b*x)/(c + d*x))^n]^2 - 6*B*n*(18*A + 11*B*n)*\text{Log}[(a + b*x)/(c + d*x)] \\
& + 54*B^2*n^2*\text{Log}[(a + b*x)/(c + d*x)]^2 + 6*B*\text{Log}[e*((a + b*x)/(c + d*x))^n \\
&]*(18*A + 11*B*n - 18*B*n*\text{Log}[(a + b*x)/(c + d*x)])) + 4*b^2*(b*c - a*d)^3* \\
& (c + d*x)^2*(9*A^2 + 6*A*B*n + 2*B^2*n^2 + 9*B^2*\text{Log}[e*((a + b*x)/(c + d*x) \\
&)^n]^2 - 6*B*n*(3*A + B*n)*\text{Log}[(a + b*x)/(c + d*x)] + 9*B^2*n^2*\text{Log}[(a + b* \\
& x)/(c + d*x)]^2 + 6*B*\text{Log}[e*((a + b*x)/(c + d*x))^n]*(3*A + B*n - 3*B*n*\text{Log} \\
& [(a + b*x)/(c + d*x)])) + 60*b^2*d^3*(a + b*x)^3*(c + d*x)^2*\text{Log}[a + b*x]*(\\
& 18*A^2 + 12*A*B*n + 49*B^2*n^2 + 18*B^2*\text{Log}[e*((a + b*x)/(c + d*x))^n]^2 - \\
& 12*B*n*(3*A + B*n)*\text{Log}[(a + b*x)/(c + d*x)] + 18*B^2*n^2*\text{Log}[(a + b*x)/(c + \\
& d*x)]^2 + 12*B*\text{Log}[e*((a + b*x)/(c + d*x))^n]*(3*A + B*n - 3*B*n*\text{Log}[(a + \\
& b*x)/(c + d*x)])) + 27*d^3*(b*c - a*d)^2*(a + b*x)^3*(2*A^2 - 2*A*B*n + B^2 \\
& *n^2 + 2*B^2*\text{Log}[e*((a + b*x)/(c + d*x))^n]^2 + 2*B*n*(-2*A + B*n)*\text{Log}[(a + \\
& b*x)/(c + d*x)] + 2*B^2*n^2*\text{Log}[(a + b*x)/(c + d*x)]^2 - 2*B*\text{Log}[e*((a + b \\
& *x)/(c + d*x))^n]*(-2*A + B*n + 2*B*n*\text{Log}[(a + b*x)/(c + d*x)])) + 54*b*d^3 \\
& *(b*c - a*d)*(a + b*x)^3*(c + d*x)*(8*A^2 - 18*A*B*n + 19*B^2*n^2 + 8*B^2*L \\
& og[e*((a + b*x)/(c + d*x))^n]^2 + 2*B*n*(-8*A + 9*B*n)*\text{Log}[(a + b*x)/(c + d \\
& *x)] + 8*B^2*n^2*\text{Log}[(a + b*x)/(c + d*x)]^2 - 2*B*\text{Log}[e*((a + b*x)/(c + d*x) \\
&)^n]*(-8*A + 9*B*n + 8*B*n*\text{Log}[(a + b*x)/(c + d*x)])) + 6*B*(b*c - a*d)*n* \\
& \text{Log}[(a + b*x)/(c + d*x)]*(18*b*d^3*(a + b*x)^3*(c + d*x)*(8*A - 9*B*n + 8*B \\
& *\text{Log}[e*((a + b*x)/(c + d*x))^n] - 8*B*n*\text{Log}[(a + b*x)/(c + d*x)])) + 4*b^2*(\\
& b*c - a*d)^2*(c + d*x)^2*(3*A + B*n + 3*B*\text{Log}[e*((a + b*x)/(c + d*x))^n] - \\
& 3*B*n*\text{Log}[(a + b*x)/(c + d*x)] + 9*d^3*(b*c - a*d)*(a + b*x)^3*(2*A - B*n \\
& + 2*B*\text{Log}[e*((a + b*x)/(c + d*x))^n] - 2*B*n*\text{Log}[(a + b*x)/(c + d*x)] - 3* \\
& b^2*d*(b*c - a*d)*(a + b*x)*(c + d*x)^2*(18*A + 11*B*n + 18*B*(\text{Log}[e*((a + \\
& b*x)/(c + d*x))^n] - n*\text{Log}[(a + b*x)/(c + d*x)])) + 6*b^2*d^2*(a + b*x)^2*(\\
& c + d*x)^2*(36*A + 47*B*n + 36*B*(\text{Log}[e*((a + b*x)/(c + d*x))^n] - n*\text{Log}[(a \\
& + b*x)/(c + d*x)])) - 60*b^2*d^3*(a + b*x)^3*(c + d*x)^2*(18*A^2 + 12*A*B \\
& *n + 49*B^2*n^2 + 18*B^2*\text{Log}[e*((a + b*x)/(c + d*x))^n]^2 - 12*B*n*(3*A + B \\
& *n)*\text{Log}[(a + b*x)/(c + d*x)] + 18*B^2*n^2*\text{Log}[(a + b*x)/(c + d*x)]^2 + 12*B \\
& *\text{Log}[e*((a + b*x)/(c + d*x))^n]*(3*A + B*n - 3*B*n*\text{Log}[(a + b*x)/(c + d*x) \\
&))*\text{Log}[c + d*x])/((b*c - a*d)^6*g^4*i^3*(a + b*x)^3*(c + d*x)^2)
\end{aligned}$$

fricas [B] time = 1.22, size = 4725, normalized size = 5.20

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^4/(d*i*x+c*i)^3,x,
algorithm="fricas")

[Out]
$$-1/108*(36*A^2*b^5*c^5 - 270*A^2*a*b^4*c^4*d + 1080*A^2*a^2*b^3*c^3*d^2 - 360*A^2*a^3*b^2*c^2*d^3 - 540*A^2*a^4*b*c*d^4 + 54*A^2*a^5*d^5 + 60*(18*A^2*b^5*c*d^4 - 18*A^2*a*b^4*d^5 + 49*(B^2*b^5*c*d^4 - B^2*a*b^4*d^5)*n^2 + 12*(A*B*b^5*c*d^4 - A*B*a*b^4*d^5)*n)*x^4 + 30*(54*A^2*b^5*c^2*d^3 + 36*A^2*a*b^4*c*d^4 - 90*A^2*a^2*b^3*d^5 + (159*B^2*b^5*c^2*d^3 + 74*B^2*a*b^4*c*d^4 - 233*B^2*a^2*b^3*d^5)*n^2 + 24*(3*A*B*b^5*c^2*d^3 - 2*A*B*a*b^4*c*d^4 - A*B*a^2*b^3*d^5)*n)*x^3 + 360*(B^2*b^5*d^5*n^2*x^5 + B^2*a^3*b^2*c^2*d^3*n^2 + (2*B^2*b^5*c*d^4 + 3*B^2*a*b^4*d^5)*n^2*x^4 + (B^2*b^5*c^2*d^3 + 6*B^2*a*b^4*c*d^4 + 3*B^2*a^2*b^3*d^5)*n^2*x^3 + (3*B^2*a*b^4*c^2*d^3 + 6*B^2*a^2*b^3*c*d^4 + B^2*a^3*b^2*d^5)*n^2*x^2 + (3*B^2*a^2*b^3*c^2*d^3 + 2*B^2*a^3*b^2*c*d^4)*n^2*x)*log((b*x + a)/(d*x + c))^3 + (8*B^2*b^5*c^5 - 135*B^2*a*b^4*c^4*d + 2160*B^2*a^2*b^3*c^3*d^2 - 980*B^2*a^3*b^2*c^2*d^3 - 1080*B^2*a^4*b*c*d^4 + 27*B^2*a^5*d^5)*n^2 + 10*(36*A^2*b^5*c^3*d^2 + 378*A^2*a*b^4*c^2*d^3 - 216*A^2*a^2*b^3*c*d^4 - 198*A^2*a^3*b^2*d^5 + (170*B^2*b^5*c^3*d^2 + 921*B^2*a*b^4*c^2*d^3 - 588*B^2*a^2*b^3*c*d^4 - 503*B^2*a^3*b^2*d^5)*n^2 + 12*(11*A*B*b^5*c^3*d^2 + 21*A*B*a*b^4*c^2*d^3 - 39*A*B*a^2*b^3*c*d^4 + 7*A*B*a^3*b^2*d^5)*n)*x^2 + 18*(2*B^2*b^5*c^5 - 15*B^2*a*b^4*c^4*d + 60*B^2*a^2*b^3*c^3*d^2 - 20*B^2*a^3*b^2*c^2*d^3 - 30*B^2*a^4*b*c*d^4 + 3*B^2*a^5*d^5 + 60*(B^2*b^5*c*d^4 - B^2*a*b^4*d^5)*x^4 + 30*(3*B^2*b^5*c^2*d^3 + 2*B^2*a*b^4*c*d^4 - 5*B^2*a^2*b^3*d^5)*x^3 + 10*(2*B^2*b^5*c^3*d^2 + 21*B^2*a*b^4*c^2*d^3 - 12*B^2*a^2*b^3*c*d^4 - 11*B^2*a^3*b^2*d^5)*x^2 - 5*(B^2*b^5*c^4*d - 12*B^2*a*b^4*c^3*d^2 - 24*B^2*a^2*b^3*c^2*d^3 + 32*B^2*a^3*b^2*c*d^4 + 3*B^2*a^4*b*d^5)*x + 60*(B^2*b^5*d^5*x^5 + B^2*a^3*b^2*c^2*d^3 + (2*B^2*b^5*c*d^4 + 3*B^2*a*b^4*d^5)*x^4 + (B^2*b^5*c^2*d^3 + 6*B^2*a*b^4*c*d^4 + 3*B^2*a^2*b^3*d^5)*x^3 + (3*B^2*a*b^4*c^2*d^3 + 6*B^2*a^2*b^3*c*d^4 + B^2*a^3*b^2*d^5)*x^2 + (3*B^2*a^2*b^3*c^2*d^3 + 2*B^2*a^3*b^2*c*d^4)*x)*log((b*x + a)/(d*x + c))*log(e)^2 + 18*(60*A*B*a^3*b^2*c^2*d^3*n + 20*(B^2*b^5*d^5*n^2 + 3*A*B*b^5*d^5*n)*x^5 + 20*(5*B^2*b^5*c*d^4*n^2 + 3*(2*A*B*b^5*c*d^4 + 3*A*B*a*b^4*d^5)*n)*x^4 + 10*((11*B^2*b^5*c^2*d^3 + 18*B^2*a*b^4*c*d^4 - 9*B^2*a^2*b^3*d^5)*n^2 + 6*(A*B*b^5*c^2*d^3 + 6*A*B*a*b^4*c*d^4 + 3*A*B*a^2*b^3*d^5)*n)*x^3 + (2*B^2*b^5*c^5 - 15*B^2*a*b^4*c^4*d + 60*B^2*a^2*b^3*c^3*d^2 - 30*B^2*a^4*b*c*d^4 + 3*B^2*a^5*d^5)*n^2 + 10*((2*B^2*b^5*c^3*d^2 + 27*B^2*a*b^4*c^2*d^3 - 9*B^2*a^3*b^2*d^5)*n^2 + 6*(3*A*B*a*b^4*c^2*d^3 + 6*A*B*a^2*b^3*c*d^4 + A*B*a^3*b^2*d^5)*n)*x^2 - 5*((B^2*b^5*c^4*d - 12*B^2*a*b^4*c^3*d^2 - 36*B^2*a^2*b^3*c^2*d^3 + 24*B^2*a^3*b^2*c*d^4 + 3*B^2*a^4*b*d^5)*n^2 - 12*(3*A*B*a^2*b^3*c^2*d^3 + 2*A*B*a^3*b^2*c*d^4)*n)*x)*log((b*x + a)/(d*x + c))^2 + 6*(4*A*B*b^5*c^5 - 45*A*B*a*b^4*c^4*d + 360*A*B*a^2*b^3*c^3*d^2 - 490*A*B*a^3*b^2*c^2*d^3 + 180*A*B*a^4*b*c*d^4 - 9*A*B*a^5*d^5)*n - 5*(18*A^2*b^5*c^4*d - 216*A^2*a*b^4*c^3*d^2 - 432*A^2*a^2*b^3*c^2*d^3 + 576*A^2*a^3*b^2*c*d^4 + 54*A^2*a^4*b*d^5 + (19*B^2*b^5*c^4*d - 756*B^2*a*b^4*c^3*d^2 - 708*B^2*a^2*b^3*c^2*d^3 + 1256*B^2*a^3*b^2*c*d^4 + 189*B^2*a^4*b*d^5)*n^2 + 6*(5*A*B*b^5*c^4*d - 108*A*B*a*b^4*c^3*d^2 + 78*A*B*a^2*b^3*c^2*d^3 +$$

$$\begin{aligned}
& 52*A*B*a^3*b^2*c*d^4 - 27*A*B*a^4*b*d^5)*n)*x + 6*(12*A*B*b^5*c^5 - 90*A*B* \\
& a*b^4*c^4*d + 360*A*B*a^2*b^3*c^3*d^2 - 120*A*B*a^3*b^2*c^2*d^3 - 180*A*B*a \\
& ^4*b*c*d^4 + 18*A*B*a^5*d^5 + 120*(3*A*B*b^5*c^4*d^4 - 3*A*B*a*b^4*d^5 + (B^2 \\
& *b^5*c^4*d^4 - B^2*a*b^4*d^5)*n)*x^4 + 60*(9*A*B*b^5*c^2*d^3 + 6*A*B*a*b^4*c* \\
& d^4 - 15*A*B*a^2*b^3*d^5 + 2*(3*B^2*b^5*c^2*d^3 - 2*B^2*a*b^4*c*d^4 - B^2*a \\
& ^2*b^3*d^5)*n)*x^3 + 20*(6*A*B*b^5*c^3*d^2 + 63*A*B*a*b^4*c^2*d^3 - 36*A*B* \\
& a^2*b^3*c*d^4 - 33*A*B*a^3*b^2*d^5 + (11*B^2*b^5*c^3*d^2 + 21*B^2*a*b^4*c^2 \\
& *d^3 - 39*B^2*a^2*b^3*c*d^4 + 7*B^2*a^3*b^2*d^5)*n)*x^2 + 180*(B^2*b^5*d^5* \\
& n*x^5 + B^2*a^3*b^2*c^2*d^3*n + (2*B^2*b^5*c^4*d^4 + 3*B^2*a*b^4*d^5)*n*x^4 + \\
& (B^2*b^5*c^2*d^3 + 6*B^2*a*b^4*c*d^4 + 3*B^2*a^2*b^3*d^5)*n*x^3 + (3*B^2*a \\
& *b^4*c^2*d^3 + 6*B^2*a^2*b^3*c*d^4 + B^2*a^3*b^2*d^5)*n*x^2 + (3*B^2*a^2*b^ \\
& 3*c^2*d^3 + 2*B^2*a^3*b^2*c*d^4)*n*x)*log((b*x + a)/(d*x + c))^2 + (4*B^2*b \\
& ^5*c^5 - 45*B^2*a*b^4*c^4*d + 360*B^2*a^2*b^3*c^3*d^2 - 490*B^2*a^3*b^2*c^2 \\
& *d^3 + 180*B^2*a^4*b*c*d^4 - 9*B^2*a^5*d^5)*n - 5*(6*A*B*b^5*c^4*d - 72*A*B \\
& *a*b^4*c^3*d^2 - 144*A*B*a^2*b^3*c^2*d^3 + 192*A*B*a^3*b^2*c*d^4 + 18*A*B*a \\
& ^4*b*d^5 + (5*B^2*b^5*c^4*d - 108*B^2*a*b^4*c^3*d^2 + 78*B^2*a^2*b^3*c^2*d^ \\
& 3 + 52*B^2*a^3*b^2*c*d^4 - 27*B^2*a^4*b*d^5)*n)*x + 6*(60*A*B*a^3*b^2*c^2*d \\
& ^3 + 20*(B^2*b^5*d^5*n + 3*A*B*b^5*d^5)*x^5 + 20*(5*B^2*b^5*c^4*d^4*n + 6*A*B \\
& *b^5*c^4*d^4 + 9*A*B*a*b^4*d^5)*x^4 + 10*(6*A*B*b^5*c^2*d^3 + 36*A*B*a*b^4*c* \\
& d^4 + 18*A*B*a^2*b^3*d^5 + (11*B^2*b^5*c^2*d^3 + 18*B^2*a*b^4*c*d^4 - 9*B^2 \\
& *a^2*b^3*d^5)*n)*x^3 + 10*(18*A*B*a*b^4*c^2*d^3 + 36*A*B*a^2*b^3*c*d^4 + 6* \\
& A*B*a^3*b^2*d^5 + (2*B^2*b^5*c^3*d^2 + 27*B^2*a*b^4*c^2*d^3 - 9*B^2*a^3*b^2 \\
& *d^5)*n)*x^2 + (2*B^2*b^5*c^5 - 15*B^2*a*b^4*c^4*d + 60*B^2*a^2*b^3*c^3*d^2 \\
& - 30*B^2*a^4*b*c*d^4 + 3*B^2*a^5*d^5)*n + 5*(36*A*B*a^2*b^3*c^2*d^3 + 24*A \\
& *B*a^3*b^2*c*d^4 - (B^2*b^5*c^4*d - 12*B^2*a*b^4*c^3*d^2 - 36*B^2*a^2*b^3*c \\
& ^2*d^3 + 24*B^2*a^3*b^2*c*d^4 + 3*B^2*a^4*b*d^5)*n)*x)*log((b*x + a)/(d*x + \\
& c))*log(e) + 6*(180*A^2*a^3*b^2*c^2*d^3 + 10*(49*B^2*b^5*d^5*n^2 + 12*A*B \\
& *b^5*d^5*n + 18*A^2*b^5*d^5)*x^5 + 10*(60*A*B*b^5*c^4*d^4*n + 36*A^2*b^5*c^4*d^ \\
& 4 + 54*A^2*a*b^4*d^5 + 5*(22*B^2*b^5*c^4*d^4 + 27*B^2*a*b^4*d^5)*n^2)*x^4 + 1 \\
& 0*(18*A^2*b^5*c^2*d^3 + 108*A^2*a*b^4*c*d^4 + 54*A^2*a^2*b^3*d^5 + 5*(17*B^ \\
& 2*b^5*c^2*d^3 + 54*B^2*a*b^4*c*d^4 + 27*B^2*a^2*b^3*d^5)*n^2 + 6*(11*A*B*b^ \\
& 5*c^2*d^3 + 18*A*B*a*b^4*c*d^4 - 9*A*B*a^2*b^3*d^5)*n)*x^3 + (4*B^2*b^5*c^5 \\
& - 45*B^2*a*b^4*c^4*d + 360*B^2*a^2*b^3*c^3*d^2 + 180*B^2*a^4*b*c*d^4 - 9*B \\
& ^2*a^5*d^5)*n^2 + 10*(54*A^2*a*b^4*c^2*d^3 + 108*A^2*a^2*b^3*c*d^4 + 18*A^2 \\
& *a^3*b^2*d^5 + (22*B^2*b^5*c^3*d^2 + 189*B^2*a*b^4*c^2*d^3 + 216*B^2*a^2*b^ \\
& 3*c^2*d^4 + 63*B^2*a^3*b^2*d^5)*n^2 + 6*(2*A*B*b^5*c^3*d^2 + 27*A*B*a*b^4*c^2 \\
& *d^3 - 9*A*B*a^3*b^2*d^5)*n)*x^2 + 6*(2*A*B*b^5*c^5 - 15*A*B*a*b^4*c^4*d + \\
& 60*A*B*a^2*b^3*c^3*d^2 - 30*A*B*a^4*b*c*d^4 + 3*A*B*a^5*d^5)*n + 5*(108*A^2 \\
& *a^2*b^3*c^2*d^3 + 72*A^2*a^3*b^2*c*d^4 - (5*B^2*b^5*c^4*d - 108*B^2*a*b^4* \\
& c^3*d^2 - 216*B^2*a^2*b^3*c^2*d^3 - 144*B^2*a^3*b^2*c*d^4 - 27*B^2*a^4*b*d^ \\
& 5)*n^2 - 6*(A*B*b^5*c^4*d - 12*A*B*a*b^4*c^3*d^2 - 36*A*B*a^2*b^3*c^2*d^3 + \\
& 24*A*B*a^3*b^2*c*d^4 + 3*A*B*a^4*b*d^5)*n)*x)*log((b*x + a)/(d*x + c)))/((\\
& b^9*c^6*d^2 - 6*a*b^8*c^5*d^3 + 15*a^2*b^7*c^4*d^4 - 20*a^3*b^6*c^3*d^5 + 1 \\
& 5*a^4*b^5*c^2*d^6 - 6*a^5*b^4*c*d^7 + a^6*b^3*d^8)*g^4*i^3*x^5 + (2*b^9*c^7 \\
& *d - 9*a*b^8*c^6*d^2 + 12*a^2*b^7*c^5*d^3 + 5*a^3*b^6*c^4*d^4 - 30*a^4*b^5*
\end{aligned}$$

$$c^3d^5 + 33a^5b^4c^2d^6 - 16a^6b^3c^2d^7 + 3a^7b^2d^8)g^4i^3x^4 + (b^9c^8 - 18a^2b^7c^6d^2 + 52a^3b^6c^5d^3 - 60a^4b^5c^4d^4 + 24a^5b^4c^3d^5 + 10a^6b^3c^2d^6 - 12a^7b^2c^2d^7 + 3a^8b^2d^8)g^4i^3x^3 + (3ab^8c^8 - 12a^2b^7c^7d + 10a^3b^6c^6d^2 + 24a^4b^5c^5d^3 - 60a^5b^4c^4d^4 + 52a^6b^3c^3d^5 - 18a^7b^2c^2d^6 + a^9d^8)g^4i^3x^2 + (3a^2b^7c^8 - 16a^3b^6c^7d + 33a^4b^5c^6d^2 - 30a^5b^4c^5d^3 + 5a^6b^3c^4d^4 + 12a^7b^2c^3d^5 - 9a^8b^2c^2d^6 + 2a^9c^2d^7)g^4i^3x + (a^3b^6c^8 - 6a^4b^5c^7d + 15a^5b^4c^6d^2 - 20a^6b^3c^5d^3 + 15a^7b^2c^4d^4 - 6a^8b^2c^3d^5 + a^9c^2d^6)g^4i^3$$

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^4/(d*i*x+c*i)^3,x, algorithm="giac")

[Out] Timed out

maple [F] time = 0.48, size = 0, normalized size = 0.00

$$\int \frac{\left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)^2}{(bgx + ag)^4 (dix + ci)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^4/(d*i*x+c*i)^3,x)

[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^4/(d*i*x+c*i)^3,x)

maxima [B] time = 11.58, size = 9293, normalized size = 10.23

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^4/(d*i*x+c*i)^3,x, algorithm="maxima")

[Out] -1/6*B^2*((60*b^4*d^4*x^4 + 2*b^4*c^4 - 13*a*b^3*c^3*d + 47*a^2*b^2*c^2*d^2 + 27*a^3*b*c*d^3 - 3*a^4*d^4 + 30*(3*b^4*c*d^3 + 5*a*b^3*d^4)*x^3 + 10*(2*b^4*c^2*d^2 + 23*a*b^3*c*d^3 + 11*a^2*b^2*d^4)*x^2 - 5*(b^4*c^3*d - 11*a*b^

$$\begin{aligned}
& (3c^2d^2 - 35a^2b^2c^3d^3 - 3a^3b^4d^4) * x) / ((b^8c^5d^2 - 5a^2b^7c^4d^3 + 10a^2b^6c^3d^4 - 10a^3b^5c^2d^5 + 5a^4b^4c^2d^6 - a^5b^3c^2d^7) * g^4 * i^3 * x^5 + (2b^8c^6d - 7a^2b^7c^5d^2 + 5a^2b^6c^4d^3 + 10a^3b^5c^3d^4 - 20a^4b^4c^2d^5 + 13a^5b^3c^2d^6 - 3a^6b^2c^2d^7) * g^4 * i^3 * x^4 + (b^8c^7 + a^2b^7c^6d - 17a^2b^6c^5d^2 + 35a^3b^5c^4d^3 - 25a^4b^4c^3d^4 - a^5b^3c^2d^5 + 9a^6b^2c^2d^6 - 3a^7b^2d^7) * g^4 * i^3 * x^3 + (3a^2b^7c^7 - 9a^2b^6c^6d + a^3b^5c^5d^2 + 25a^4b^4c^4d^3 - 35a^5b^3c^3d^4 + 17a^6b^2c^2d^5 - a^7b^2c^2d^6 - a^8d^7) * g^4 * i^3 * x^2 + (3a^2b^6c^7 - 13a^3b^5c^6d + 20a^4b^4c^5d^2 - 10a^5b^3c^4d^3 - 5a^6b^2c^3d^4 + 7a^7b^2c^2d^5 - 2a^8c^2d^6) * g^4 * i^3 * x + (a^3b^5c^7 - 5a^4b^4c^6d + 10a^5b^3c^5d^2 - 10a^6b^2c^4d^3 + 5a^7b^2c^3d^4 - a^8c^2d^5) * g^4 * i^3) + 60b^2d^3 * \log(b * x + a) / ((b^6c^6 - 6a^2b^5c^5d + 15a^2b^4c^4d^2 - 20a^3b^3c^3d^3 + 15a^4b^2c^2d^4 - 6a^5b^2c^2d^5 + a^6d^6) * g^4 * i^3) - 60b^2d^3 * \log(d * x + c) / ((b^6c^6 - 6a^2b^5c^5d + 15a^2b^4c^4d^2 - 20a^3b^3c^3d^3 + 15a^4b^2c^2d^4 - 6a^5b^2c^2d^5 + a^6d^6) * g^4 * i^3)) * \log(e * (b * x / (d * x + c)) + a / (d * x + c)) ^ n - 1/3 * A * B * ((60b^4d^4 * x^4 + 2b^4c^4 - 13a^2b^3c^3d + 47a^2b^2c^2d^2 + 27a^3b^2c^2d^3 - 3a^4d^4 + 30 * (3b^4c^3d^3 + 5a^2b^3d^4) * x^3 + 10 * (2b^4c^2d^2 + 23a^2b^3c^2d^3 + 11a^2b^2d^4) * x^2 - 5 * (b^4c^3d - 11a^2b^3c^2d^2 - 35a^2b^2c^2d^3 - 3a^3b^4d^4) * x) / ((b^8c^5d^2 - 5a^2b^7c^4d^3 + 10a^2b^6c^3d^4 - 10a^3b^5c^2d^5 + 5a^4b^4c^2d^6 - a^5b^3c^2d^7) * g^4 * i^3 * x^5 + (2b^8c^6d - 7a^2b^7c^5d^2 + 5a^2b^6c^4d^3 + 10a^3b^5c^3d^4 - 20a^4b^4c^2d^5 + 13a^5b^3c^2d^6 - 3a^6b^2c^2d^7) * g^4 * i^3 * x^4 + (b^8c^7 + a^2b^7c^6d - 17a^2b^6c^5d^2 + 35a^3b^5c^4d^3 - 25a^4b^4c^3d^4 - a^5b^3c^2d^5 + 9a^6b^2c^2d^6 - 3a^7b^2d^7) * g^4 * i^3 * x^3 + (3a^2b^7c^7 - 9a^2b^6c^6d + a^3b^5c^5d^2 + 25a^4b^4c^4d^3 - 35a^5b^3c^3d^4 + 17a^6b^2c^2d^5 - a^7b^2c^2d^6 - a^8d^7) * g^4 * i^3 * x^2 + (3a^2b^6c^7 - 13a^3b^5c^6d + 20a^4b^4c^5d^2 - 10a^5b^3c^4d^3 - 5a^6b^2c^3d^4 + 7a^7b^2c^2d^5 - 2a^8c^2d^6) * g^4 * i^3 * x + (a^3b^5c^7 - 5a^4b^4c^6d + 10a^5b^3c^5d^2 - 10a^6b^2c^4d^3 + 5a^7b^2c^3d^4 - a^8c^2d^5) * g^4 * i^3) + 60b^2d^3 * \log(b * x + a) / ((b^6c^6 - 6a^2b^5c^5d + 15a^2b^4c^4d^2 - 20a^3b^3c^3d^3 + 15a^4b^2c^2d^4 - 6a^5b^2c^2d^5 + a^6d^6) * g^4 * i^3) - 60b^2d^3 * \log(d * x + c) / ((b^6c^6 - 6a^2b^5c^5d + 15a^2b^4c^4d^2 - 20a^3b^3c^3d^3 + 15a^4b^2c^2d^4 - 6a^5b^2c^2d^5 + a^6d^6) * g^4 * i^3)) * \log(e * (b * x / (d * x + c)) + a / (d * x + c)) ^ n - 1/108 * ((8b^5c^5 - 135a^2b^4c^4d + 2160a^2b^3c^3d^2 - 980a^3b^2c^2d^3 - 1080a^4b^2c^2d^4 + 27a^5d^5 + 2940 * (b^5c^4d - a^2b^4d^5) * x^4 + 30 * (159b^5c^2d^3 + 74a^2b^4c^2d^4 - 233a^2b^3c^2d^5) * x^3 + 360 * (b^5d^5 * x^5 + a^3b^2c^2d^3 + (2b^5c^4d^4 + 3a^2b^4d^5) * x^4 + (b^5c^2d^3 + 6a^2b^4c^2d^4 + 3a^2b^3d^5) * x^3 + (3a^2b^4c^2d^3 + 6a^2b^3c^2d^4 + a^3b^2d^5) * x^2 + (3a^2b^3c^2d^3 + 2a^3b^2c^2d^4) * x) * \log(b * x + a)^3 - 360 * (b^5d^5 * x^5 + a^3b^2c^2d^3 + (2b^5c^4d^4 + 3a^2b^4d^5) * x^4 + (b^5c^2d^3 + 6a^2b^4c^2d^4 + 3a^2b^3d^5) * x^3 + (3a^2b^4c^2d^3 + 6a^2b^3c^2d^4 + a^3b^2d^5) * x^2 + (3a^2b^3c^2d^3 + 2a^3b^2c^2d^4) * x) * \log(d * x + c)^3 + 10 * (170b^5c^3d^2 + 921a^2b^4c^2d
\end{aligned}$$

$$\begin{aligned}
&^3 - 588a^2b^3c^2d^4 - 503a^3b^2d^5) x^2 - 360(b^5d^5x^5 + a^3b^2c^2d^3 + (2b^5c^2d^3 + 3a^2b^3c^2d^3 + 3a^2b^3d^5) x^3 + (3a^2b^3c^2d^3 + 2a^3b^2c^2d^3 + 2a^3b^2c^2d^4) x) \log(bx + a)^2 - 360(b^5d^5x^5 + a^3b^2c^2d^3 + (2b^5c^2d^3 + 3a^2b^3c^2d^3 + 3a^2b^3d^5) x^3 + (3a^2b^3c^2d^3 + 2a^3b^2c^2d^3 + 2a^3b^2c^2d^4) x) \log(bx + a) \log(dx + c) \\
&^2 - 5(19b^5c^4d - 756a^2b^4c^3d^2 - 708a^2b^3c^2d^3 + 1256a^3b^2c^2d^4 + 189a^4b^2d^5) x + 2940(b^5d^5x^5 + a^3b^2c^2d^3 + (2b^5c^2d^3 + 3a^2b^3c^2d^3 + 3a^2b^3d^5) x^3 + (3a^2b^3c^2d^3 + 2a^3b^2c^2d^3 + 2a^3b^2c^2d^4) x) \log(bx + a) - 60(49b^5d^5x^5 + 49a^3b^2c^2d^3 + 49(2b^5c^2d^3 + 3a^2b^3c^2d^3 + 3a^2b^3d^5) x^3 + 49(3a^2b^3c^2d^3 + 6a^2b^3c^2d^4 + a^3b^2d^5) x^2 + 18(b^5d^5x^5 + a^3b^2c^2d^3 + (2b^5c^2d^3 + 3a^2b^3c^2d^3 + 3a^2b^3d^5) x^3 + (3a^2b^3c^2d^3 + 6a^2b^3c^2d^4 + a^3b^2d^5) x^2 + (3a^2b^3c^2d^3 + 2a^3b^2c^2d^3 + 2a^3b^2c^2d^4) x) \log(bx + a)^2 + 49(3a^2b^3c^2d^3 + 2a^3b^2c^2d^3 + 2a^3b^2c^2d^4) x - 12(b^5d^5x^5 + a^3b^2c^2d^3 + (2b^5c^2d^3 + 3a^2b^3c^2d^3 + 3a^2b^3d^5) x^3 + (3a^2b^3c^2d^3 + 6a^2b^3c^2d^4 + a^3b^2d^5) x^2 + (3a^2b^3c^2d^3 + 2a^3b^2c^2d^3 + 2a^3b^2c^2d^4) x) \log(bx + a) \log(dx + c)) n^2 / (a^3b^6c^8g^4i^3 - 6a^4b^5c^7d^2g^4i^3 + 15a^5b^4c^6d^2g^4i^3 - 20a^6b^3c^5d^3g^4i^3 + 15a^7b^2c^4d^4g^4i^3 - 6a^8b^2c^3d^5g^4i^3 + a^9c^2d^6g^4i^3 + (b^9c^6d^2g^4i^3 - 6a^8b^8c^5d^3g^4i^3 + 15a^2b^7c^4d^4g^4i^3 - 20a^3b^6c^3d^5g^4i^3 + 15a^4b^5c^2d^6g^4i^3 - 6a^5b^4c^2d^7g^4i^3 + a^6b^3d^8g^4i^3) x^5 + (2b^9c^7d^2g^4i^3 - 9a^8b^8c^6d^2g^4i^3 + 12a^2b^7c^5d^3g^4i^3 + 5a^3b^6c^4d^4g^4i^3 - 30a^4b^5c^3d^5g^4i^3 + 33a^5b^4c^2d^6g^4i^3 - 16a^6b^3c^2d^7g^4i^3 + 3a^7b^2d^8g^4i^3) x^4 + (b^9c^8g^4i^3 - 18a^2b^7c^6d^2g^4i^3 + 52a^3b^6c^5d^3g^4i^3 - 60a^4b^5c^4d^4g^4i^3 + 24a^5b^4c^3d^5g^4i^3 + 10a^6b^3c^2d^6g^4i^3 - 12a^7b^2c^2d^7g^4i^3 + 3a^8b^2d^8g^4i^3) x^3 + (3a^8b^8c^8g^4i^3 - 12a^2b^7c^7d^2g^4i^3 + 10a^3b^6c^6d^2g^4i^3 + 24a^4b^5c^5d^3g^4i^3 - 60a^5b^4c^4d^4g^4i^3 + 52a^6b^3c^3d^5g^4i^3 - 18a^7b^2c^2d^6g^4i^3 + a^9d^8g^4i^3) x^2 + (3a^2b^7c^8g^4i^3 - 16a^3b^6c^7d^2g^4i^3 + 33a^4b^5c^6d^2g^4i^3 - 30a^5b^4c^5d^3g^4i^3 + 5a^6b^3c^4d^4g^4i^3 + 12a^7b^2c^3d^5g^4i^3 - 9a^8b^2c^2d^6g^4i^3 + 2a^9c^2d^7g^4i^3) x) + 6(4b^5c^5 - 45a^2b^4c^4d + 360a^2b^3c^3d^2 - 490a^3b^2c^2d^3 + 180a^4b^2c^2d^4 - 9a^5d^5 + 120(b^5c^2d^4 - a^2b^4d^5) x^4 + 120(3b^5c^2d^3 - 2a^2b^4c^2d^4 - a^2b^3d^5) x^3 + 20(11b^5c^3d^2 + 21a^2b^4c^2d^3 - 39a^2b^3c^2d^4 + 7a^3b^2d^5) x^2 - 180(b^5d^5x^5 + a^3b^2c^2d^3
\end{aligned}$$

$$\begin{aligned}
& + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x*\log(b*x + a)^2 - 180*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x)*\log(d*x + c)^2 - 5*(5*b^5*c^4*d - 108*a*b^4*c^3*d^2 + 78*a^2*b^3*c^2*d^3 + 52*a^3*b^2*c*d^4 - 27*a^4*b*d^5)*x + 120*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x)*\log(b*x + a) - 120*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x - 3*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x)*\log(b*x + a))*\log(d*x + c))*n*\log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(a^3*b^6*c^8*g^4*i^3 - 6*a^4*b^5*c^7*d*g^4*i^3 + 15*a^5*b^4*c^6*d^2*g^4*i^3 - 20*a^6*b^3*c^5*d^3*g^4*i^3 + 15*a^7*b^2*c^4*d^4*g^4*i^3 - 6*a^8*b*c^3*d^5*g^4*i^3 + a^9*c^2*d^6*g^4*i^3 + (b^9*c^6*d^2*g^4*i^3 - 6*a*b^8*c^5*d^3*g^4*i^3 + 15*a^2*b^7*c^4*d^4*g^4*i^3 - 20*a^3*b^6*c^3*d^5*g^4*i^3 + 15*a^4*b^5*c^2*d^6*g^4*i^3 - 6*a^5*b^4*c*d^7*g^4*i^3 + a^6*b^3*d^8*g^4*i^3)*x^5 + (2*b^9*c^7*d*g^4*i^3 - 9*a*b^8*c^6*d^2*g^4*i^3 + 12*a^2*b^7*c^5*d^3*g^4*i^3 + 5*a^3*b^6*c^4*d^4*g^4*i^3 - 30*a^4*b^5*c^3*d^5*g^4*i^3 + 33*a^5*b^4*c^2*d^6*g^4*i^3 - 16*a^6*b^3*c*d^7*g^4*i^3 + 3*a^7*b^2*d^8*g^4*i^3)*x^4 + (b^9*c^8*g^4*i^3 - 18*a^2*b^7*c^6*d^2*g^4*i^3 + 52*a^3*b^6*c^5*d^3*g^4*i^3 - 60*a^4*b^5*c^4*d^4*g^4*i^3 + 24*a^5*b^4*c^3*d^5*g^4*i^3 + 10*a^6*b^3*c^2*d^6*g^4*i^3 - 12*a^7*b^2*c*d^7*g^4*i^3 + 3*a^8*b*d^8*g^4*i^3)*x^3 + (3*a*b^8*c^8*g^4*i^3 - 12*a^2*b^7*c^7*d*g^4*i^3 + 10*a^3*b^6*c^6*d^2*g^4*i^3 + 24*a^4*b^5*c^5*d^3*g^4*i^3 - 60*a^5*b^4*c^4*d^4*g^4*i^3 + 52*a^6*b^3*c^3*d^5*g^4*i^3 - 18*a^7*b^2*c^2*d^6*g^4*i^3 + a^9*d^8*g^4*i^3)*x^2 + (3*a^2*b^7*c^8*g^4*i^3 - 16*a^3*b^6*c^7*d*g^4*i^3 + 33*a^4*b^5*c^6*d^2*g^4*i^3 - 30*a^5*b^4*c^5*d^3*g^4*i^3 + 5*a^6*b^3*c^4*d^4*g^4*i^3 + 12*a^7*b^2*c^3*d^5*g^4*i^3 - 9*a^8*b*c^2*d^6*g^4*i^3 + 2*a^9*c*d^7*g^4*i^3)*x)))*B^2 - 1/18*(4*b^5*c^5 - 45*a*b^4*c^4*d + 360*a^2*b^3*c^3*d^2 - 490*a^3*b^2*c^2*d^3 + 180*a^4*b*c*d^4 - 9*a^5*d^5 + 120*(b^5*c*d^4 - a*b^4*d^5)*x^4 + 120*(3*b^5*c^2*d^3 - 2*a*b^4*c*d^4 - a^2*b^3*d^5)*x^3 + 20*(11*b^5*c^3*d^2 + 21*a*b^4*c^2*d^3 - 39*a^2*b^3*c*d^4 + 7*a^3*b^2*d^5)*x^2 - 180*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x)*\log(b*x + a)^2 - 180*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x)*\log(d*x + c)^2 - 5*(5*b^5*c^4*d - 108*a*b^4*c^3*d^2 + 78*a^2*b^3*c^2*d^3 + 52*a^3*b^2*c*d^4 - 27*a^4*b*d^5)*x
\end{aligned}$$

$$\begin{aligned}
& + 120*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (\\
& b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2 \\
& *b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x) * \log(b*x + a) - 120*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^ \\
& 5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^ \\
& ^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c* \\
& d^4)*x - 3*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 \\
& + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6 \\
& *a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x \\
&) * \log(b*x + a) * \log(d*x + c) * A*B*n / (a^3*b^6*c^8*g^4*i^3 - 6*a^4*b^5*c^7*d* \\
& g^4*i^3 + 15*a^5*b^4*c^6*d^2*g^4*i^3 - 20*a^6*b^3*c^5*d^3*g^4*i^3 + 15*a^7* \\
& b^2*c^4*d^4*g^4*i^3 - 6*a^8*b*c^3*d^5*g^4*i^3 + a^9*c^2*d^6*g^4*i^3 + (b^9*c^ \\
& ^6*d^2*g^4*i^3 - 6*a*b^8*c^5*d^3*g^4*i^3 + 15*a^2*b^7*c^4*d^4*g^4*i^3 - 20 \\
& *a^3*b^6*c^3*d^5*g^4*i^3 + 15*a^4*b^5*c^2*d^6*g^4*i^3 - 6*a^5*b^4*c*d^7*g^4 \\
& *i^3 + a^6*b^3*d^8*g^4*i^3)*x^5 + (2*b^9*c^7*d*g^4*i^3 - 9*a*b^8*c^6*d^2*g^ \\
& 4*i^3 + 12*a^2*b^7*c^5*d^3*g^4*i^3 + 5*a^3*b^6*c^4*d^4*g^4*i^3 - 30*a^4*b^5 \\
& *c^3*d^5*g^4*i^3 + 33*a^5*b^4*c^2*d^6*g^4*i^3 - 16*a^6*b^3*c*d^7*g^4*i^3 + \\
& 3*a^7*b^2*d^8*g^4*i^3)*x^4 + (b^9*c^8*g^4*i^3 - 18*a^2*b^7*c^6*d^2*g^4*i^3 \\
& + 52*a^3*b^6*c^5*d^3*g^4*i^3 - 60*a^4*b^5*c^4*d^4*g^4*i^3 + 24*a^5*b^4*c^3* \\
& d^5*g^4*i^3 + 10*a^6*b^3*c^2*d^6*g^4*i^3 - 12*a^7*b^2*c*d^7*g^4*i^3 + 3*a^8 \\
& *b*d^8*g^4*i^3)*x^3 + (3*a*b^8*c^8*g^4*i^3 - 12*a^2*b^7*c^7*d*g^4*i^3 + 10* \\
& a^3*b^6*c^6*d^2*g^4*i^3 + 24*a^4*b^5*c^5*d^3*g^4*i^3 - 60*a^5*b^4*c^4*d^4*g \\
& ^4*i^3 + 52*a^6*b^3*c^3*d^5*g^4*i^3 - 18*a^7*b^2*c^2*d^6*g^4*i^3 + a^9*d^8* \\
& g^4*i^3)*x^2 + (3*a^2*b^7*c^8*g^4*i^3 - 16*a^3*b^6*c^7*d*g^4*i^3 + 33*a^4*b \\
& ^5*c^6*d^2*g^4*i^3 - 30*a^5*b^4*c^5*d^3*g^4*i^3 + 5*a^6*b^3*c^4*d^4*g^4*i^3 \\
& + 12*a^7*b^2*c^3*d^5*g^4*i^3 - 9*a^8*b*c^2*d^6*g^4*i^3 + 2*a^9*c*d^7*g^4*i \\
& ^3)*x) - 1/6*A^2*((60*b^4*d^4*x^4 + 2*b^4*c^4 - 13*a*b^3*c^3*d + 47*a^2*b^2 \\
& *c^2*d^2 + 27*a^3*b*c*d^3 - 3*a^4*d^4 + 30*(3*b^4*c*d^3 + 5*a*b^3*d^4)*x^3 \\
& + 10*(2*b^4*c^2*d^2 + 23*a*b^3*c*d^3 + 11*a^2*b^2*d^4)*x^2 - 5*(b^4*c^3*d - \\
& 11*a*b^3*c^2*d^2 - 35*a^2*b^2*c*d^3 - 3*a^3*b*d^4)*x)/((b^8*c^5*d^2 - 5*a* \\
& b^7*c^4*d^3 + 10*a^2*b^6*c^3*d^4 - 10*a^3*b^5*c^2*d^5 + 5*a^4*b^4*c*d^6 - a \\
& ^5*b^3*d^7)*g^4*i^3*x^5 + (2*b^8*c^6*d - 7*a*b^7*c^5*d^2 + 5*a^2*b^6*c^4*d^ \\
& 3 + 10*a^3*b^5*c^3*d^4 - 20*a^4*b^4*c^2*d^5 + 13*a^5*b^3*c*d^6 - 3*a^6*b^2* \\
& d^7)*g^4*i^3*x^4 + (b^8*c^7 + a*b^7*c^6*d - 17*a^2*b^6*c^5*d^2 + 35*a^3*b^5 \\
& *c^4*d^3 - 25*a^4*b^4*c^3*d^4 - a^5*b^3*c^2*d^5 + 9*a^6*b^2*c*d^6 - 3*a^7*b \\
& *d^7)*g^4*i^3*x^3 + (3*a*b^7*c^7 - 9*a^2*b^6*c^6*d + a^3*b^5*c^5*d^2 + 25*a \\
& ^4*b^4*c^4*d^3 - 35*a^5*b^3*c^3*d^4 + 17*a^6*b^2*c^2*d^5 - a^7*b*c*d^6 - a^ \\
& 8*d^7)*g^4*i^3*x^2 + (3*a^2*b^6*c^7 - 13*a^3*b^5*c^6*d + 20*a^4*b^4*c^5*d^2 \\
& - 10*a^5*b^3*c^4*d^3 - 5*a^6*b^2*c^3*d^4 + 7*a^7*b*c^2*d^5 - 2*a^8*c*d^6)* \\
& g^4*i^3*x + (a^3*b^5*c^7 - 5*a^4*b^4*c^6*d + 10*a^5*b^3*c^5*d^2 - 10*a^6*b^ \\
& 2*c^4*d^3 + 5*a^7*b*c^3*d^4 - a^8*c^2*d^5)*g^4*i^3) + 60*b^2*d^3*log(b*x + \\
& a)/((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15 \\
& *a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)*g^4*i^3) - 60*b^2*d^3*log(d*x + \\
& c)/((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 1 \\
& 5*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)*g^4*i^3))
\end{aligned}$$

mupad [B] time = 13.70, size = 4649, normalized size = 5.12

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] $\text{int}((A + B \cdot \log(e((a + b \cdot x)/(c + d \cdot x))^n))^2 / ((a \cdot g + b \cdot g \cdot x)^4 \cdot (c \cdot i + d \cdot i \cdot x)^3), x)$

[Out] $\log(e((a + b \cdot x)/(c + d \cdot x))^n) \cdot ((x \cdot ((a \cdot d + b \cdot c) \cdot (20 \cdot A \cdot B \cdot a \cdot b \cdot d^2 + 10 \cdot A \cdot B \cdot b^2 \cdot c \cdot d - (70 \cdot B^2 \cdot a \cdot b \cdot d^2 \cdot n)/3 + (10 \cdot B^2 \cdot b^2 \cdot c \cdot d \cdot n)/3) + a \cdot c \cdot (30 \cdot A \cdot B \cdot b^2 \cdot d^2 - 20 \cdot B^2 \cdot b^2 \cdot d^2 \cdot n) + (5 \cdot B^2 \cdot a^2 \cdot b \cdot d^3 \cdot n)/6 + (5 \cdot B^2 \cdot b^3 \cdot c^2 \cdot d \cdot n)/6 - 5 \cdot A \cdot B \cdot a^2 \cdot b \cdot d^3 - 5 \cdot A \cdot B \cdot b^3 \cdot c^2 \cdot d + 10 \cdot A \cdot B \cdot a \cdot b^2 \cdot c \cdot d^2 - (5 \cdot B^2 \cdot a \cdot b^2 \cdot c \cdot d^2 \cdot n)/3) + x^2 \cdot ((a \cdot d + b \cdot c) \cdot (30 \cdot A \cdot B \cdot b^2 \cdot d^2 - 20 \cdot B^2 \cdot b^2 \cdot d^2 \cdot n) + b \cdot d \cdot (20 \cdot A \cdot B \cdot a \cdot b \cdot d^2 + 10 \cdot A \cdot B \cdot b^2 \cdot c \cdot d - (70 \cdot B^2 \cdot a \cdot b \cdot d^2 \cdot n)/3 + (10 \cdot B^2 \cdot b^2 \cdot c \cdot d \cdot n)/3)) + a \cdot c \cdot (20 \cdot A \cdot B \cdot a \cdot b \cdot d^2 + 10 \cdot A \cdot B \cdot b^2 \cdot c \cdot d - (70 \cdot B^2 \cdot a \cdot b \cdot d^2 \cdot n)/3 + (10 \cdot B^2 \cdot b^2 \cdot c \cdot d \cdot n)/3) - 3 \cdot A \cdot B \cdot a^3 \cdot d^3 - 2 \cdot A \cdot B \cdot b^3 \cdot c^3 + b \cdot d \cdot x^3 \cdot (30 \cdot A \cdot B \cdot b^2 \cdot d^2 - 20 \cdot B^2 \cdot b^2 \cdot d^2 \cdot n) + (3 \cdot B^2 \cdot a^3 \cdot d^3 \cdot n)/2 - (2 \cdot B^2 \cdot b^3 \cdot c^3 \cdot n)/3 + A \cdot B \cdot a \cdot b^2 \cdot c^2 \cdot d + 4 \cdot A \cdot B \cdot a^2 \cdot b \cdot c \cdot d^2 + (17 \cdot B^2 \cdot a \cdot b^2 \cdot c^2 \cdot d \cdot n)/6 - (11 \cdot B^2 \cdot a^2 \cdot b \cdot c \cdot d^2 \cdot n)/3) / (x^5 \cdot (3 \cdot a^4 \cdot b^3 \cdot d^6 \cdot g^4 \cdot i^3 + 3 \cdot b^7 \cdot c^4 \cdot d^2 \cdot g^4 \cdot i^3 - 12 \cdot a \cdot b^6 \cdot c^3 \cdot d^3 \cdot g^4 \cdot i^3 - 12 \cdot a^3 \cdot b^4 \cdot c \cdot d^5 \cdot g^4 \cdot i^3 + 18 \cdot a^2 \cdot b^5 \cdot c^2 \cdot d^4 \cdot g^4 \cdot i^3) + x \cdot (9 \cdot a^2 \cdot b^5 \cdot c^6 \cdot g^4 \cdot i^3 + 6 \cdot a^7 \cdot c \cdot d^5 \cdot g^4 \cdot i^3 - 30 \cdot a^3 \cdot b^4 \cdot c^5 \cdot d \cdot g^4 \cdot i^3 - 15 \cdot a^6 \cdot b \cdot c^2 \cdot d^4 \cdot g^4 \cdot i^3 + 30 \cdot a^4 \cdot b^3 \cdot c^4 \cdot d^2 \cdot g^4 \cdot i^3) + x^2 \cdot (3 \cdot a^7 \cdot d^6 \cdot g^4 \cdot i^3 + 9 \cdot a \cdot b^6 \cdot c^6 \cdot g^4 \cdot i^3 + 6 \cdot a^6 \cdot b \cdot c \cdot d^5 \cdot g^4 \cdot i^3 - 18 \cdot a^2 \cdot b^5 \cdot c^5 \cdot d \cdot g^4 \cdot i^3 - 15 \cdot a^3 \cdot b^4 \cdot c^4 \cdot d^2 \cdot g^4 \cdot i^3 + 60 \cdot a^4 \cdot b^3 \cdot c^3 \cdot d^3 \cdot g^4 \cdot i^3 - 45 \cdot a^5 \cdot b^2 \cdot c^2 \cdot d^4 \cdot g^4 \cdot i^3) + x^3 \cdot (3 \cdot b^7 \cdot c^6 \cdot g^4 \cdot i^3 + 9 \cdot a^6 \cdot b \cdot d^6 \cdot g^4 \cdot i^3 + 6 \cdot a \cdot b^6 \cdot c^5 \cdot d \cdot g^4 \cdot i^3 - 18 \cdot a^5 \cdot b^2 \cdot c \cdot d^5 \cdot g^4 \cdot i^3 - 45 \cdot a^2 \cdot b^5 \cdot c^4 \cdot d^2 \cdot g^4 \cdot i^3 + 60 \cdot a^3 \cdot b^4 \cdot c^3 \cdot d^3 \cdot g^4 \cdot i^3 - 15 \cdot a^4 \cdot b^3 \cdot c^2 \cdot d^4 \cdot g^4 \cdot i^3) + x^4 \cdot (9 \cdot a^5 \cdot b^2 \cdot d^6 \cdot g^4 \cdot i^3 + 6 \cdot b^7 \cdot c^5 \cdot d \cdot g^4 \cdot i^3 - 15 \cdot a \cdot b^6 \cdot c^4 \cdot d^2 \cdot g^4 \cdot i^3 - 30 \cdot a^4 \cdot b^3 \cdot c \cdot d^5 \cdot g^4 \cdot i^3 + 30 \cdot a^3 \cdot b^4 \cdot c^2 \cdot d^4 \cdot g^4 \cdot i^3) + 3 \cdot a^3 \cdot b^4 \cdot c^6 \cdot g^4 \cdot i^3 + 3 \cdot a^7 \cdot c^2 \cdot d^4 \cdot g^4 \cdot i^3 - 12 \cdot a^4 \cdot b^3 \cdot c^5 \cdot d \cdot g^4 \cdot i^3 - 12 \cdot a^6 \cdot b \cdot c^3 \cdot d^3 \cdot g^4 \cdot i^3 + 18 \cdot a^5 \cdot b^2 \cdot c^4 \cdot d^2 \cdot g^4 \cdot i^3) + (20 \cdot B \cdot b^2 \cdot d^3 \cdot (3 \cdot A + B \cdot n) \cdot (x^2 \cdot ((3 \cdot g^4 \cdot i^3 \cdot n \cdot (a \cdot d + b \cdot c))^2 \cdot (a \cdot d - b \cdot c)^5) / d + 6 \cdot a \cdot b \cdot c \cdot g^4 \cdot i^3 \cdot n \cdot (a \cdot d - b \cdot c)^5) + 6 \cdot b \cdot g^4 \cdot i^3 \cdot n \cdot x^3 \cdot (a \cdot d + b \cdot c) \cdot (a \cdot d - b \cdot c)^5 + 3 \cdot b^2 \cdot d \cdot g^4 \cdot i^3 \cdot n \cdot x^4 \cdot (a \cdot d - b \cdot c)^5 + (3 \cdot a^2 \cdot c^2 \cdot g^4 \cdot i^3 \cdot n \cdot (a \cdot d - b \cdot c)^5) / d + (6 \cdot a \cdot c \cdot g^4 \cdot i^3 \cdot n \cdot x \cdot (a \cdot d + b \cdot c) \cdot (a \cdot d - b \cdot c)^5) / d)) / (3 \cdot g^4 \cdot i^3 \cdot n \cdot (a \cdot d - b \cdot c)^6 \cdot (x^5 \cdot (3 \cdot a^4 \cdot b^3 \cdot d^6 \cdot g^4 \cdot i^3 + 3 \cdot b^7 \cdot c^4 \cdot d^2 \cdot g^4 \cdot i^3 - 12 \cdot a \cdot b^6 \cdot c^3 \cdot d^3 \cdot g^4 \cdot i^3 - 12 \cdot a^3 \cdot b^4 \cdot c \cdot d^5 \cdot g^4 \cdot i^3 + 18 \cdot a^2 \cdot b^5 \cdot c^2 \cdot d^4 \cdot g^4 \cdot i^3) + x \cdot (9 \cdot a^2 \cdot b^5 \cdot c^6 \cdot g^4 \cdot i^3 + 6 \cdot a^7 \cdot c \cdot d^5 \cdot g^4 \cdot i^3 - 30 \cdot a^3 \cdot b^4 \cdot c^5 \cdot d \cdot g^4 \cdot i^3 - 15 \cdot a^6 \cdot b \cdot c^2 \cdot d^4 \cdot g^4 \cdot i^3 + 30 \cdot a^4 \cdot b^3 \cdot c^4 \cdot d^2 \cdot g^4 \cdot i^3) + x^2 \cdot (3 \cdot a^7 \cdot d^6 \cdot g^4 \cdot i^3 + 9 \cdot a \cdot b^6 \cdot c^6 \cdot g^4 \cdot i^3 + 6 \cdot a^6 \cdot b \cdot c \cdot d^5 \cdot g^4 \cdot i^3 - 18 \cdot a^2 \cdot b^5 \cdot c^5 \cdot d \cdot g^4 \cdot i^3 - 15 \cdot a^3 \cdot b^4 \cdot c^4 \cdot d^2 \cdot g^4 \cdot i^3 + 60 \cdot a^4 \cdot b^3 \cdot c^3 \cdot d^3 \cdot g^4 \cdot i^3 - 45 \cdot a^5 \cdot b^2 \cdot c^2 \cdot d^4 \cdot g^4 \cdot i^3) + x^3 \cdot (3 \cdot b^7 \cdot c^6 \cdot g^4 \cdot i^3 + 9 \cdot a^6 \cdot b \cdot d^6 \cdot g^4 \cdot i^3 + 6 \cdot a \cdot b^6 \cdot c^5 \cdot d \cdot g^4 \cdot i^3 - 18 \cdot a^5 \cdot b^2 \cdot c \cdot d^5 \cdot g^4 \cdot i^3 - 45 \cdot a^2 \cdot b^5 \cdot c^4 \cdot d^2 \cdot g^4 \cdot i^3 + 60 \cdot a^3 \cdot b^4 \cdot c^3 \cdot d^3 \cdot g^4 \cdot i^3 - 15 \cdot a^4 \cdot b^3 \cdot c^2 \cdot d^4 \cdot g^4 \cdot i^3) + x^4 \cdot (9 \cdot a^5 \cdot b^2 \cdot d^6 \cdot g^4 \cdot i^3 + 6 \cdot b^7 \cdot c^5 \cdot d \cdot g^4 \cdot i^3 - 15 \cdot a \cdot b^6 \cdot c^4 \cdot d^2 \cdot g^4 \cdot i^3 - 30 \cdot a^4 \cdot b^3 \cdot c \cdot d^5 \cdot g^4 \cdot i^3 - 30 \cdot a^3 \cdot b^4 \cdot c^2 \cdot d^4 \cdot g^4 \cdot i^3$

$$\begin{aligned}
& *c^d^5g^4i^3 + 30a^3b^4c^2d^4g^4i^3) + 3a^3b^4c^6g^4i^3 + 3a^7c^2d^4g^4i^3 - 12a^4b^3c^5d^4g^4i^3 - 12a^6b^3c^3d^3g^4i^3 + 1 \\
& 8a^5b^2c^4d^2g^4i^3)) + \log(e((a + bx)/(c + dx))^n)^2((x((5B^2 \\
& *(2a*b*d^2 + b^2*c*d)*(a*d + b*c))/(3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2) - \\
& (5B^2*b*d)/(6*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (5B^2*a*b^2*c*d^2)/(a^2 \\
& *d^2 + b^2*c^2 - 2*a*b*c*d)^2) + x^2*((5B^2*b*d*(2*a*b*d^2 + b^2*c*d))/(3* \\
& (a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2) + (5B^2*b^2*d^2*(a*d + b*c))/(a^2*d^2 + \\
& b^2*c^2 - 2*a*b*c*d)^2) - (B^2*(3*a*d + 2*b*c))/(6*(a^2*d^2 + b^2*c^2 - 2* \\
& a*b*c*d)) + (5B^2*a*c*(2*a*b*d^2 + b^2*c*d))/(3*(a^2*d^2 + b^2*c^2 - 2*a*b \\
& *c*d)^2) + (5B^2*b^3*d^3*x^3)/(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2)/(x*(2*a^3 \\
& *c*d*g^4i^3 + 3*a^2*b*c^2*g^4i^3) + x^2*(a^3*d^2*g^4i^3 + 3*a*b^2*c^2*g^ \\
& 4i^3 + 6*a^2*b*c*d*g^4i^3) + x^3*(b^3*c^2*g^4i^3 + 3*a^2*b*d^2*g^4i^3 + \\
& 6*a*b^2*c*d*g^4i^3) + x^4*(2*b^3*c*d*g^4i^3 + 3*a*b^2*d^2*g^4i^3) + a^3 \\
& *c^2*g^4i^3 + b^3*d^2*g^4i^3*x^5) - (10*B*b^2*d^3*(3*A + B*n))/(3*g^4i^3 \\
& *n*(a*d - b*c)^6) + (10*B^2*b^2*d^3*(x^2*((g^4i^3*n*(a*d + b*c)^2*(a*d - b \\
& *c))/d + 2*a*b*c*g^4i^3*n*(a*d - b*c)) + b^2*d*g^4i^3*n*x^4*(a*d - b*c) + \\
& (a^2*c^2*g^4i^3*n*(a*d - b*c))/d + 2*b*g^4i^3*n*x^3*(a*d + b*c)*(a*d - b \\
& *c) + (2*a*c*g^4i^3*n*x*(a*d + b*c)*(a*d - b*c))/d))/(g^4i^3*n*(a*d - b*c \\
&)^6*(x*(2*a^3*c*d*g^4i^3 + 3*a^2*b*c^2*g^4i^3) + x^2*(a^3*d^2*g^4i^3 + 3 \\
& *a*b^2*c^2*g^4i^3 + 6*a^2*b*c*d*g^4i^3) + x^3*(b^3*c^2*g^4i^3 + 3*a^2*b* \\
& d^2*g^4i^3 + 6*a*b^2*c*d*g^4i^3) + x^4*(2*b^3*c*d*g^4i^3 + 3*a*b^2*d^2*g \\
& ^4i^3) + a^3*c^2*g^4i^3 + b^3*d^2*g^4i^3*x^5))) + ((36*A^2*b^4*c^4 - 54* \\
& A^2*a^4*d^4 - 27*B^2*a^4*d^4*n^2 + 8*B^2*b^4*c^4*n^2 + 846*A^2*a^2*b^2*c^2* \\
& d^2 - 234*A^2*a*b^3*c^3*d + 486*A^2*a^3*b*c*d^3 + 54*A*B*a^4*d^4*n + 24*A*B \\
& *b^4*c^4*n - 127*B^2*a*b^3*c^3*d*n^2 + 1053*B^2*a^3*b*c*d^3*n^2 + 2033*B^2* \\
& a^2*b^2*c^2*d^2*n^2 + 1914*A*B*a^2*b^2*c^2*d^2*n - 246*A*B*a*b^3*c^3*d*n - \\
& 1026*A*B*a^3*b*c*d^3*n)/(6*(a*d - b*c)) + (5*x*(54*A^2*a^3*b*d^4 - 18*A^2*b \\
& ^4*c^3*d + 198*A^2*a*b^3*c^2*d^2 + 630*A^2*a^2*b^2*c*d^3 + 189*B^2*a^3*b*d^ \\
& 4*n^2 - 19*B^2*b^4*c^3*d*n^2 - 162*A*B*a^3*b*d^4*n - 30*A*B*b^4*c^3*d*n + 7 \\
& 37*B^2*a*b^3*c^2*d^2*n^2 + 1445*B^2*a^2*b^2*c*d^3*n^2 + 618*A*B*a*b^3*c^2*d \\
& ^2*n + 150*A*B*a^2*b^2*c*d^3*n))/(6*(a*d - b*c)) + (5*x^3*(90*A^2*a*b^3*d^4 \\
& + 54*A^2*b^4*c*d^3 + 233*B^2*a*b^3*d^4*n^2 + 159*B^2*b^4*c*d^3*n^2 + 24*A* \\
& B*a*b^3*d^4*n + 72*A*B*b^4*c*d^3*n))/(a*d - b*c) + (10*x^4*(18*A^2*b^4*d^4 \\
& + 49*B^2*b^4*d^4*n^2 + 12*A*B*b^4*d^4*n))/(a*d - b*c) + (5*x^2*(198*A^2*a^2 \\
& *b^2*d^4 + 36*A^2*b^4*c^2*d^2 + 503*B^2*a^2*b^2*d^4*n^2 + 170*B^2*b^4*c^2*d \\
& ^2*n^2 + 414*A^2*a*b^3*c*d^3 + 1091*B^2*a*b^3*c*d^3*n^2 - 84*A*B*a^2*b^2*d^ \\
& 4*n + 132*A*B*b^4*c^2*d^2*n + 384*A*B*a*b^3*c*d^3*n))/(3*(a*d - b*c)))/(x^5 \\
& *(18*a^4*b^3*d^6*g^4i^3 + 18*b^7*c^4*d^2*g^4i^3 - 72*a*b^6*c^3*d^3*g^4i^ \\
& 3 - 72*a^3*b^4*c*d^5*g^4i^3 + 108*a^2*b^5*c^2*d^4*g^4i^3) + x*(54*a^2*b^5 \\
& *c^6*g^4i^3 + 36*a^7*c*d^5*g^4i^3 - 180*a^3*b^4*c^5*d*g^4i^3 - 90*a^6*b* \\
& c^2*d^4*g^4i^3 + 180*a^4*b^3*c^4*d^2*g^4i^3) + x^2*(18*a^7*d^6*g^4i^3 + \\
& 54*a*b^6*c^6*g^4i^3 + 36*a^6*b*c*d^5*g^4i^3 - 108*a^2*b^5*c^5*d*g^4i^3 - \\
& 90*a^3*b^4*c^4*d^2*g^4i^3 + 360*a^4*b^3*c^3*d^3*g^4i^3 - 270*a^5*b^2*c^2 \\
& *d^4*g^4i^3) + x^3*(18*b^7*c^6*g^4i^3 + 54*a^6*b*d^6*g^4i^3 + 36*a*b^6*c \\
& ^5*d*g^4i^3 - 108*a^5*b^2*c*d^5*g^4i^3 - 270*a^2*b^5*c^4*d^2*g^4i^3 + 36
\end{aligned}$$

$$\begin{aligned}
& 0*a^3*b^4*c^3*d^3*g^4*i^3 - 90*a^4*b^3*c^2*d^4*g^4*i^3) + x^4*(54*a^5*b^2*d \\
& ^6*g^4*i^3 + 36*b^7*c^5*d*g^4*i^3 - 90*a*b^6*c^4*d^2*g^4*i^3 - 180*a^4*b^3* \\
& c*d^5*g^4*i^3 + 180*a^3*b^4*c^2*d^4*g^4*i^3) + 18*a^3*b^4*c^6*g^4*i^3 + 18* \\
& a^7*c^2*d^4*g^4*i^3 - 72*a^4*b^3*c^5*d*g^4*i^3 - 72*a^6*b*c^3*d^3*g^4*i^3 + \\
& 108*a^5*b^2*c^4*d^2*g^4*i^3) + (b^2*d^3*atan((b^2*d^3*(18*A^2 + 49*B^2*n^2 \\
& + 12*A*B*n))*(9*a^6*d^6*g^4*i^3 - 9*b^6*c^6*g^4*i^3 + 36*a*b^5*c^5*d*g^4*i^ \\
& 3 - 36*a^5*b*c*d^5*g^4*i^3 - 45*a^2*b^4*c^4*d^2*g^4*i^3 + 45*a^4*b^2*c^2*d^ \\
& 4*g^4*i^3)*5i)/(9*g^4*i^3*(a*d - b*c)^6*(90*A^2*b^2*d^3 + 245*B^2*b^2*d^3*n \\
& ^2 + 60*A*B*b^2*d^3*n)) + (b^3*d^4*x*(18*A^2 + 49*B^2*n^2 + 12*A*B*n)*(a^5* \\
& d^5*g^4*i^3 - b^5*c^5*g^4*i^3 + 5*a*b^4*c^4*d*g^4*i^3 - 5*a^4*b*c*d^4*g^4*i \\
& ^3 - 10*a^2*b^3*c^3*d^2*g^4*i^3 + 10*a^3*b^2*c^2*d^3*g^4*i^3)*10i)/(g^4*i^3 \\
& *(a*d - b*c)^6*(90*A^2*b^2*d^3 + 245*B^2*b^2*d^3*n^2 + 60*A*B*b^2*d^3*n)))* \\
& (18*A^2 + 49*B^2*n^2 + 12*A*B*n)*10i)/(9*g^4*i^3*(a*d - b*c)^6) - (10*B^2*b \\
& ^2*d^3*log(e*((a + b*x)/(c + d*x))^n)^3)/(3*g^4*i^3*n*(a*d - b*c)^6)
\end{aligned}$$

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)**4/(d*i*x+c*i)**3, x)

[Out] Timed out

$$3.210 \quad \int (ag+bgx)^m (ci+dix)^{-2-m} \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^p dx$$

Optimal. Leaf size=189

$$(a+bx)e^{-\frac{A(m+1)}{Bn}} (g(a+bx))^m (i(c+dx))^{-m} \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)^{-\frac{m+1}{n}} \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)^p \left(-\frac{(m+1) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{Bn} \right)^{-p}$$

$$i^2(m+1)(c+dx)(bc-ad)$$

[Out] (b*x+a)*(g*(b*x+a))^m*GAMMA(1+p,-(1+m)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/B/n)* (A+B*ln(e*((b*x+a)/(d*x+c))^n))^p/(-a*d+b*c)/exp(A*(1+m)/B/n)/i^2/(1+m)/((e*((b*x+a)/(d*x+c))^n)^((1+m)/n))/(d*x+c)/((i*(d*x+c))^m)/((-1+m)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/B/n)^p

Rubi [F] time = 0.98, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int (ag+bgx)^m (ci+dix)^{-2-m} \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^p dx$$

Verification is Not applicable to the result.

[In] Int[(a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^p,x]

[Out] Defer[Int] [(a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^p, x]

Rubi steps

$$\int (210c + 210dx)^{-2-m} (ag + bgx)^m \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^p dx = \int (210c + 210dx)^{-2-m} (ag + bgx)^m \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^p dx$$

Mathematica [F] time = 0.55, size = 0, normalized size = 0.00

$$\int (ag+bgx)^m (ci+dix)^{-2-m} \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^p dx$$

Verification is Not applicable to the result.

[In] Integrate[(a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^p,x]

[Out] Integrate[(a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^p, x]

fricas [F] time = 0.75, size = 0, normalized size = 0.00

$$\text{integral} \left((bgx + ag)^m (dix + ci)^{-m-2} \left(B \log \left(e \left(\frac{bx + a}{dx + c} \right)^n \right) + A \right)^p, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^p,x, algorithm="fricas")

[Out] integral((b*g*x + a*g)^m*(d*i*x + c*i)^(-m - 2)*(B*log(e*((b*x + a)/(d*x + c))^n) + A)^p, x)

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (bgx + ag)^m (dix + ci)^{-m-2} \left(B \log \left(e \left(\frac{bx + a}{dx + c} \right)^n \right) + A \right)^p dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^p,x, algorithm="giac")

[Out] integrate((b*g*x + a*g)^m*(d*i*x + c*i)^(-m - 2)*(B*log(e*((b*x + a)/(d*x + c))^n) + A)^p, x)

maple [F(-1)] time = 180.00, size = 0, normalized size = 0.00

$$\int \left(B \ln \left(e \left(\frac{bx + a}{dx + c} \right)^n \right) + A \right)^p (bgx + ag)^m (dix + ci)^{-m-2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)^m*(d*i*x+c*i)^(-m-2)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^p,x)

[Out] int((b*g*x+a*g)^m*(d*i*x+c*i)^(-m-2)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^p,x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (bgx + ag)^m (dix + ci)^{-m-2} \left(B \log \left(e \left(\frac{bx + a}{dx + c} \right)^n \right) + A \right)^p dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)*(A+B*log(e*((b*x+a)/(d*x+c))^n))
^p,x, algorithm="maxima")
```

```
[Out] integrate((b*g*x + a*g)^m*(d*i*x + c*i)^(-m - 2)*(B*log(e*((b*x + a)/(d*x +
c))^n) + A)^p, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(ag + bgx)^m \left(A + B \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^p}{(ci + dix)^{m+2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)^m*(A + B*log(e*((a + b*x)/(c + d*x))^n))^p)/(c*i + d*i*x
)^(m + 2), x)
```

```
[Out] int(((a*g + b*g*x)^m*(A + B*log(e*((a + b*x)/(c + d*x))^n))^p)/(c*i + d*i*x
)^(m + 2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**m*(d*i*x+c*i)**(-2-m)*(A+B*ln(e*((b*x+a)/(d*x+c))**n
))**p,x)
```

```
[Out] Timed out
```

$$3.211 \quad \int (ag+bgx)^{-2-m}(ci+dix)^m \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^p dx$$

Optimal. Leaf size=190

$$(a+bx)e^{\frac{A(m+1)}{Bn}}(g(a+bx))^{-m-2}(i(c+dx))^{m+2} \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)^{\frac{m+1}{n}} \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)^p \left(\frac{(m+1) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{Bn} \right)^{-p}$$

$$i^2(m+1)(c+dx)(bc-ad)$$

[Out] $-\exp(A*(1+m)/B/n)*(b*x+a)*(g*(b*x+a))^{(-2-m)}*(e*((b*x+a)/(d*x+c))^n)^{((1+m)/n)}*(i*(d*x+c))^{(2+m)}*\text{GAMMA}(1+p,(1+m)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/B/n)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^p/(-a*d+b*c)/i^2/(1+m)/(d*x+c)/(((1+m)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/B/n))^p$

Rubi [F] time = 0.88, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int (ag+bgx)^{-2-m}(ci+dix)^m \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^p dx$$

Verification is Not applicable to the result.

[In] $\text{Int}[(a*g + b*g*x)^{(-2 - m)}*(c*i + d*i*x)^m*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^p, x]$

[Out] $\text{Defer}[\text{Int}[(a*g + b*g*x)^{(-2 - m)}*(c*i + d*i*x)^m*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^p, x]$

Rubi steps

$$\int (211c + 211dx)^m (ag + bgx)^{-2-m} \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^p dx = \int (211c + 211dx)^m (ag + bgx)^{-2-m} \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^p dx$$

Mathematica [F] time = 0.57, size = 0, normalized size = 0.00

$$\int (ag+bgx)^{-2-m}(ci+dix)^m \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^p dx$$

Verification is Not applicable to the result.

[In] Integrate[(a*g + b*g*x)^(-2 - m)*(c*i + d*i*x)^m*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^p, x]

[Out] Integrate[(a*g + b*g*x)^(-2 - m)*(c*i + d*i*x)^m*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^p, x]

fricas [F] time = 0.87, size = 0, normalized size = 0.00

$$\text{integral} \left((bgx + ag)^{-m-2} (dix + ci)^m \left(B \log \left(e \left(\frac{bx + a}{dx + c} \right)^n \right) + A \right)^p, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m*(A+B*log(e*((b*x+a)/(d*x+c))^n))^p, x, algorithm="fricas")

[Out] integral((b*g*x + a*g)^(-m - 2)*(d*i*x + c*i)^m*(B*log(e*((b*x + a)/(d*x + c))^n) + A)^p, x)

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (bgx + ag)^{-m-2} (dix + ci)^m \left(B \log \left(e \left(\frac{bx + a}{dx + c} \right)^n \right) + A \right)^p dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m*(A+B*log(e*((b*x+a)/(d*x+c))^n))^p, x, algorithm="giac")

[Out] integrate((b*g*x + a*g)^(-m - 2)*(d*i*x + c*i)^m*(B*log(e*((b*x + a)/(d*x + c))^n) + A)^p, x)

maple [F] time = 3.53, size = 0, normalized size = 0.00

$$\int \left(B \ln \left(e \left(\frac{bx + a}{dx + c} \right)^n \right) + A \right)^p (bgx + ag)^{-m-2} (dix + ci)^m dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)^(-m-2)*(d*i*x+c*i)^m*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^p, x)

[Out] int((b*g*x+a*g)^(-m-2)*(d*i*x+c*i)^m*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^p, x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (bgx + ag)^{-m-2} (dix + ci)^m \left(B \log \left(e \left(\frac{bx + a}{dx + c} \right)^n \right) + A \right)^p dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m*(A+B*log(e*((b*x+a)/(d*x+c))^n))
^p,x, algorithm="maxima")
```

```
[Out] integrate((b*g*x + a*g)^(-m - 2)*(d*i*x + c*i)^m*(B*log(e*((b*x + a)/(d*x +
c))^n) + A)^p, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(c i + d i x)^m \left(A + B \ln \left(e \left(\frac{a + b x}{c + d x} \right)^n \right) \right)^p}{(a g + b g x)^{m+2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^m*(A + B*log(e*((a + b*x)/(c + d*x))^n))^p)/(a*g + b*g*x
)^(m + 2),x)
```

```
[Out] int(((c*i + d*i*x)^m*(A + B*log(e*((a + b*x)/(c + d*x))^n))^p)/(a*g + b*g*x
)^(m + 2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**(-2-m)*(d*i*x+c*i)**m*(A+B*ln(e*((b*x+a)/(d*x+c))**n
))**p,x)
```

```
[Out] Timed out
```

$$3.212 \quad \int (ag + bgx)^m (ci + dix)^{-2-m} \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^3 dx$$

Optimal. Leaf size=292

$$\frac{6B^2n^2(a+bx)(g(a+bx))^m(i(c+dx))^{-m} \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{i^2(m+1)^3(c+dx)(bc-ad)} + \frac{(a+bx)(g(a+bx))^m(i(c+dx))^{-m} \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{i^2(m+1)(c+dx)(bc-ad)}$$

[Out] $-6*B^3*n^3*(b*x+a)*(g*(b*x+a))^m/(-a*d+b*c)/i^2/(1+m)^4/(d*x+c)/((i*(d*x+c))^m)+6*B^2*n^2*(b*x+a)*(g*(b*x+a))^m*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)/i^2/(1+m)^3/(d*x+c)/((i*(d*x+c))^m)-3*B*n*(b*x+a)*(g*(b*x+a))^m*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)/i^2/(1+m)^2/(d*x+c)/((i*(d*x+c))^m)+(b*x+a)*(g*(b*x+a))^m*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^3/(-a*d+b*c)/i^2/(1+m)/(d*x+c)/((i*(d*x+c))^m)$

Rubi [F] time = 1.98, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int (ag + bgx)^m (ci + dix)^{-2-m} \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^3 dx$$

Verification is Not applicable to the result.

[In] $\text{Int}[(a*g + b*g*x)^m*(c*i + d*i*x)^{-2 - m}*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^3, x]$

[Out] $(A^3*(a*g + b*g*x)^{(1+m)}*(c*i + d*i*x)^{-1-m})/((b*c - a*d)*g*i*(1+m)) - (3*A^2*B*n*(a*g + b*g*x)^{(1+m)}*(c*i + d*i*x)^{-1-m})/((b*c - a*d)*g*i*(1+m)^2) + (3*A^2*B*(a*g + b*g*x)^{(1+m)}*(c*i + d*i*x)^{-1-m}*\text{Log}[e*((a + b*x)/(c + d*x))^n])/((b*c - a*d)*g*i*(1+m)) + 3*A*B^2*\text{Defer}[\text{Int}[(a*g + b*g*x)^m*(c*i + d*i*x)^{-2-m}*\text{Log}[e*((a + b*x)/(c + d*x))^n]^2, x] + B^3*\text{Defer}[\text{Int}[(a*g + b*g*x)^m*(c*i + d*i*x)^{-2-m}*\text{Log}[e*((a + b*x)/(c + d*x))^n]^3, x]$

Rubi steps

$$\begin{aligned}
\int (212c + 212dx)^{-2-m} (ag + bgx)^m \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^3 dx &= \int \left(A^3 (212c + 212dx)^{-2-m} (ag + bgx)^m + 3A^2 \right. \\
&= A^3 \int (212c + 212dx)^{-2-m} (ag + bgx)^m dx + \left. \frac{3A^2 (212c + 212dx)^{-1-m} (ag + bgx)^{1+m}}{212(bc - ad)g(1+m)} + \frac{3A^2 (212c + 212dx)^{-1-m} (ag + bgx)^{1+m}}{212(bc - ad)g(1+m)} + \right. \\
&= \frac{3 \cdot 212^{-2-m} A^2 B n (c + dx)^{-1-m} (ag + bgx)^{1+m}}{(bc - ad)g(1+m)^2}
\end{aligned}$$

Mathematica [A] time = 6.96, size = 206, normalized size = 0.71

$$\frac{(a + bx)(g(a + bx))^m (i(c + dx))^{-m-1} \left(3B(m + 1) \left(A^2(m + 1)^2 - 2AB(m + 1)n + 2B^2n^2 \right) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + 3B^2(m + 1) \right)}{i(c + dx)^{m+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^3,x]
```

```
[Out] ((a + b*x)*(g*(a + b*x))^m*(i*(c + d*x))^(-1 - m)*(A^3*(1 + m)^3 - 3*A^2*B*(1 + m)^2*n + 6*A*B^2*(1 + m)*n^2 - 6*B^3*n^3 + 3*B*(1 + m)*(A^2*(1 + m)^2 - 2*A*B*(1 + m)*n + 2*B^2*n^2)*Log[e*((a + b*x)/(c + d*x))^n] + 3*B^2*(1 + m)^2*(A + A*m - B*n)*Log[e*((a + b*x)/(c + d*x))^n]^2 + B^3*(1 + m)^3*Log[e*((a + b*x)/(c + d*x))^n]^3))/((b*c - a*d)*i*(1 + m)^4)
```

fricas [B] time = 1.02, size = 2680, normalized size = 9.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^3,x, algorithm="fricas")
```

[Out] $(A^3*a*c*m^3 - 6*B^3*a*c*n^3 + 3*A^3*a*c*m^2 + 3*A^3*a*c*m + A^3*a*c + (B^3*a*c*m^3 + 3*B^3*a*c*m^2 + 3*B^3*a*c*m + B^3*a*c + (B^3*b*d*m^3 + 3*B^3*b*d*m^2 + 3*B^3*b*d*m + B^3*b*d)*x^2 + (B^3*b*c + B^3*a*d + (B^3*b*c + B^3*a*d)*m^3 + 3*(B^3*b*c + B^3*a*d)*m^2 + 3*(B^3*b*c + B^3*a*d)*m)*x)*\log(e)^3 + ((B^3*b*d*m^3 + 3*B^3*b*d*m^2 + 3*B^3*b*d*m + B^3*b*d)*n^3*x^2 + (B^3*b*c + B^3*a*d + (B^3*b*c + B^3*a*d)*m^3 + 3*(B^3*b*c + B^3*a*d)*m^2 + 3*(B^3*b*c + B^3*a*d)*m)*n^3*x + (B^3*a*c*m^3 + 3*B^3*a*c*m^2 + 3*B^3*a*c*m + B^3*a*c)*n^3)*\log((b*x + a)/(d*x + c))^3 + 6*(A*B^2*a*c*m + A*B^2*a*c)*n^2 + (A^3*b*d*m^3 - 6*B^3*b*d*n^3 + 3*A^3*b*d*m^2 + 3*A^3*b*d*m + A^3*b*d + 6*(A*B^2*b*d*m + A*B^2*b*d)*n^2 - 3*(A^2*B*b*d*m^2 + 2*A^2*B*b*d*m + A^2*B*b*d)*n)*x^2 + 3*(A*B^2*a*c*m^3 + 3*A*B^2*a*c*m^2 + 3*A*B^2*a*c*m + A*B^2*a*c + (A*B^2*b*d*m^3 + 3*A*B^2*b*d*m^2 + 3*A*B^2*b*d*m + A*B^2*b*d - (B^3*b*d*m^2 + 2*B^3*b*d*m + B^3*b*d)*n)*x^2 - (B^3*a*c*m^2 + 2*B^3*a*c*m + B^3*a*c)*n + (A*B^2*b*c + A*B^2*a*d + (A*B^2*b*c + A*B^2*a*d)*m^3 + 3*(A*B^2*b*c + A*B^2*a*d)*m^2 + 3*(A*B^2*b*c + A*B^2*a*d)*m - (B^3*b*c + B^3*a*d + (B^3*b*c + B^3*a*d)*m^2 + 2*(B^3*b*c + B^3*a*d)*m)*n)*x + ((B^3*b*d*m^3 + 3*B^3*b*d*m^2 + 3*B^3*b*d*m + B^3*b*d)*n*x^2 + (B^3*b*c + B^3*a*d + (B^3*b*c + B^3*a*d)*m^3 + 3*(B^3*b*c + B^3*a*d)*m^2 + 3*(B^3*b*c + B^3*a*d)*m)*n*x + (B^3*a*c*m^3 + 3*B^3*a*c*m^2 + 3*B^3*a*c*m + B^3*a*c)*n)*\log((b*x + a)/(d*x + c))*\log(e)^2 - 3*((B^3*a*c*m^2 + 2*B^3*a*c*m + B^3*a*c)*n^3 - (A*B^2*a*c*m^3 + 3*A*B^2*a*c*m^2 + 3*A*B^2*a*c*m + A*B^2*a*c)*n^2 + ((B^3*b*d*m^2 + 2*B^3*b*d*m + B^3*b*d)*n^3 - (A*B^2*b*d*m^3 + 3*A*B^2*b*d*m^2 + 3*A*B^2*b*d*m + A*B^2*b*d)*n^2)*x^2 + ((B^3*b*c + B^3*a*d + (B^3*b*c + B^3*a*d)*m^2 + 2*(B^3*b*c + B^3*a*d)*m)*n^3 - (A*B^2*b*c + A*B^2*a*d + (A*B^2*b*c + A*B^2*a*d)*m^3 + 3*(A*B^2*b*c + A*B^2*a*d)*m^2 + 3*(A*B^2*b*c + A*B^2*a*d)*m)*n^2)*x)*\log((b*x + a)/(d*x + c))^2 - 3*(A^2*B*a*c*m^2 + 2*A^2*B*a*c*m + A^2*B*a*c)*n + (A^3*b*c + A^3*a*d + (A^3*b*c + A^3*a*d)*m^3 - 6*(B^3*b*c + B^3*a*d)*n^3 + 3*(A^3*b*c + A^3*a*d)*m^2 + 6*(A*B^2*b*c + A*B^2*a*d + (A*B^2*b*c + A*B^2*a*d)*m)*n^2 + 3*(A^3*b*c + A^3*a*d)*m - 3*(A^2*B*b*c + A^2*B*a*d + (A^2*B*b*c + A^2*B*a*d)*m^2 + 2*(A^2*B*b*c + A^2*B*a*d)*m)*n)*x + 3*(A^2*B*a*c*m^3 + 3*A^2*B*a*c*m^2 + 3*A^2*B*a*c*m + A^2*B*a*c + 2*(B^3*a*c*m + B^3*a*c)*n^2 + (A^2*B*b*d*m^3 + 3*A^2*B*b*d*m^2 + 3*A^2*B*b*d*m + A^2*B*b*d + 2*(B^3*b*d*m + B^3*b*d)*n^2 - 2*(A*B^2*b*d*m^2 + 2*A*B^2*b*d*m + A*B^2*b*d)*n)*x^2 + ((B^3*b*d*m^3 + 3*B^3*b*d*m^2 + 3*B^3*b*d*m + B^3*b*d)*n^2*x^2 + (B^3*b*c + B^3*a*d + (B^3*b*c + B^3*a*d)*m^3 + 3*(B^3*b*c + B^3*a*d)*m^2 + 3*(B^3*b*c + B^3*a*d)*m)*n^2*x + (B^3*a*c*m^3 + 3*B^3*a*c*m^2 + 3*B^3*a*c*m + B^3*a*c)*n^2)*\log((b*x + a)/(d*x + c))^2 - 2*(A*B^2*a*c*m^2 + 2*A*B^2*a*c*m + A*B^2*a*c)*n + (A^2*B*b*c + A^2*B*a*d + (A^2*B*b*c + A^2*B*a*d)*m^3 + 3*(A^2*B*b*c + A^2*B*a*d)*m^2 + 2*(B^3*b*c + B^3*a*d + (B^3*b*c + B^3*a*d)*m)*n^2 + 3*(A^2*B*b*c + A^2*B*a*d)*m - 2*(A*B^2*b*c + A*B^2*a*d + (A*B^2*b*c + A*B^2*a*d)*m^2 + 2*(A*B^2*b*c + A*B^2*a*d)*m)*n)*x - 2*((B^3*a*c*m^2 + 2*B^3*a*c*m + B^3*a*c)*n^2 + ((B^3*b*d*m^2 + 2*B^3*b*d*m + B^3*b*d)*n^2 - (A*B^2*b*d*m^3 + 3*A*B^2*b*d*m^2 + 3*A*B^2*b*d*m + A*B^2*b*d)*n)*x^2 - (A*B^2*a*c*m^3 + 3*A*B^2*a*c*m^2 + 3*A*B^2*a*c*m + A*B^2*a*c)*n + ((B^3*b*c + B^3*a*d + (B^3*b*c + B^3*a*d)*m^2 + 2*(B^3*b*c + B^3*a*d)*m)*n^2 - (A*B^2*b*c + A*B^2*a*d$

+ (A*B^2*b*c + A*B^2*a*d)*m^3 + 3*(A*B^2*b*c + A*B^2*a*d)*m^2 + 3*(A*B^2*b*c + A*B^2*a*d)*m)*n)*x)*log((b*x + a)/(d*x + c))*log(e) + 3*(2*(B^3*a*c*m + B^3*a*c)*n^3 - 2*(A*B^2*a*c*m^2 + 2*A*B^2*a*c*m + A*B^2*a*c)*n^2 + (2*(B^3*b*d*m + B^3*b*d)*n^3 - 2*(A*B^2*b*d*m^2 + 2*A*B^2*b*d*m + A*B^2*b*d)*n^2 + (A^2*B*b*d*m^3 + 3*A^2*B*b*d*m^2 + 3*A^2*B*b*d*m + A^2*B*b*d)*n)*x^2 + (A^2*B*a*c*m^3 + 3*A^2*B*a*c*m^2 + 3*A^2*B*a*c*m + A^2*B*a*c)*n + (2*(B^3*b*c + B^3*a*d + (B^3*b*c + B^3*a*d)*m)*n^3 - 2*(A*B^2*b*c + A*B^2*a*d + (A*B^2*b*c + A*B^2*a*d)*m)*n^2 + 2*(A*B^2*b*c + A*B^2*a*d)*m)*n^2 + (A^2*B*b*c + A^2*B*a*d + (A^2*B*b*c + A^2*B*a*d)*m)*n^3 + 3*(A^2*B*b*c + A^2*B*a*d)*m^2 + 3*(A^2*B*b*c + A^2*B*a*d)*m)*n)*x)*log((b*x + a)/(d*x + c))*(b*g*x + a*g)^m*e^(-(m + 2)*log(b*g*x + a*g) + (m + 2)*log((b*x + a)/(d*x + c)) - (m + 2)*log(i/g))/(b*c - a*d)*m^4 + 4*(b*c - a*d)*m^3 + 6*(b*c - a*d)*m^2 + b*c - a*d + 4*(b*c - a*d)*m)

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(B \log \left(e \left(\frac{bx + a}{dx + c} \right)^n \right) + A \right)^3 (bgx + ag)^m (dix + ci)^{-m-2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^3,x, algorithm="giac")

[Out] integrate((B*log(e*((b*x + a)/(d*x + c))^n) + A)^3*(b*g*x + a*g)^m*(d*i*x + c*i)^(-m - 2), x)

maple [F] time = 8.69, size = 0, normalized size = 0.00

$$\int \left(B \ln \left(e \left(\frac{bx + a}{dx + c} \right)^n \right) + A \right)^3 (bgx + ag)^m (dix + ci)^{-m-2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)^m*(d*i*x+c*i)^(-m-2)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^3,x)

[Out] int((b*g*x+a*g)^m*(d*i*x+c*i)^(-m-2)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^3,x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(B \log \left(e \left(\frac{bx + a}{dx + c} \right)^n \right) + A \right)^3 (bgx + ag)^m (dix + ci)^{-m-2} dx$$

Verification of antiderivative is not currently implemented for this CAS.


```
[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)*(A+B*log(e*((b*x+a)/(d*x+c))^n))
^3,x, algorithm="maxima")
```

```
[Out] integrate((B*log(e*((b*x + a)/(d*x + c))^n) + A)^3*(b*g*x + a*g)^m*(d*i*x +
c*i)^(-m - 2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ag + bgx)^m \left(A + B \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^3}{(ci + dix)^{m+2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)^m*(A + B*log(e*((a + b*x)/(c + d*x))^n))^3)/(c*i + d*i*x
)^(m + 2),x)
```

```
[Out] int(((a*g + b*g*x)^m*(A + B*log(e*((a + b*x)/(c + d*x))^n))^3)/(c*i + d*i*x
)^(m + 2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**m*(d*i*x+c*i)**(-2-m)*(A+B*ln(e*((b*x+a)/(d*x+c))**n
))**3,x)
```

```
[Out] Timed out
```

$$3.213 \quad \int (ag+bgx)^m (ci+dix)^{-2-m} \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx$$

Optimal. Leaf size=210

$$\frac{(a+bx)(g(a+bx))^m (i(c+dx))^{-m} \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)^2}{i^2(m+1)(c+dx)(bc-ad)} - \frac{2Bn(a+bx)(g(a+bx))^m (i(c+dx))^{-m} \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{i^2(m+1)^2(c+dx)(bc-ad)}$$

[Out] $2*B^2*n^2*(b*x+a)*(g*(b*x+a))^m/(-a*d+b*c)/i^2/(1+m)^3/(d*x+c)/((i*(d*x+c))^m)-2*B*n*(b*x+a)*(g*(b*x+a))^m*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)/i^2/(1+m)^2/(d*x+c)/((i*(d*x+c))^m)+(b*x+a)*(g*(b*x+a))^m*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)/i^2/(1+m)/(d*x+c)/((i*(d*x+c))^m)$

Rubi [F] time = 1.22, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int (ag + bgx)^m (ci + dix)^{-2-m} \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2 dx$$

Verification is Not applicable to the result.

[In] Int[(a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2,x]

[Out] $(A^2*(a*g + b*g*x)^{(1+m)}*(c*i + d*i*x)^{(-1-m)})/((b*c - a*d)*g*i*(1+m)) - (2*A*B*n*(a*g + b*g*x)^{(1+m)}*(c*i + d*i*x)^{(-1-m)})/((b*c - a*d)*g*i*(1+m)^2) + (2*A*B*(a*g + b*g*x)^{(1+m)}*(c*i + d*i*x)^{(-1-m)}*Log[e*((a + b*x)/(c + d*x))^n])/((b*c - a*d)*g*i*(1+m)) + B^2*Defer[Int][(a*g + b*g*x)^m*(c*i + d*i*x)^{(-2-m)}*Log[e*((a + b*x)/(c + d*x))^n]^2, x]$

Rubi steps

$$\begin{aligned}
\int (213c + 213dx)^{-2-m}(ag + bgx)^m \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2 dx &= \int \left(A^2(213c + 213dx)^{-2-m}(ag + bgx)^m + 2AB(213c + 213dx)^{-2-m}(ag + bgx)^m \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) + B^2(213c + 213dx)^{-2-m}(ag + bgx)^m \log^2 \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right) dx \\
&= A^2 \int (213c + 213dx)^{-2-m}(ag + bgx)^m dx + 2AB \int (213c + 213dx)^{-2-m}(ag + bgx)^m \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) dx + B^2 \int (213c + 213dx)^{-2-m}(ag + bgx)^m \log^2 \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) dx \\
&= \frac{A^2(213c + 213dx)^{-1-m}(ag + bgx)^{1+m}}{213(bc - ad)g(1 + m)} + \frac{2ABn(213c + 213dx)^{-1-m}(ag + bgx)^{1+m}}{213(bc - ad)g(1 + m)} + \frac{B^2n^2(213c + 213dx)^{-1-m}(ag + bgx)^{1+m}}{213(bc - ad)g(1 + m)} \\
&= -\frac{2 \cdot 213^{-2-m} ABn(c + dx)^{-1-m}(ag + bgx)^{1+m}}{(bc - ad)g(1 + m)^2}
\end{aligned}$$

Mathematica [A] time = 2.02, size = 134, normalized size = 0.64

$$\frac{(a + bx)(g(a + bx))^m(i(c + dx))^{-m-1} \left(2B(m + 1)(Am + A - Bn) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + B^2(m + 1)^2 \log^2 \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{i(m + 1)^3(bc - ad)}$$

Antiderivative was successfully verified.

[In] Integrate[(a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2,x]

[Out] ((a + b*x)*(g*(a + b*x))^m*(i*(c + d*x))^(-1 - m)*(A^2*(1 + m)^2 - 2*A*B*(1 + m)*n + 2*B^2*n^2 + 2*B*(1 + m)*(A + A*m - B*n)*Log[e*((a + b*x)/(c + d*x))^n] + B^2*(1 + m)^2*Log[e*((a + b*x)/(c + d*x))^n]^2))/((b*c - a*d)*i*(1 + m)^3)

fricas [B] time = 1.08, size = 991, normalized size = 4.72

$$\frac{(A^2acm^2 + 2B^2acn^2 + 2A^2acm + A^2ac + (A^2bdm^2 + 2B^2bdn^2 + 2A^2bdm + A^2bd - 2(ABbdm + ABbd)n)x^2)}{i(m + 1)^3(bc - ad)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, algorithm="fricas")

```
[Out] (A^2*a*c*m^2 + 2*B^2*a*c*n^2 + 2*A^2*a*c*m + A^2*a*c + (A^2*b*d*m^2 + 2*B^2
*b*d*n^2 + 2*A^2*b*d*m + A^2*b*d - 2*(A*B*b*d*m + A*B*b*d)*n)*x^2 + (B^2*a*
c*m^2 + 2*B^2*a*c*m + B^2*a*c + (B^2*b*d*m^2 + 2*B^2*b*d*m + B^2*b*d)*x^2 +
(B^2*b*c + B^2*a*d + (B^2*b*c + B^2*a*d)*m^2 + 2*(B^2*b*c + B^2*a*d)*m)*x)
*log(e)^2 + ((B^2*b*d*m^2 + 2*B^2*b*d*m + B^2*b*d)*n^2*x^2 + (B^2*b*c + B^2
*a*d + (B^2*b*c + B^2*a*d)*m^2 + 2*(B^2*b*c + B^2*a*d)*m)*n^2*x + (B^2*a*c*
m^2 + 2*B^2*a*c*m + B^2*a*c)*n^2)*log((b*x + a)/(d*x + c))^2 - 2*(A*B*a*c*m
+ A*B*a*c)*n + (A^2*b*c + A^2*a*d + (A^2*b*c + A^2*a*d)*m^2 + 2*(B^2*b*c +
B^2*a*d)*n^2 + 2*(A^2*b*c + A^2*a*d)*m - 2*(A*B*b*c + A*B*a*d + (A*B*b*c +
A*B*a*d)*m)*n)*x + 2*(A*B*a*c*m^2 + 2*A*B*a*c*m + A*B*a*c + (A*B*b*d*m^2 +
2*A*B*b*d*m + A*B*b*d - (B^2*b*d*m + B^2*b*d)*n)*x^2 - (B^2*a*c*m + B^2*a*
c)*n + (A*B*b*c + A*B*a*d + (A*B*b*c + A*B*a*d)*m^2 + 2*(A*B*b*c + A*B*a*d)
*m - (B^2*b*c + B^2*a*d + (B^2*b*c + B^2*a*d)*m)*n)*x + ((B^2*b*d*m^2 + 2*B
^2*b*d*m + B^2*b*d)*n*x^2 + (B^2*b*c + B^2*a*d + (B^2*b*c + B^2*a*d)*m^2 +
2*(B^2*b*c + B^2*a*d)*m)*n*x + (B^2*a*c*m^2 + 2*B^2*a*c*m + B^2*a*c)*n)*log
((b*x + a)/(d*x + c))*log(e) - 2*((B^2*a*c*m + B^2*a*c)*n^2 + ((B^2*b*d*m
+ B^2*b*d)*n^2 - (A*B*b*d*m^2 + 2*A*B*b*d*m + A*B*b*d)*n)*x^2 - (A*B*a*c*m^
2 + 2*A*B*a*c*m + A*B*a*c)*n + ((B^2*b*c + B^2*a*d + (B^2*b*c + B^2*a*d)*m)
*n^2 - (A*B*b*c + A*B*a*d + (A*B*b*c + A*B*a*d)*m^2 + 2*(A*B*b*c + A*B*a*d)
*m)*n)*x)*log((b*x + a)/(d*x + c))*(b*g*x + a*g)^m*e^(-(m + 2)*log(b*g*x +
a*g) + (m + 2)*log((b*x + a)/(d*x + c)) - (m + 2)*log(i/g))/((b*c - a*d)*m
^3 + 3*(b*c - a*d)*m^2 + b*c - a*d + 3*(b*c - a*d)*m)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(B \log \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)^2 (bgx+ag)^m (dix+ci)^{-m-2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)*(A+B*log(e*((b*x+a)/(d*x+c))^n))
^2,x, algorithm="giac")
```

```
[Out] integrate((B*log(e*((b*x + a)/(d*x + c))^n) + A)^2*(b*g*x + a*g)^m*(d*i*x +
c*i)^(-m - 2), x)
```

maple [F] time = 7.86, size = 0, normalized size = 0.00

$$\int \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)^2 (bgx+ag)^m (dix+ci)^{-m-2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^m*(d*i*x+c*i)^(-m-2)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)
```

```
[Out] int((b*g*x+a*g)^m*(d*i*x+c*i)^(-m-2)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(B \log \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)^2 (bgx+ag)^m (dix+ci)^{-m-2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, algorithm="maxima")

[Out] integrate((B*log(e*((b*x + a)/(d*x + c))^n) + A)^2*(b*g*x + a*g)^m*(d*i*x + c*i)^(-m - 2), x)

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ag+bgx)^m \left(A + B \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ci+dix)^{m+2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((a*g + b*g*x)^m*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(c*i + d*i*x)^(m + 2), x)

[Out] int(((a*g + b*g*x)^m*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(c*i + d*i*x)^(m + 2), x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)**m*(d*i*x+c*i)**(-2-m)*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2,x)

[Out] Timed out

$$3.214 \quad \int (ag+bgx)^m (ci+dix)^{-2-m} \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) dx$$

Optimal. Leaf size=128

$$\frac{(a+bx)(g(a+bx))^m (i(c+dx))^{-m} \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{i^2(m+1)(c+dx)(bc-ad)} - \frac{Bn(a+bx)(g(a+bx))^m (i(c+dx))^{-m}}{i^2(m+1)^2(c+dx)(bc-ad)}$$

[Out] $-B*n*(b*x+a)*(g*(b*x+a))^m/(-a*d+b*c)/i^2/(1+m)^2/(d*x+c)/((i*(d*x+c))^m)+(b*x+a)*(g*(b*x+a))^m*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)/i^2/(1+m)/(d*x+c)/((i*(d*x+c))^m)$

Rubi [A] time = 0.62, antiderivative size = 168, normalized size of antiderivative = 1.31, number of steps used = 6, number of rules used = 4, integrand size = 47, $\frac{\text{number of rules}}{\text{integrand size}} = 0.085$, Rules used = {6742, 37, 2554, 12}

$$\frac{A(ag+bgx)^{m+1}(ci+dix)^{-m-1}}{gi(m+1)(bc-ad)} + \frac{B(ag+bgx)^{m+1}(ci+dix)^{-m-1} \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{gi(m+1)(bc-ad)} - \frac{Bn(ag+bgx)^{m+1}(ci+dix)^{-m-1}}{gi(m+1)^2(bc-ad)}$$

Antiderivative was successfully verified.

[In] $\text{Int}[(a*g + b*g*x)^m*(c*i + d*i*x)^{-2-m}*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]),x]$

[Out] $(A*(a*g + b*g*x)^{(1+m)*(c*i + d*i*x)^{-1-m}}/((b*c - a*d)*g*i*(1+m)) - (B*n*(a*g + b*g*x)^{(1+m)*(c*i + d*i*x)^{-1-m}}/((b*c - a*d)*g*i*(1+m)^2) + (B*(a*g + b*g*x)^{(1+m)*(c*i + d*i*x)^{-1-m})*\text{Log}[e*((a + b*x)/(c + d*x))^n])/((b*c - a*d)*g*i*(1+m))$

Rule 12

$\text{Int}[(a_*)*(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \ \&\& \ !\text{MatchQ}[u, (b_*)*(v_)] /; \text{FreeQ}[b, x]$

Rule 37

$\text{Int}[(a_.) + (b_.)*(x_.))^{(m_.)*((c_.) + (d_.)*(x_.))^{(n_.)}, x_Symbol] \rightarrow \text{Simp}[(a + b*x)^{(m+1)*(c+d*x)^{(n+1)}}/((b*c - a*d)*(m+1)), x] /; \text{FreeQ}[\{a, b, c, d, m, n\}, x] \ \&\& \ \text{NeQ}[b*c - a*d, 0] \ \&\& \ \text{EqQ}[m + n + 2, 0] \ \&\& \ \text{NeQ}[m, -1]$

Rule 2554

```
Int[Log[u_]*(v_), x_Symbol] := With[{w = IntHide[v, x]}, Dist[Log[u], w, x]
- Int[SimplifyIntegrand[(w*D[u, x])/u, x], x] /; InverseFunctionFreeQ[w, x]
]] /; InverseFunctionFreeQ[u, x]
```

Rule 6742

```
Int[u_, x_Symbol] := With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\begin{aligned} \int (214c + 214dx)^{-2-m} (ag + bgx)^m \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) dx &= \int \left(A(214c + 214dx)^{-2-m} (ag + bgx)^m + B(214c + 214dx)^{-2-m} (ag + bgx)^m \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) dx \\ &= A \int (214c + 214dx)^{-2-m} (ag + bgx)^m dx + B \int (214c + 214dx)^{-2-m} (ag + bgx)^m \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) dx \\ &= \frac{A(214c + 214dx)^{-1-m} (ag + bgx)^{1+m}}{214(bc - ad)g(1 + m)} + \frac{B(214c + 214dx)^{-1-m} (ag + bgx)^{1+m} \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{214(bc - ad)g(1 + m)} \\ &= \frac{A(214c + 214dx)^{-1-m} (ag + bgx)^{1+m}}{214(bc - ad)g(1 + m)} + \frac{B(214c + 214dx)^{-1-m} (ag + bgx)^{1+m} \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{214(bc - ad)g(1 + m)} \\ &= -\frac{214^{-2-m} Bn(c + dx)^{-1-m} (ag + bgx)^{1+m}}{(bc - ad)g(1 + m)^2} + \frac{A(214c + 214dx)^{-1-m} (ag + bgx)^{1+m}}{214(bc - ad)g(1 + m)} \end{aligned}$$

Mathematica [A] time = 0.52, size = 78, normalized size = 0.61

$$\frac{(a + bx)(g(a + bx))^m (i(c + dx))^{-m-1} \left(B(m + 1) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + Am + A - Bn \right)}{i(m + 1)^2 (bc - ad)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]),x]
```

```
[Out] ((a + b*x)*(g*(a + b*x))^m*(i*(c + d*x))^(-1 - m)*(A + A*m - B*n + B*(1 + m)*Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)*i*(1 + m)^2)
```

fricas [B] time = 0.91, size = 274, normalized size = 2.14

$$\left(Aacm - Bacn + Aac + (Abdm - Bbdn + Abd)x^2 + (Abc + Aad + (Abc + Aad)m - (Bbc + Bad)n)x + (Bacm + \dots \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="fricas")

[Out] (A*a*c*m - B*a*c*n + A*a*c + (A*b*d*m - B*b*d*n + A*b*d)*x^2 + (A*b*c + A*a*d + (A*b*c + A*a*d)*m - (B*b*c + B*a*d)*n)*x + (B*a*c*m + B*a*c + (B*b*d*m + B*b*d)*x^2 + (B*b*c + B*a*d + (B*b*c + B*a*d)*m)*x)*log(e) + ((B*b*d*m + B*b*d)*n*x^2 + (B*b*c + B*a*d + (B*b*c + B*a*d)*m)*n*x + (B*a*c*m + B*a*c)*n)*log((b*x + a)/(d*x + c))*(b*g*x + a*g)^m*e^(-(m + 2)*log(b*g*x + a*g) + (m + 2)*log((b*x + a)/(d*x + c)) - (m + 2)*log(i/g))/((b*c - a*d)*m^2 + b*c - a*d + 2*(b*c - a*d)*m)

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(B \log \left(e \left(\frac{bx + a}{dx + c} \right)^n \right) + A \right) (bgx + ag)^m (dix + ci)^{-m-2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="giac")

[Out] integrate((B*log(e*((b*x + a)/(d*x + c))^n) + A)*(b*g*x + a*g)^m*(d*i*x + c*i)^(-m - 2), x)

maple [F] time = 8.82, size = 0, normalized size = 0.00

$$\int \left(B \ln \left(e \left(\frac{bx + a}{dx + c} \right)^n \right) + A \right) (bgx + ag)^m (dix + ci)^{-m-2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)^m*(d*i*x+c*i)^(-m-2)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)

[Out] int((b*g*x+a*g)^m*(d*i*x+c*i)^(-m-2)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(B \log \left(e \left(\frac{bx + a}{dx + c} \right)^n \right) + A \right) (bgx + ag)^m (dix + ci)^{-m-2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="maxima")
```

```
[Out] integrate((B*log(e*((b*x + a)/(d*x + c))^n) + A)*(b*g*x + a*g)^m*(d*i*x + c*i)^(-m - 2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(ag + bgx)^m \left(A + B \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ci + dix)^{m+2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)^m*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(c*i + d*i*x)^(m + 2),x)
```

```
[Out] int(((a*g + b*g*x)^m*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(c*i + d*i*x)^(m + 2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**m*(d*i*x+c*i)**(-2-m)*(A+B*ln(e*((b*x+a)/(d*x+c))**n)),x)
```

```
[Out] Timed out
```

$$3.215 \quad \int \frac{(ag+bgx)^m (ci+dx)^{-2-m}}{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)} dx$$

Optimal. Leaf size=125

$$\frac{(a+bx)e^{-\frac{A(m+1)}{Bn}} (g(a+bx))^m (i(c+dx))^{-m} \left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{-\frac{m+1}{n}} \operatorname{Ei}\left(\frac{(m+1)\left(A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{Bn}\right)}{B^2 n (c+dx)(bc-ad)}$$

[Out] (b*x+a)*(g*(b*x+a))^m*Ei(((1+m)*(A+B*ln(e*((b*x+a)/(d*x+c))^n)))/B/n)/B/(-a*d+b*c)/exp(A*(1+m)/B/n)/i^2/n/((e*((b*x+a)/(d*x+c))^n)^((1+m)/n))/(d*x+c)/((i*(d*x+c))^m)

Rubi [F] time = 0.74, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{(ag+bgx)^m (ci+dx)^{-2-m}}{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)} dx$$

Verification is Not applicable to the result.

[In] Int[((a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m))/(A + B*Log[e*((a + b*x)/(c + d*x))^n]), x]

[Out] Defer[Int] [((a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m))/(A + B*Log[e*((a + b*x)/(c + d*x))^n]), x]

Rubi steps

$$\int \frac{(215c + 215dx)^{-2-m} (ag + bgx)^m}{A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)} dx = \int \frac{(215c + 215dx)^{-2-m} (ag + bgx)^m}{A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)} dx$$

Mathematica [F] time = 0.25, size = 0, normalized size = 0.00

$$\int \frac{(ag+bgx)^m (ci+dx)^{-2-m}}{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)} dx$$

Verification is Not applicable to the result.

[In] Integrate[((a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m))/(A + B*Log[e*((a + b*x)/(c + d*x))^n]), x]

[Out] Integrate[((a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m))/(A + B*Log[e*((a + b*x)/(c + d*x))^n]), x]

fricas [A] time = 0.83, size = 98, normalized size = 0.78

$$\frac{\operatorname{Ei}\left(\frac{(Bm+B)n \log\left(\frac{bx+a}{dx+c}\right) + Am + (Bm+B) \log(e) + A}{Bn}\right) e^{\left(-\frac{(Bm+2B)n \log\left(\frac{i}{g}\right) + Am + (Bm+B) \log(e) + A}{Bn}\right)}}{(Bbc - Bad)g^{2n}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)/(A+B*log(e*((b*x+a)/(d*x+c))^n)), x, algorithm="fricas")

[Out] Ei(((B*m + B)*n*log((b*x + a)/(d*x + c)) + A*m + (B*m + B)*log(e) + A)/(B*n)) * e^(-((B*m + 2*B)*n*log(i/g) + A*m + (B*m + B)*log(e) + A)/(B*n)) / ((B*b*c - B*a*d)*g^2*n)

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bgx + ag)^m (dix + ci)^{-m-2}}{B \log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right) + A} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)/(A+B*log(e*((b*x+a)/(d*x+c))^n)), x, algorithm="giac")

[Out] integrate((b*g*x + a*g)^m*(d*i*x + c*i)^(-m - 2)/(B*log(e*((b*x + a)/(d*x + c))^n) + A), x)

maple [F] time = 4.21, size = 0, normalized size = 0.00

$$\int \frac{(bgx + ag)^m (dix + ci)^{-m-2}}{B \ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right) + A} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((b*g*x+a*g)^m*(d*i*x+c*i)^(-m-2)/(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)`

[Out] `int((b*g*x+a*g)^m*(d*i*x+c*i)^(-m-2)/(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)`

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bgx + ag)^m (dix + ci)^{-m-2}}{B \log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right) + A} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)/(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="maxima")`

[Out] `integrate((b*g*x + a*g)^m*(d*i*x + c*i)^(-m - 2)/(B*log(e*((b*x + a)/(d*x + c))^n) + A), x)`

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(ag + bgx)^m}{(ci + dix)^{m+2} \left(A + B \ln\left(e\left(\frac{a+bx}{c+dx} \right)^n \right) \right)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((a*g + b*g*x)^m/((c*i + d*i*x)^(m + 2)*(A + B*log(e*((a + b*x)/(c + d*x))^n))),x)`

[Out] `int((a*g + b*g*x)^m/((c*i + d*i*x)^(m + 2)*(A + B*log(e*((a + b*x)/(c + d*x))^n))), x)`

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((b*g*x+a*g)**m*(d*i*x+c*i)**(-2-m)/(A+B*ln(e*((b*x+a)/(d*x+c))**n)),x)`

[Out] Timed out

$$3.216 \quad \int \frac{(ag+bgx)^m (ci+dix)^{-2-m}}{\left(A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2} dx$$

Optimal. Leaf size=206

$$\frac{(m+1)(a+bx)e^{-\frac{A(m+1)}{Bn}}(g(a+bx))^m(i(c+dx))^{-m}\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{-\frac{m+1}{n}} \operatorname{Ei}\left(\frac{(m+1)\left(A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{Bn}\right)}{B^2 i^2 n^2 (c+dx)(bc-ad)} \frac{(a+bx)(g(a+bx))^m (ci+dix)^{-2-m}}{B i^2 n (c+dx)(bc-ad)}$$

[Out] (1+m)*(b*x+a)*(g*(b*x+a))^m*Ei((1+m)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/B/n)/B^2/(-a*d+b*c)/exp(A*(1+m)/B/n)/i^2/n^2/((e*((b*x+a)/(d*x+c))^n)^((1+m)/n))/(d*x+c)/((i*(d*x+c))^m)-(b*x+a)*(g*(b*x+a))^m/B/(-a*d+b*c)/i^2/n/(d*x+c)/((i*(d*x+c))^m)/(A+B*ln(e*((b*x+a)/(d*x+c))^n))

Rubi [F] time = 0.83, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{(ag + bgx)^m (ci + dix)^{-2-m}}{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2} dx$$

Verification is Not applicable to the result.

[In] Int[((a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m))/(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2, x]

[Out] Defer[Int](((a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m))/(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2, x]

Rubi steps

$$\int \frac{(216c + 216dx)^{-2-m} (ag + bgx)^m}{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2} dx = \int \frac{(216c + 216dx)^{-2-m} (ag + bgx)^m}{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2} dx$$

Mathematica [F] time = 0.28, size = 0, normalized size = 0.00

$$\int \frac{(ag + bgx)^m (ci + dix)^{-2-m}}{\left(A + B \log\left(e \left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2} dx$$

Verification is Not applicable to the result.

[In] Integrate[((a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m))/(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2,x]

[Out] Integrate[((a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m))/(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2, x]

fricas [A] time = 1.00, size = 293, normalized size = 1.42

$$\frac{(Bbdg^2nx^2 + Bacg^2n + (Bbc + Bad)g^2nx)(bgx + ag)^m e^{-(m+2)\log(bgx+ag)+(m+2)\log\left(\frac{bx+a}{dx+c}\right)-(m+2)\log\left(\frac{i}{g}\right)} - (Bm + B)(B^3bc - B^3ad)g^2n^3 \log\left(\frac{bx+a}{dx+c}\right) + (B^3bc - B^3ad)g^2n^3 \log\left(\frac{i}{g}\right)}{(B^3bc - B^3ad)g^2n^3 \log\left(\frac{bx+a}{dx+c}\right) + (B^3bc - B^3ad)g^2n^3 \log\left(\frac{i}{g}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)/(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, algorithm="fricas")

[Out] -((B*b*d*g^2*n*x^2 + B*a*c*g^2*n + (B*b*c + B*a*d)*g^2*n*x)*(b*g*x + a*g)^m * e^(-(m + 2)*log(b*g*x + a*g) + (m + 2)*log((b*x + a)/(d*x + c)) - (m + 2)*log(i/g)) - ((B*m + B)*n*log((b*x + a)/(d*x + c)) + A*m + (B*m + B)*log(e) + A)*Ei(((B*m + B)*n*log((b*x + a)/(d*x + c)) + A*m + (B*m + B)*log(e) + A)/(B*n)))/((B^3*b*c - B^3*a*d)*g^2*n^3*log((b*x + a)/(d*x + c)) + (B^3*b*c - B^3*a*d)*g^2*n^2*log(e) + (A*B^2*b*c - A*B^2*a*d)*g^2*n^2)

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bgx + ag)^m (dix + ci)^{-m-2}}{\left(B \log\left(e \left(\frac{bx+a}{dx+c}\right)^n\right) + A\right)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)/(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, algorithm="giac")

[Out] integrate((b*g*x + a*g)^m*(d*i*x + c*i)^(-m - 2)/(B*log(e*((b*x + a)/(d*x + c))^n) + A)^2, x)

maple [F(-1)] time = 180.00, size = 0, normalized size = 0.00

$$\int \frac{(bgx + ag)^m (dix + ci)^{-m-2}}{\left(B \ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right) + A\right)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)^m*(d*i*x+c*i)^(-m-2)/(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)

[Out] int((b*g*x+a*g)^m*(d*i*x+c*i)^(-m-2)/(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-g^m(m+1) \int -\frac{(B^2d^2i^{m+2}nx^2 + 2B^2cdi^{m+2}nx + B^2c^2i^{m+2}n)(dx + c)^m \log((bx + a)^n) - (B^2d^2i^{m+2}nx^2 + 2B^2cdi^{m+2}nx + B^2c^2i^{m+2}n)(dx + c)^m \log((bx + a)^n) - (B^2d^2i^{m+2}nx^2 + 2B^2cdi^{m+2}nx + B^2c^2i^{m+2}n)(dx + c)^m \log((bx + a)^n) - (B^2d^2i^{m+2}nx^2 + 2B^2cdi^{m+2}nx + B^2c^2i^{m+2}n)(dx + c)^m \log((bx + a)^n)}{(B^2d^2i^{m+2}nx^2 + 2B^2cdi^{m+2}nx + B^2c^2i^{m+2}n)(dx + c)^m \log((bx + a)^n) - (B^2d^2i^{m+2}nx^2 + 2B^2cdi^{m+2}nx + B^2c^2i^{m+2}n)(dx + c)^m \log((bx + a)^n) - (B^2d^2i^{m+2}nx^2 + 2B^2cdi^{m+2}nx + B^2c^2i^{m+2}n)(dx + c)^m \log((bx + a)^n) - (B^2d^2i^{m+2}nx^2 + 2B^2cdi^{m+2}nx + B^2c^2i^{m+2}n)(dx + c)^m \log((bx + a)^n)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)/(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, algorithm="maxima")

[Out] -g^m*(m + 1)*integrate(-(b*x + a)^m/((B^2*d^2*i^(m + 2)*n*x^2 + 2*B^2*c*d*i^(m + 2)*n*x + B^2*c^2*i^(m + 2)*n)*(d*x + c)^m*log((b*x + a)^n) - (B^2*d^2*i^(m + 2)*n*x^2 + 2*B^2*c*d*i^(m + 2)*n*x + B^2*c^2*i^(m + 2)*n)*(d*x + c)^m*log((d*x + c)^n) + (B^2*c^2*i^(m + 2)*n*log(e) + A*B*c^2*i^(m + 2)*n + (B^2*d^2*i^(m + 2)*n*log(e) + A*B*d^2*i^(m + 2)*n)*x^2 + 2*(B^2*c*d*i^(m + 2)*n*log(e) + A*B*c*d*i^(m + 2)*n)*x)*(d*x + c)^m), x) - (b*g^m*x + a*g^m)*(b*x + a)^m/(((b*c*d*i^(m + 2)*n - a*d^2*i^(m + 2)*n)*B^2*x + (b*c^2*i^(m + 2)*n - a*c*d*i^(m + 2)*n)*B^2)*(d*x + c)^m*log((b*x + a)^n) - ((b*c*d*i^(m + 2)*n - a*d^2*i^(m + 2)*n)*B^2*x + (b*c^2*i^(m + 2)*n - a*c*d*i^(m + 2)*n)*B^2)*(d*x + c)^m*log((d*x + c)^n) + ((b*c^2*i^(m + 2)*n - a*c*d*i^(m + 2)*n)*A*B + (b*c^2*i^(m + 2)*n*log(e) - a*c*d*i^(m + 2)*n*log(e))*B^2 + ((b*c*d*i^(m + 2)*n - a*d^2*i^(m + 2)*n)*A*B + (b*c*d*i^(m + 2)*n*log(e) - a*d^2*i^(m + 2)*n*log(e))*B^2)*x)*(d*x + c)^m)

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ag + bgx)^m}{(ci + dix)^{m+2} \left(A + B \ln\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) \right)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)^m/((c*i + d*i*x)^(m + 2)*(A + B*log(e*((a + b*x)/(c + d*x))
))^n))^2),x)
```

```
[Out] int((a*g + b*g*x)^m/((c*i + d*i*x)^(m + 2)*(A + B*log(e*((a + b*x)/(c + d*x))
))^n))^2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**m*(d*i*x+c*i)**(-2-m)/(A+B*ln(e*((b*x+a)/(d*x+c))**n))
)**2,x)
```

```
[Out] Timed out
```


$$3.217 \quad \int \frac{(ag+bgx)^m (ci+dix)^{-2-m}}{\left(A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^3} dx$$

Optimal. Leaf size=295

$$\frac{(m+1)^2(a+bx)e^{-\frac{A(m+1)}{Bn}}(g(a+bx))^m(i(c+dx))^{-m}\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{-\frac{m+1}{n}} \operatorname{Ei}\left(\frac{(m+1)\left(A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{Bn}\right)}{2B^3i^2n^3(c+dx)(bc-ad)} \frac{(m+1)(a+bx)}{2B^2i^2n^2(c+dx)}$$

[Out] $1/2*(1+m)^2*(b*x+a)*(g*(b*x+a))^m*\operatorname{Ei}((1+m)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/B/n)/B^3/(-a*d+b*c)/\exp(A*(1+m)/B/n)/i^2/n^3/((e*((b*x+a)/(d*x+c))^n)^{(1+m)/n})/(d*x+c)/((i*(d*x+c))^m)-1/2*(b*x+a)*(g*(b*x+a))^m/B/(-a*d+b*c)/i^2/n/(d*x+c)/((i*(d*x+c))^m)/(A+B*\ln(e*((b*x+a)/(d*x+c))^n))^2-1/2*(1+m)*(b*x+a)*(g*(b*x+a))^m/B^2/(-a*d+b*c)/i^2/n^2/(d*x+c)/((i*(d*x+c))^m)/(A+B*\ln(e*((b*x+a)/(d*x+c))^n))$

Rubi [F] time = 0.81, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{(ag+bgx)^m (ci+dix)^{-2-m}}{\left(A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^3} dx$$

Verification is Not applicable to the result.

[In] $\operatorname{Int}(((a*g + b*g*x)^m*(c*i + d*i*x)^{-2-m})/(A + B*\operatorname{Log}[e*((a + b*x)/(c + d*x))^n])^3, x]$

[Out] $\operatorname{Defer}[\operatorname{Int}(((a*g + b*g*x)^m*(c*i + d*i*x)^{-2-m})/(A + B*\operatorname{Log}[e*((a + b*x)/(c + d*x))^n])^3, x)]$

Rubi steps

$$\int \frac{(217c + 217dx)^{-2-m}(ag + bgx)^m}{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^3} dx = \int \frac{(217c + 217dx)^{-2-m}(ag + bgx)^m}{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^3} dx$$

Mathematica [F] time = 0.34, size = 0, normalized size = 0.00

$$\int \frac{(ag + bgx)^m (ci + dix)^{-2-m}}{\left(A + B \log\left(e \left(\frac{a+bx}{c+dx}\right)^n\right)\right)^3} dx$$

Verification is Not applicable to the result.

[In] Integrate[((a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m))/(A + B*Log[e*((a + b*x)/(c + d*x))^n])^3,x]

[Out] Integrate[((a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m))/(A + B*Log[e*((a + b*x)/(c + d*x))^n])^3, x]

fricas [B] time = 1.08, size = 818, normalized size = 2.77

$$\left(B^2acg^2n^2 + (B^2bdg^2n^2 + (ABbdg^2m + ABbdg^2)n)x^2 + (ABacg^2m + ABacg^2)n + ((B^2bc + B^2ad)g^2n^2 + ((AE$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)/(A+B*log(e*((b*x+a)/(d*x+c))^n))^3,x, algorithm="fricas")

[Out] -1/2*((B^2*a*c*g^2*n^2 + (B^2*b*d*g^2*n^2 + (A*B*b*d*g^2*m + A*B*b*d*g^2)*n)*x^2 + (A*B*a*c*g^2*m + A*B*a*c*g^2)*n + ((B^2*b*c + B^2*a*d)*g^2*n^2 + ((A*B*b*c + A*B*a*d)*g^2*m + (A*B*b*c + A*B*a*d)*g^2)*n)*x + ((B^2*b*d*g^2*m + B^2*b*d*g^2)*n*x^2 + ((B^2*b*c + B^2*a*d)*g^2*m + (B^2*b*c + B^2*a*d)*g^2)*n*x + (B^2*a*c*g^2*m + B^2*a*c*g^2)*n)*log(e) + ((B^2*b*d*g^2*m + B^2*b*d*g^2)*n^2*x^2 + ((B^2*b*c + B^2*a*d)*g^2*m + (B^2*b*c + B^2*a*d)*g^2)*n^2*x + (B^2*a*c*g^2*m + B^2*a*c*g^2)*n^2)*log((b*x + a)/(d*x + c))*((b*g*x + a*g)^m*e^(-(m + 2)*log(b*g*x + a*g) + (m + 2)*log((b*x + a)/(d*x + c)) - (m + 2)*log(i/g)) - ((B^2*m^2 + 2*B^2*m + B^2)*n^2*log((b*x + a)/(d*x + c))^2 + A^2*m^2 + 2*A^2*m + (B^2*m^2 + 2*B^2*m + B^2)*log(e)^2 + 2*(A*B*m^2 + 2*A*B*m + A*B)*n*log((b*x + a)/(d*x + c)) + A^2 + 2*(A*B*m^2 + 2*A*B*m + (B^2*m^2 + 2*B^2*m + B^2)*n*log((b*x + a)/(d*x + c)) + A*B)*log(e))*Ei(((B*m + B)*n*log((b*x + a)/(d*x + c)) + A*m + (B*m + B)*log(e) + A)/(B*n)))*e^(-((B*m + 2*B)*n*log(i/g) + A*m + (B*m + B)*log(e) + A)/(B*n)))/((B^5*b*c - B^5*a*d)*g^2*n^5*log((b*x + a)/(d*x + c))^2 + (B^5*b*c - B^5*a*d)*g^2*n^3*log(e)^2 + 2*(A*B^4*b*c - A*B^4*a*d)*g^2*n^4*log((b*x + a)/(d*x + c)) + (A^2*B^3*b*c - A^2*B^3*a*d)*g^2*n^3 + 2*((B^5*b*c - B^5*a*d)*g^2*n^4*log((b*x + a)/(d*x + c)) + (A*B^4*b*c - A*B^4*a*d)*g^2*n^3)*log(e))

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bgx + ag)^m (dix + ci)^{-m-2}}{\left(B \log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right) + A\right)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)/(A+B*log(e*((b*x+a)/(d*x+c))^n))^3,x, algorithm="giac")

[Out] integrate((b*g*x + a*g)^m*(d*i*x + c*i)^(-m - 2)/(B*log(e*((b*x + a)/(d*x + c))^n) + A)^3, x)

maple [F(-1)] time = 180.00, size = 0, normalized size = 0.00

$$\int \frac{(bgx + ag)^m (dix + ci)^{-m-2}}{\left(B \ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right) + A\right)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)^m*(d*i*x+c*i)^(-m-2)/(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^3,x)

[Out] int((b*g*x+a*g)^m*(d*i*x+c*i)^(-m-2)/(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^3,x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)/(A+B*log(e*((b*x+a)/(d*x+c))^n))^3,x, algorithm="maxima")

[Out] $-(m^2 + 2m + 1)g^m \int \frac{-1/2(bx + a)^m / ((B^3 d^2 i^{m+2} n^2 x^2 + 2B^3 c d i^{m+2} n^2 x + B^3 c^2 i^{m+2} n^2) (dx + c)^m \log((bx + a)^n) - (B^3 d^2 i^{m+2} n^2 x^2 + 2B^3 c d i^{m+2} n^2 x + B^3 c^2 i^{m+2} n^2) (dx + c)^m \log((dx + c)^n) + (B^3 c^2 i^{m+2} n^2 \log(e) + A B^2 c^2 i^{m+2} n^2 + (B^3 d^2 i^{m+2} n^2 \log(e) + A B^2 d^2 i^{m+2} n^2) x^2 + 2(B^3 c d i^{m+2} n^2 \log(e) + A B^2 c d i^{m+2} n^2) x) (dx + c)^m}{1/2((B b g^m (m+1) x + B a g^m (m+1)) (bx + a)^m \log((bx + a)^n) - (B b g^m (m+1) x + B a g^m (m+1)) (bx + a)^m \log((dx + c)^n) + (A a g^m (m+1) + (g^m (m+1) \log(e) + g^m n) B a + (A b g^m (m+1) + (g^m (m+1) \log(e) + g^m n) B b) x) (bx + a)^m)}{((b c d i^m$

$$\begin{aligned}
& (m+2)n^2 - a d^2 i^{(m+2)n^2} B^4 x + (b c^2 i^{(m+2)n^2} - a c d i^{(m+2)n^2}) B^4 (d x + c)^m \log((b x + a)^n)^2 + ((b c d i^{(m+2)n^2} - a d^2 i^{(m+2)n^2}) B^4 x + (b c^2 i^{(m+2)n^2} - a c d i^{(m+2)n^2}) B^4) (d x + c)^m \log((d x + c)^n)^2 + 2((b c^2 i^{(m+2)n^2} - a c d i^{(m+2)n^2}) n^2) A B^3 + (b c^2 i^{(m+2)n^2} \log(e) - a c d i^{(m+2)n^2} \log(e)) B^4 + ((b c d i^{(m+2)n^2} - a d^2 i^{(m+2)n^2}) A B^3 + (b c d i^{(m+2)n^2} \log(e) - a d^2 i^{(m+2)n^2} \log(e)) B^4) x (d x + c)^m \log((b x + a)^n) + ((b c^2 i^{(m+2)n^2} - a c d i^{(m+2)n^2}) A^2 B^2 + 2(b c^2 i^{(m+2)n^2} \log(e) - a c d i^{(m+2)n^2} \log(e)) A B^3 + (b c^2 i^{(m+2)n^2} \log(e)^2 - a c d i^{(m+2)n^2} \log(e)^2) B^4 + ((b c d i^{(m+2)n^2} - a d^2 i^{(m+2)n^2}) A^2 B^2 + 2(b c d i^{(m+2)n^2} \log(e) - a d^2 i^{(m+2)n^2} \log(e)) A B^3 + (b c d i^{(m+2)n^2} \log(e)^2 - a d^2 i^{(m+2)n^2} \log(e)^2) B^4) x) (d x + c)^m - 2(((b c d i^{(m+2)n^2} - a d^2 i^{(m+2)n^2}) B^4 x + (b c^2 i^{(m+2)n^2} - a c d i^{(m+2)n^2}) B^4) (d x + c)^m \log((b x + a)^n) + ((b c^2 i^{(m+2)n^2} - a c d i^{(m+2)n^2}) A B^3 + (b c^2 i^{(m+2)n^2} \log(e) - a c d i^{(m+2)n^2} \log(e)) B^4 + ((b c d i^{(m+2)n^2} - a d^2 i^{(m+2)n^2}) A B^3 + (b c d i^{(m+2)n^2} \log(e) - a d^2 i^{(m+2)n^2} \log(e)) B^4) x) (d x + c)^m) \log((d x + c)^n)
\end{aligned}$$

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a g + b g x)^m}{(c i + d i x)^{m+2} \left(A + B \ln \left(e \left(\frac{a+b x}{c+d x} \right)^n \right) \right)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a*g + b*g*x)^m/((c*i + d*i*x)^(m+2)*(A + B*log(e*((a + b*x)/(c + d*x))^n))^3), x)

[Out] int((a*g + b*g*x)^m/((c*i + d*i*x)^(m+2)*(A + B*log(e*((a + b*x)/(c + d*x))^n))^3), x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)**m*(d*i*x+c*i)**(-2-m)/(A+B*ln(e*((b*x+a)/(d*x+c))**n))**3,x)

[Out] Timed out

$$3.218 \quad \int (ag+bgx)^{-2-m}(ci+dix)^m \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^3 dx$$

Optimal. Leaf size=309

$$\frac{6B^2n^2(a+bx)(g(a+bx))^{-m-2}(i(c+dx))^{m+2} \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{i^2(m+1)^3(c+dx)(bc-ad)} - \frac{(a+bx)(g(a+bx))^{-m-2}(i(c+dx))^{m+2} \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{i^2(m+1)(c+dx)(bc-ad)}$$

[Out] $-6*B^3*n^3*(b*x+a)*(g*(b*x+a))^{(-2-m)*(i*(d*x+c))^{(2+m)/(-a*d+b*c)/i^2/(1+m)^4/(d*x+c)-6*B^2*n^2*(b*x+a)*(g*(b*x+a))^{(-2-m)*(i*(d*x+c))^{(2+m)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n)))/(-a*d+b*c)/i^2/(1+m)^3/(d*x+c)-3*B*n*(b*x+a)*(g*(b*x+a))^{(-2-m)*(i*(d*x+c))^{(2+m)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))}^2/(-a*d+b*c)/i^2/(1+m)^2/(d*x+c)-(b*x+a)*(g*(b*x+a))^{(-2-m)*(i*(d*x+c))^{(2+m)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))}^3/(-a*d+b*c)/i^2/(1+m)/(d*x+c)}$

Rubi [F] time = 2.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int (ag + bgx)^{-2-m}(ci + dix)^m \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^3 dx$$

Verification is Not applicable to the result.

[In] $\text{Int}[(a*g + b*g*x)^{(-2 - m)*(c*i + d*i*x)^m*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^3, x]$

[Out] $-((A^3*(a*g + b*g*x)^{(-1 - m)*(c*i + d*i*x)^{(1 + m)}})/((b*c - a*d)*g*i*(1 + m))) - (3*A^2*B*n*(a*g + b*g*x)^{(-1 - m)*(c*i + d*i*x)^{(1 + m)}})/((b*c - a*d)*g*i*(1 + m)^2) - (3*A^2*B*(a*g + b*g*x)^{(-1 - m)*(c*i + d*i*x)^{(1 + m)}}*Log[e*((a + b*x)/(c + d*x))^n])/((b*c - a*d)*g*i*(1 + m)) + 3*A*B^2*Defer[Int][(a*g + b*g*x)^{(-2 - m)*(c*i + d*i*x)^m*Log[e*((a + b*x)/(c + d*x))^n]^2, x] + B^3*Defer[Int][(a*g + b*g*x)^{(-2 - m)*(c*i + d*i*x)^m*Log[e*((a + b*x)/(c + d*x))^n]^3, x]$

Rubi steps

$$\begin{aligned}
\int (218c + 218dx)^m (ag + bgx)^{-2-m} \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^3 dx &= \int \left(A^3 (218c + 218dx)^m (ag + bgx)^{-2-m} + 3A^2 B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) (218c + 218dx)^m (ag + bgx)^{-2-m} \right. \\
&= A^3 \int (218c + 218dx)^m (ag + bgx)^{-2-m} dx + \left. 3A^2 B \int (218c + 218dx)^m (ag + bgx)^{-2-m} \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) dx \right) \\
&= -\frac{A^3 (218c + 218dx)^{1+m} (ag + bgx)^{-1-m}}{218(bc - ad)g(1+m)} - \frac{3A^2 B n (218c + 218dx)^{1+m} (ag + bgx)^{-1-m}}{218(bc - ad)g(1+m)} \\
&= -\frac{3 \cdot 218^m A^2 B n (c + dx)^{1+m} (ag + bgx)^{-1-m}}{(bc - ad)g(1+m)^2}
\end{aligned}$$

Mathematica [A] time = 7.18, size = 206, normalized size = 0.67

$$\frac{(c + dx)(g(a + bx))^{-m-1}(i(c + dx))^m \left(3B(m + 1) \left(A^2(m + 1)^2 + 2AB(m + 1)n + 2B^2n^2 \right) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + 3B^2(m + 1)^2 \right)}{(bc - ad)g(1+m)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)^(-2 - m)*(c*i + d*i*x)^m*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^3,x]
```

```
[Out] -(((g*(a + b*x))^(-1 - m)*(c + d*x)*(i*(c + d*x))^m*(A^3*(1 + m)^3 + 3*A^2*B*(1 + m)^2*n + 6*A*B^2*(1 + m)*n^2 + 6*B^3*n^3 + 3*B*(1 + m)*(A^2*(1 + m)^2 + 2*A*B*(1 + m)*n + 2*B^2*n^2)*Log[e*((a + b*x)/(c + d*x))^n] + 3*B^2*(1 + m)^2*(A + A*m + B*n)*Log[e*((a + b*x)/(c + d*x))^n]^2 + B^3*(1 + m)^3*Log[e*((a + b*x)/(c + d*x))^n]^3))/((b*c - a*d)*g*(1 + m)^4)
```

fricas [B] time = 0.81, size = 2669, normalized size = 8.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m*(A+B*log(e*((b*x+a)/(d*x+c))^n))^3,x, algorithm="fricas")
```

[Out] $-(A^3*a*c*m^3 + 6*B^3*a*c*n^3 + 3*A^3*a*c*m^2 + 3*A^3*a*c*m + A^3*a*c + (B^3*a*c*m^3 + 3*B^3*a*c*m^2 + 3*B^3*a*c*m + B^3*a*c + (B^3*b*d*m^3 + 3*B^3*b*d*m^2 + 3*B^3*b*d*m + B^3*b*d)*x^2 + (B^3*b*c + B^3*a*d + (B^3*b*c + B^3*a*d)*m^3 + 3*(B^3*b*c + B^3*a*d)*m^2 + 3*(B^3*b*c + B^3*a*d)*m)*x)*\log(e)^3 + ((B^3*b*d*m^3 + 3*B^3*b*d*m^2 + 3*B^3*b*d*m + B^3*b*d)*n^3*x^2 + (B^3*b*c + B^3*a*d + (B^3*b*c + B^3*a*d)*m^3 + 3*(B^3*b*c + B^3*a*d)*m^2 + 3*(B^3*b*c + B^3*a*d)*m)*n^3*x + (B^3*a*c*m^3 + 3*B^3*a*c*m^2 + 3*B^3*a*c*m + B^3*a*c)*n^3)*\log((b*x + a)/(d*x + c))^3 + 6*(A*B^2*a*c*m + A*B^2*a*c)*n^2 + (A^3*b*d*m^3 + 6*B^3*b*d*n^3 + 3*A^3*b*d*m^2 + 3*A^3*b*d*m + A^3*b*d + 6*(A*B^2*b*d*m + A*B^2*b*d)*n^2 + 3*(A^2*B*b*d*m^2 + 2*A^2*B*b*d*m + A^2*B*b*d)*n)*x^2 + 3*(A*B^2*a*c*m^3 + 3*A*B^2*a*c*m^2 + 3*A*B^2*a*c*m + A*B^2*a*c + (A*B^2*b*d*m^3 + 3*A*B^2*b*d*m^2 + 3*A*B^2*b*d*m + A*B^2*b*d + (B^3*b*d*m^2 + 2*B^3*b*d*m + B^3*b*d)*n)*x^2 + (B^3*a*c*m^2 + 2*B^3*a*c*m + B^3*a*c)*n + (A*B^2*b*c + A*B^2*a*d + (A*B^2*b*c + A*B^2*a*d)*m^3 + 3*(A*B^2*b*c + A*B^2*a*d)*m^2 + 3*(A*B^2*b*c + A*B^2*a*d)*m + (B^3*b*c + B^3*a*d + (B^3*b*c + B^3*a*d)*m^2 + 2*(B^3*b*c + B^3*a*d)*m)*n)*x + ((B^3*b*d*m^3 + 3*B^3*b*d*m^2 + 3*B^3*b*d*m + B^3*b*d)*n*x^2 + (B^3*b*c + B^3*a*d + (B^3*b*c + B^3*a*d)*m^3 + 3*(B^3*b*c + B^3*a*d)*m^2 + 3*(B^3*b*c + B^3*a*d)*m)*n*x + (B^3*a*c*m^3 + 3*B^3*a*c*m^2 + 3*B^3*a*c*m + B^3*a*c)*n)*\log((b*x + a)/(d*x + c))*\log(e)^2 + 3*((B^3*a*c*m^2 + 2*B^3*a*c*m + B^3*a*c)*n^3 + (A*B^2*a*c*m^3 + 3*A*B^2*a*c*m^2 + 3*A*B^2*a*c*m + A*B^2*a*c)*n^2 + ((B^3*b*d*m^2 + 2*B^3*b*d*m + B^3*b*d)*n^3 + (A*B^2*b*d*m^3 + 3*A*B^2*b*d*m^2 + 3*A*B^2*b*d*m + A*B^2*b*d)*n^2)*x^2 + ((B^3*b*c + B^3*a*d + (B^3*b*c + B^3*a*d)*m^2 + 2*(B^3*b*c + B^3*a*d)*m)*n^3 + (A*B^2*b*c + A*B^2*a*d + (A*B^2*b*c + A*B^2*a*d)*m^3 + 3*(A*B^2*b*c + A*B^2*a*d)*m^2 + 3*(A*B^2*b*c + A*B^2*a*d)*m)*n^2)*x)*\log((b*x + a)/(d*x + c))^2 + 3*(A^2*B*a*c*m^2 + 2*A^2*B*a*c*m + A^2*B*a*c)*n + (A^3*b*c + A^3*a*d + (A^3*b*c + A^3*a*d)*m^3 + 6*(B^3*b*c + B^3*a*d)*n^3 + 3*(A^3*b*c + A^3*a*d)*m^2 + 6*(A*B^2*b*c + A*B^2*a*d + (A*B^2*b*c + A*B^2*a*d)*m)*n^2 + 3*(A^3*b*c + A^3*a*d)*m + 3*(A^2*B*b*c + A^2*B*a*d + (A^2*B*b*c + A^2*B*a*d)*m^2 + 2*(A^2*B*b*c + A^2*B*a*d)*m)*n)*x + 3*(A^2*B*a*c*m^3 + 3*A^2*B*a*c*m^2 + 3*A^2*B*a*c*m + A^2*B*a*c + 2*(B^3*a*c*m + B^3*a*c)*n^2 + (A^2*B*b*d*m^3 + 3*A^2*B*b*d*m^2 + 3*A^2*B*b*d*m + A^2*B*b*d + 2*(B^3*b*d*m + B^3*b*d)*n^2 + 2*(A*B^2*b*d*m^2 + 2*A*B^2*b*d*m + A*B^2*b*d)*n)*x^2 + ((B^3*b*d*m^3 + 3*B^3*b*d*m^2 + 3*B^3*b*d*m + B^3*b*d)*n^2*x^2 + (B^3*b*c + B^3*a*d + (B^3*b*c + B^3*a*d)*m^3 + 3*(B^3*b*c + B^3*a*d)*m^2 + 3*(B^3*b*c + B^3*a*d)*m)*n^2*x + (B^3*a*c*m^3 + 3*B^3*a*c*m^2 + 3*B^3*a*c*m + B^3*a*c)*n^2)*\log((b*x + a)/(d*x + c))^2 + 2*(A*B^2*a*c*m^2 + 2*A*B^2*a*c*m + A*B^2*a*c)*n + (A^2*B*b*c + A^2*B*a*d + (A^2*B*b*c + A^2*B*a*d)*m^3 + 3*(A^2*B*b*c + A^2*B*a*d)*m^2 + 2*(B^3*b*c + B^3*a*d + (B^3*b*c + B^3*a*d)*m)*n^2 + 3*(A^2*B*b*c + A^2*B*a*d)*m + 2*(A*B^2*b*c + A*B^2*a*d + (A*B^2*b*c + A*B^2*a*d)*m^2 + 2*(A*B^2*b*c + A*B^2*a*d)*m)*n)*x + 2*((B^3*a*c*m^2 + 2*B^3*a*c*m + B^3*a*c)*n^2 + ((B^3*b*d*m^2 + 2*B^3*b*d*m + B^3*b*d)*n^2 + (A*B^2*b*d*m^3 + 3*A*B^2*b*d*m^2 + 3*A*B^2*b*d*m + A*B^2*b*d)*n)*x^2 + (A*B^2*a*c*m^3 + 3*A*B^2*a*c*m^2 + 3*A*B^2*a*c*m + A*B^2*a*c)*n + ((B^3*b*c + B^3*a*d + (B^3*b*c + B^3*a*d)*m^2 + 2*(B^3*b*c + B^3*a*d)*m)*n^2 + (A*B^2*b*c + A*B^2*a*d$

+ (A*B^2*b*c + A*B^2*a*d)*m^3 + 3*(A*B^2*b*c + A*B^2*a*d)*m^2 + 3*(A*B^2*b*c + A*B^2*a*d)*m)*n*x)*log((b*x + a)/(d*x + c))*log(e) + 3*(2*(B^3*a*c*m + B^3*a*c)*n^3 + 2*(A*B^2*a*c*m^2 + 2*A*B^2*a*c*m + A*B^2*a*c)*n^2 + (2*(B^3*b*d*m + B^3*b*d)*n^3 + 2*(A*B^2*b*d*m^2 + 2*A*B^2*b*d*m + A*B^2*b*d)*n^2 + (A^2*B*b*d*m^3 + 3*A^2*B*b*d*m^2 + 3*A^2*B*b*d*m + A^2*B*b*d)*n)*x^2 + (A^2*B*a*c*m^3 + 3*A^2*B*a*c*m^2 + 3*A^2*B*a*c*m + A^2*B*a*c)*n + (2*(B^3*b*c + B^3*a*d + (B^3*b*c + B^3*a*d)*m)*n^3 + 2*(A*B^2*b*c + A*B^2*a*d + (A*B^2*b*c + A*B^2*a*d)*m)*n^2 + (A^2*B*b*c + A^2*B*a*d + (A^2*B*b*c + A^2*B*a*d)*m)*n^3 + 3*(A^2*B*b*c + A^2*B*a*d)*m^2 + 3*(A^2*B*b*c + A^2*B*a*d)*m)*n)*x)*log((b*x + a)/(d*x + c))*(b*g*x + a*g)^(-m - 2)*e^(m*log(b*g*x + a*g) - m*log((b*x + a)/(d*x + c)) + m*log(i/g))/((b*c - a*d)*m^4 + 4*(b*c - a*d)*m^3 + 6*(b*c - a*d)*m^2 + b*c - a*d + 4*(b*c - a*d)*m)

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(B \log \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)^3 (bgx+ag)^{-m-2} (dix+ci)^m dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m*(A+B*log(e*((b*x+a)/(d*x+c))^n))^3,x, algorithm="giac")

[Out] integrate((B*log(e*((b*x + a)/(d*x + c))^n) + A)^3*(b*g*x + a*g)^(-m - 2)*(d*i*x + c*i)^m, x)

maple [F] time = 8.71, size = 0, normalized size = 0.00

$$\int \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)^3 (bgx+ag)^{-m-2} (dix+ci)^m dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)^(-m-2)*(d*i*x+c*i)^m*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^3,x)

[Out] int((b*g*x+a*g)^(-m-2)*(d*i*x+c*i)^m*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^3,x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(B \log \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)^3 (bgx+ag)^{-m-2} (dix+ci)^m dx$$

Verification of antiderivative is not currently implemented for this CAS.


```
[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m*(A+B*log(e*((b*x+a)/(d*x+c))^n))
^3,x, algorithm="maxima")
```

```
[Out] integrate((B*log(e*((b*x + a)/(d*x + c))^n) + A)^3*(b*g*x + a*g)^(-m - 2)*
(d*i*x + c*i)^m, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ci + dix)^m \left(A + B \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^3}{(ag + bgx)^{m+2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^m*(A + B*log(e*((a + b*x)/(c + d*x))^n))^3)/(a*g + b*g*x
)^(m + 2),x)
```

```
[Out] int(((c*i + d*i*x)^m*(A + B*log(e*((a + b*x)/(c + d*x))^n))^3)/(a*g + b*g*x
)^(m + 2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**(-2-m)*(d*i*x+c*i)**m*(A+B*ln(e*((b*x+a)/(d*x+c))**n
))**3,x)
```

```
[Out] Timed out
```

$$3.219 \quad \int (ag+bgx)^{-2-m}(ci+dix)^m \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx$$

Optimal. Leaf size=223

$$\frac{(a+bx)(g(a+bx))^{-m-2}(i(c+dx))^{m+2} \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)^2}{i^2(m+1)(c+dx)(bc-ad)} - \frac{2Bn(a+bx)(g(a+bx))^{-m-2}(i(c+dx))^{m+2} \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{i^2(m+1)^2(c+dx)(bc-ad)}$$

[Out] $-2*B^2*n^2*(b*x+a)*(g*(b*x+a))^{(-2-m)*(i*(d*x+c))^{(2+m)/(-a*d+b*c)/i^2/(1+m)^3/(d*x+c)-2*B*n*(b*x+a)*(g*(b*x+a))^{(-2-m)*(i*(d*x+c))^{(2+m)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n)))/(-a*d+b*c)/i^2/(1+m)^2/(d*x+c)-(b*x+a)*(g*(b*x+a))^{(-2-m)*(i*(d*x+c))^{(2+m)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))}^2/(-a*d+b*c)/i^2/(1+m)/(d*x+c)}$

Rubi [F] time = 1.16, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int (ag+bgx)^{-2-m}(ci+dix)^m \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2 dx$$

Verification is Not applicable to the result.

[In] $\text{Int}[(a*g + b*g*x)^{(-2 - m)*(c*i + d*i*x)^m*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n])^2, x]$

[Out] $-((A^2*(a*g + b*g*x)^{(-1 - m)*(c*i + d*i*x)^{(1 + m)}})/((b*c - a*d)*g*i*(1 + m))) - (2*A*B*n*(a*g + b*g*x)^{(-1 - m)*(c*i + d*i*x)^{(1 + m)}})/((b*c - a*d)*g*i*(1 + m)^2) - (2*A*B*(a*g + b*g*x)^{(-1 - m)*(c*i + d*i*x)^{(1 + m)}}*\text{Log}[e*((a + b*x)/(c + d*x))^n])/((b*c - a*d)*g*i*(1 + m)) + B^2*\text{Defer}[\text{Int}[(a*g + b*g*x)^{(-2 - m)*(c*i + d*i*x)^m*\text{Log}[e*((a + b*x)/(c + d*x))^n]^2, x]$

Rubi steps

$$\begin{aligned}
\int (219c + 219dx)^m (ag + bgx)^{-2-m} \left(A + B \log \left(e \left(\frac{a + bx}{c + dx} \right)^n \right) \right)^2 dx &= \int \left(A^2 (219c + 219dx)^m (ag + bgx)^{-2-m} + 2 \right. \\
&= A^2 \int (219c + 219dx)^m (ag + bgx)^{-2-m} dx + 2 \\
&= -\frac{A^2 (219c + 219dx)^{1+m} (ag + bgx)^{-1-m}}{219(bc - ad)g(1 + m)} - 2 \\
&= -\frac{A^2 (219c + 219dx)^{1+m} (ag + bgx)^{-1-m}}{219(bc - ad)g(1 + m)} - 2 \\
&= -\frac{2 \cdot 219^m ABn (c + dx)^{1+m} (ag + bgx)^{-1-m}}{(bc - ad)g(1 + m)^2} - 2
\end{aligned}$$

Mathematica [A] time = 2.09, size = 134, normalized size = 0.60

$$\frac{(c + dx)(g(a + bx))^{-m-1}(i(c + dx))^m \left(2B(m + 1)(Am + A + Bn) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + B^2(m + 1)^2 \log^2 \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{g(m + 1)^3(bc - ad)}$$

Antiderivative was successfully verified.

[In] Integrate[(a*g + b*g*x)^(-2 - m)*(c*i + d*i*x)^m*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2,x]

[Out] -(((g*(a + b*x))^(1 - m)*(c + d*x)*(i*(c + d*x))^m*(A^2*(1 + m)^2 + 2*A*B*(1 + m)*n + 2*B^2*n^2 + 2*B*(1 + m)*(A + A*m + B*n)*Log[e*((a + b*x)/(c + d*x))^n] + B^2*(1 + m)^2*Log[e*((a + b*x)/(c + d*x))^n]^2))/((b*c - a*d)*g*(1 + m)^3))

fricas [B] time = 1.03, size = 983, normalized size = 4.41

$$\frac{\left(A^2 acm^2 + 2 B^2 acn^2 + 2 A^2 acm + A^2 ac + \left(A^2 bdm^2 + 2 B^2 bdn^2 + 2 A^2 bdm + A^2 bd + 2 (ABbdm + ABbd)n \right) x \right)}{g(m + 1)^3(bc - ad)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, algorithm="fricas")

```
[Out] -(A^2*a*c*m^2 + 2*B^2*a*c*n^2 + 2*A^2*a*c*m + A^2*a*c + (A^2*b*d*m^2 + 2*B^2*b*d*n^2 + 2*A^2*b*d*m + A^2*b*d + 2*(A*B*b*d*m + A*B*b*d)*n)*x^2 + (B^2*a*c*m^2 + 2*B^2*a*c*m + B^2*a*c + (B^2*b*d*m^2 + 2*B^2*b*d*m + B^2*b*d)*x^2 + (B^2*b*c + B^2*a*d + (B^2*b*c + B^2*a*d)*m^2 + 2*(B^2*b*c + B^2*a*d)*m)*x)*log(e)^2 + ((B^2*b*d*m^2 + 2*B^2*b*d*m + B^2*b*d)*n^2*x^2 + (B^2*b*c + B^2*a*d + (B^2*b*c + B^2*a*d)*m^2 + 2*(B^2*b*c + B^2*a*d)*m)*n^2*x + (B^2*a*c*m^2 + 2*B^2*a*c*m + B^2*a*c)*n^2)*log((b*x + a)/(d*x + c))^2 + 2*(A*B*a*c*m + A*B*a*c)*n + (A^2*b*c + A^2*a*d + (A^2*b*c + A^2*a*d)*m^2 + 2*(B^2*b*c + B^2*a*d)*n^2 + 2*(A^2*b*c + A^2*a*d)*m + 2*(A*B*b*c + A*B*a*d + (A*B*b*c + A*B*a*d)*m)*n)*x + 2*(A*B*a*c*m^2 + 2*A*B*a*c*m + A*B*a*c + (A*B*b*d*m^2 + 2*A*B*b*d*m + A*B*b*d + (B^2*b*d*m + B^2*b*d)*n)*x^2 + (B^2*a*c*m + B^2*a*c)*n + (A*B*b*c + A*B*a*d + (A*B*b*c + A*B*a*d)*m^2 + 2*(A*B*b*c + A*B*a*d)*m + (B^2*b*c + B^2*a*d + (B^2*b*c + B^2*a*d)*m)*n)*x + ((B^2*b*d*m^2 + 2*B^2*b*d*m + B^2*b*d)*n*x^2 + (B^2*b*c + B^2*a*d + (B^2*b*c + B^2*a*d)*m^2 + 2*(B^2*b*c + B^2*a*d)*m)*n*x + (B^2*a*c*m^2 + 2*B^2*a*c*m + B^2*a*c)*n)*log((b*x + a)/(d*x + c))*log(e) + 2*((B^2*a*c*m + B^2*a*c)*n^2 + ((B^2*b*d*m + B^2*b*d)*n^2 + (A*B*b*d*m^2 + 2*A*B*b*d*m + A*B*b*d)*n)*x^2 + (A*B*a*c*m^2 + 2*A*B*a*c*m + A*B*a*c)*n + ((B^2*b*c + B^2*a*d + (B^2*b*c + B^2*a*d)*m)*n^2 + (A*B*b*c + A*B*a*d + (A*B*b*c + A*B*a*d)*m^2 + 2*(A*B*b*c + A*B*a*d)*m)*n)*x)*log((b*x + a)/(d*x + c))*(b*g*x + a*g)^(-m - 2)*e^(m*log(b*g*x + a*g) - m*log((b*x + a)/(d*x + c)) + m*log(i/g))/((b*c - a*d)*m^3 + 3*(b*c - a*d)*m^2 + b*c - a*d + 3*(b*c - a*d)*m)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(B \log \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)^2 (bgx+ag)^{-m-2} (dix+ci)^m dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, algorithm="giac")
```

```
[Out] integrate((B*log(e*((b*x + a)/(d*x + c))^n) + A)^2*(b*g*x + a*g)^(-m - 2)*(d*i*x + c*i)^m, x)
```

maple [F] time = 7.78, size = 0, normalized size = 0.00

$$\int \left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)^2 (bgx+ag)^{-m-2} (dix+ci)^m dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^(-m-2)*(d*i*x+c*i)^m*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)
```

```
[Out] int((b*g*x+a*g)^(-m-2)*(d*i*x+c*i)^m*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(B \log \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A \right)^2 (bgx+ag)^{-m-2} (dix+ci)^m dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, algorithm="maxima")

[Out] integrate((B*log(e*((b*x+a)/(d*x+c))^n)+A)^2*(b*g*x+a*g)^(-m-2)*(d*i*x+c*i)^m,x)

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ci+dix)^m \left(A + B \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2}{(ag+bgx)^{m+2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((c*i+d*i*x)^m*(A+B*log(e*((a+b*x)/(c+d*x))^n))^2)/(a*g+b*g*x)^(m+2),x)

[Out] int(((c*i+d*i*x)^m*(A+B*log(e*((a+b*x)/(c+d*x))^n))^2)/(a*g+b*g*x)^(m+2),x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)**(-2-m)*(d*i*x+c*i)**m*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2,x)

[Out] Timed out

$$3.220 \quad \int (ag+bgx)^{-2-m}(ci+dix)^m \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) dx$$

Optimal. Leaf size=137

$$\frac{(a+bx)(g(a+bx))^{-m-2}(i(c+dx))^{m+2} \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}{i^2(m+1)(c+dx)(bc-ad)} - \frac{Bn(a+bx)(g(a+bx))^{-m-2}(i(c+dx))^{m+2}}{i^2(m+1)^2(c+dx)(bc-ad)}$$

[Out] $-B*n*(b*x+a)*(g*(b*x+a))^{(-2-m)*(i*(d*x+c))^{(2+m)/(-a*d+b*c)/i^2/(1+m)^2/(d*x+c)-(b*x+a)*(g*(b*x+a))^{(-2-m)*(i*(d*x+c))^{(2+m)*(A+B*\ln(e*((b*x+a)/(d*x+c)))^n)))/(-a*d+b*c)/i^2/(1+m)/(d*x+c)}$

Rubi [A] time = 0.62, antiderivative size = 170, normalized size of antiderivative = 1.24, number of steps used = 6, number of rules used = 4, integrand size = 47, $\frac{\text{number of rules}}{\text{integrand size}} = 0.085$, Rules used = {6742, 37, 2554, 12}

$$\frac{A(ag+bgx)^{-m-1}(ci+dix)^{m+1}}{gi(m+1)(bc-ad)} - \frac{B(ag+bgx)^{-m-1}(ci+dix)^{m+1} \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{gi(m+1)(bc-ad)} - \frac{Bn(ag+bgx)^{-m-1}(ci+dix)^{m+1}}{gi(m+1)^2(bc-ad)}$$

Antiderivative was successfully verified.

[In] $\text{Int}[(a*g + b*g*x)^{-2 - m}*(c*i + d*i*x)^m*(A + B*\text{Log}[e*((a + b*x)/(c + d*x))^n]), x]$

[Out] $-((A*(a*g + b*g*x)^{-1 - m}*(c*i + d*i*x)^{(1 + m)})/((b*c - a*d)*g*i*(1 + m))) - (B*n*(a*g + b*g*x)^{-1 - m}*(c*i + d*i*x)^{(1 + m)})/((b*c - a*d)*g*i*(1 + m)^2) - (B*(a*g + b*g*x)^{-1 - m}*(c*i + d*i*x)^{(1 + m)*\text{Log}[e*((a + b*x)/(c + d*x))^n]})/((b*c - a*d)*g*i*(1 + m))$

Rule 12

$\text{Int}[(a_*)*(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \ \&\& \ !\text{MatchQ}[u, (b_*)*(v_)] /; \text{FreeQ}[b, x]$

Rule 37

$\text{Int}[((a_.) + (b_.)*(x_))^{(m_.)*((c_.) + (d_.)*(x_))^{(n_.)}, x_Symbol] \rightarrow \text{Simp}[(a + b*x)^{(m + 1)}*(c + d*x)^{(n + 1)}/((b*c - a*d)*(m + 1)), x] /; \text{FreeQ}[\{a, b, c, d, m, n\}, x] \ \&\& \ \text{NeQ}[b*c - a*d, 0] \ \&\& \ \text{EqQ}[m + n + 2, 0] \ \&\& \ \text{NeQ}[m, -1]$

Rule 2554

```
Int[Log[u_]*(v_), x_Symbol] := With[{w = IntHide[v, x]}, Dist[Log[u], w, x]
- Int[SimplifyIntegrand[(w*D[u, x])/u, x], x] /; InverseFunctionFreeQ[w, x]
]] /; InverseFunctionFreeQ[u, x]
```

Rule 6742

```
Int[u_, x_Symbol] := With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\begin{aligned} \int (220c + 220dx)^m (ag + bgx)^{-2-m} \left(A + B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right) dx &= \int \left(A(220c + 220dx)^m (ag + bgx)^{-2-m} + B \right) dx \\ &= A \int (220c + 220dx)^m (ag + bgx)^{-2-m} dx + B \int dx \\ &= -\frac{A(220c + 220dx)^{1+m} (ag + bgx)^{-1-m}}{220(bc - ad)g(1+m)} - \frac{Bx}{bc - ad} \\ &= -\frac{A(220c + 220dx)^{1+m} (ag + bgx)^{-1-m}}{220(bc - ad)g(1+m)} - \frac{Bx}{bc - ad} \\ &= -\frac{220^m Bn(c + dx)^{1+m} (ag + bgx)^{-1-m}}{(bc - ad)g(1+m)^2} - \frac{A(220c + 220dx)^{1+m} (ag + bgx)^{-1-m}}{220(bc - ad)g(1+m)} \end{aligned}$$

Mathematica [A] time = 0.53, size = 78, normalized size = 0.57

$$-\frac{(c + dx)(g(a + bx))^{-m-1}(i(c + dx))^m \left(B(m + 1) \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + Am + A + Bn \right)}{g(m + 1)^2(bc - ad)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)^(-2 - m)*(c*i + d*i*x)^m*(A + B*Log[e*((a + b*x)/(c + d*x))^n]), x]
```

```
[Out] -(((g*(a + b*x))^(-1 - m)*(c + d*x)*(i*(c + d*x))^m*(A + A*m + B*n + B*(1 + m)*Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)*g*(1 + m)^2))
```

fricas [A] time = 1.05, size = 269, normalized size = 1.96

$$\frac{\left(Aacm + Bacn + Aac + (Abdm + Bbdn + Abd)x^2 + (Abc + Aad + (Abc + Aad)m + (Bbc + Bad)n)x + (Bacm - \dots \right)}{\dots}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="fricas")

[Out] -(A*a*c*m + B*a*c*n + A*a*c + (A*b*d*m + B*b*d*n + A*b*d)*x^2 + (A*b*c + A*a*d + (A*b*c + A*a*d)*m + (B*b*c + B*a*d)*n)*x + (B*a*c*m + B*a*c + (B*b*d*m + B*b*d)*x^2 + (B*b*c + B*a*d + (B*b*c + B*a*d)*m)*x)*log(e) + ((B*b*d*m + B*b*d)*n*x^2 + (B*b*c + B*a*d + (B*b*c + B*a*d)*m)*n*x + (B*a*c*m + B*a*c)*n)*log((b*x + a)/(d*x + c))*(b*g*x + a*g)^(-m - 2)*e^(m*log(b*g*x + a*g) - m*log((b*x + a)/(d*x + c)) + m*log(i/g))/((b*c - a*d)*m^2 + b*c - a*d + 2*(b*c - a*d)*m)

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(B \log \left(e \left(\frac{bx + a}{dx + c} \right)^n \right) + A \right) (bgx + ag)^{-m-2} (dix + ci)^m dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="giac")

[Out] integrate((B*log(e*((b*x + a)/(d*x + c))^n) + A)*(b*g*x + a*g)^(-m - 2)*(d*i*x + c*i)^m, x)

maple [F] time = 8.30, size = 0, normalized size = 0.00

$$\int \left(B \ln \left(e \left(\frac{bx + a}{dx + c} \right)^n \right) + A \right) (bgx + ag)^{-m-2} (dix + ci)^m dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)^(-m-2)*(d*i*x+c*i)^m*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)

[Out] int((b*g*x+a*g)^(-m-2)*(d*i*x+c*i)^m*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(B \log \left(e \left(\frac{bx + a}{dx + c} \right)^n \right) + A \right) (bgx + ag)^{-m-2} (dix + ci)^m dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="maxima")
```

```
[Out] integrate((B*log(e*((b*x + a)/(d*x + c))^n) + A)*(b*g*x + a*g)^(-m - 2)*(d*i*x + c*i)^m, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(ci + dix)^m \left(A + B \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)}{(ag + bgx)^{m+2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^m*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x)^(m + 2),x)
```

```
[Out] int(((c*i + d*i*x)^m*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x)^(m + 2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**(-2-m)*(d*i*x+c*i)**m*(A+B*ln(e*((b*x+a)/(d*x+c))**n)),x)
```

```
[Out] Timed out
```

$$3.221 \quad \int \frac{(ag+bgx)^{-2-m}(ci+dix)^m}{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)} dx$$

Optimal. Leaf size=128

$$\frac{(a+bx)e^{\frac{A(m+1)}{Bn}}(g(a+bx))^{-m-2}(i(c+dx))^{m+2}\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{\frac{m+1}{n}} \operatorname{Ei}\left(-\frac{(m+1)\left(A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{Bn}\right)}{Bi^2n(c+dx)(bc-ad)}$$

[Out] $\exp(A*(1+m)/B/n)*(b*x+a)*(g*(b*x+a))^{-(2+m)}*(e*((b*x+a)/(d*x+c))^n)^{(1+m)/n}*(i*(d*x+c))^{(2+m)}*\operatorname{Ei}(-(1+m)*(A+B*\ln(e*((b*x+a)/(d*x+c))^n))/B/n)/B/(-a*d+b*c)/i^2/n/(d*x+c)$

Rubi [F] time = 0.69, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{(ag+bgx)^{-2-m}(ci+dix)^m}{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)} dx$$

Verification is Not applicable to the result.

[In] $\operatorname{Int}[\left((a*g+b*g*x)^{-2-m}*(c*i+d*i*x)^m\right)/(A+B*\operatorname{Log}[e*((a+b*x)/(c+d*x))^n]), x]$

[Out] $\operatorname{Defer}[\operatorname{Int}[\left((a*g+b*g*x)^{-2-m}*(c*i+d*i*x)^m\right)/(A+B*\operatorname{Log}[e*((a+b*x)/(c+d*x))^n]), x]$

Rubi steps

$$\int \frac{(221c+221dx)^m(ag+bgx)^{-2-m}}{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)} dx = \int \frac{(221c+221dx)^m(ag+bgx)^{-2-m}}{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)} dx$$

Mathematica [F] time = 0.25, size = 0, normalized size = 0.00

$$\int \frac{(ag+bgx)^{-2-m}(ci+dix)^m}{A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)} dx$$

Verification is Not applicable to the result.

[In] Integrate[((a*g + b*g*x)^(-2 - m)*(c*i + d*i*x)^m)/(A + B*Log[e*((a + b*x)/(c + d*x))^n]), x]

[Out] Integrate[((a*g + b*g*x)^(-2 - m)*(c*i + d*i*x)^m)/(A + B*Log[e*((a + b*x)/(c + d*x))^n]), x]

fricas [A] time = 0.82, size = 93, normalized size = 0.73

$$\frac{\operatorname{Ei}\left(-\frac{(Bm+B)n \log\left(\frac{bx+a}{dx+c}\right) + Am + (Bm+B) \log(e) + A}{Bn}\right) e^{\left(\frac{Bmn \log\left(\frac{i}{g}\right) + Am + (Bm+B) \log(e) + A}{Bn}\right)}}{(Bbc - Bad)g^2n}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m/(A+B*log(e*((b*x+a)/(d*x+c))^n)), x, algorithm="fricas")

[Out] Ei(-((B*m + B)*n*log((b*x + a)/(d*x + c)) + A*m + (B*m + B)*log(e) + A)/(B*n))*e^((B*m*n*log(i/g) + A*m + (B*m + B)*log(e) + A)/(B*n))/((B*b*c - B*a*d)*g^2*n)

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bgx + ag)^{-m-2} (dix + ci)^m}{B \log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right) + A} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m/(A+B*log(e*((b*x+a)/(d*x+c))^n)), x, algorithm="giac")

[Out] integrate((b*g*x + a*g)^(-m - 2)*(d*i*x + c*i)^m/(B*log(e*((b*x + a)/(d*x + c))^n) + A), x)

maple [F] time = 4.00, size = 0, normalized size = 0.00

$$\int \frac{(bgx + ag)^{-m-2} (dix + ci)^m}{B \ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right) + A} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((b*g*x+a*g)^(-m-2)*(d*i*x+c*i)^m/(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)`

[Out] `int((b*g*x+a*g)^(-m-2)*(d*i*x+c*i)^m/(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)`

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bgx + ag)^{-m-2} (dix + ci)^m}{B \log \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m/(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="maxima")`

[Out] `integrate((b*g*x + a*g)^(-m - 2)*(d*i*x + c*i)^m/(B*log(e*((b*x + a)/(d*x + c))^n) + A), x)`

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(ci + dix)^m}{(ag + bgx)^{m+2} \left(A + B \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((c*i + d*i*x)^m/((a*g + b*g*x)^(m + 2)*(A + B*log(e*((a + b*x)/(c + d*x))^n))),x)`

[Out] `int((c*i + d*i*x)^m/((a*g + b*g*x)^(m + 2)*(A + B*log(e*((a + b*x)/(c + d*x))^n))), x)`

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((b*g*x+a*g)**(-2-m)*(d*i*x+c*i)**m/(A+B*ln(e*((b*x+a)/(d*x+c))**n)),x)`

[Out] Timed out

$$3.222 \quad \int \frac{(ag+bgx)^{-2-m}(ci+dix)^m}{\left(A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2} dx$$

Optimal. Leaf size=214

$$\frac{(m+1)(a+bx)e^{\frac{A(m+1)}{Bn}}(g(a+bx))^{-m-2}(i(c+dx))^{m+2}\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{\frac{m+1}{n}} \operatorname{Ei}\left(-\frac{(m+1)\left(A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{Bn}\right)}{B^2i^2n^2(c+dx)(bc-ad)} \frac{(a+bx)}{Bi^2n(c+dx)}$$

[Out] $-\exp(A*(1+m)/B/n)*(1+m)*(b*x+a)*(g*(b*x+a))^{(-2-m)}*(e*((b*x+a)/(d*x+c)))^n)^{((1+m)/n)*(i*(d*x+c))^{(2+m)}*Ei(-(1+m)*(A+B*\ln(e*((b*x+a)/(d*x+c)))^n))/B/n)/B^2/(-a*d+b*c)/i^2/n^2/(d*x+c)-(b*x+a)*(g*(b*x+a))^{(-2-m)}*(i*(d*x+c))^{(2+m)}/B/(-a*d+b*c)/i^2/n/(d*x+c)/(A+B*\ln(e*((b*x+a)/(d*x+c)))^n)}$

Rubi [F] time = 0.78, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{(ag+bgx)^{-2-m}(ci+dix)^m}{\left(A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2} dx$$

Verification is Not applicable to the result.

[In] $\operatorname{Int}\left[\left(\frac{(a*g + b*g*x)^{(-2 - m)}*(c*i + d*i*x)^m}{(A + B*\operatorname{Log}[e*((a + b*x)/(c + d*x))]^n)}\right)^2, x\right]$

[Out] $\operatorname{Defer}[\operatorname{Int}\left[\left(\frac{(a*g + b*g*x)^{(-2 - m)}*(c*i + d*i*x)^m}{(A + B*\operatorname{Log}[e*((a + b*x)/(c + d*x))]^n)}\right)^2, x\right]]$

Rubi steps

$$\int \frac{(222c + 222dx)^m(ag+bgx)^{-2-m}}{\left(A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2} dx = \int \frac{(222c + 222dx)^m(ag+bgx)^{-2-m}}{\left(A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2} dx$$

Mathematica [F] time = 0.27, size = 0, normalized size = 0.00

$$\int \frac{(ag + bgx)^{-2-m}(ci + dix)^m}{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2} dx$$

Verification is Not applicable to the result.

[In] Integrate[((a*g + b*g*x)^(-2 - m)*(c*i + d*i*x)^m)/(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2,x]

[Out] Integrate[((a*g + b*g*x)^(-2 - m)*(c*i + d*i*x)^m)/(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2, x]

fricas [A] time = 0.62, size = 284, normalized size = 1.33

$$\frac{(Bbdg^2nx^2 + Bacg^2n + (Bbc + Bad)g^2nx)(bgx + ag)^{-m-2} e^{(m \log(bgx+ag) - m \log(\frac{bx+a}{dx+c}) + m \log(\frac{i}{g}))} + ((Bm + B)n \log(\frac{b}{d}))}{(B^3bc - B^3ad)g^2n^3 \log(\frac{bx+a}{dx+c}) + (B^3bc - B^3ad)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m/(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, algorithm="fricas")

[Out] -((B*b*d*g^2*n*x^2 + B*a*c*g^2*n + (B*b*c + B*a*d)*g^2*n*x)*(b*g*x + a*g)^(-m - 2)*e^(m*log(b*g*x + a*g) - m*log((b*x + a)/(d*x + c)) + m*log(i/g)) + ((B*m + B)*n*log((b*x + a)/(d*x + c)) + A*m + (B*m + B)*log(e) + A)*Ei(-((B*m + B)*n*log((b*x + a)/(d*x + c)) + A*m + (B*m + B)*log(e) + A)/(B*n))*e^((B*m*n*log(i/g) + A*m + (B*m + B)*log(e) + A)/(B*n)))/((B^3*b*c - B^3*a*d)*g^2*n^3*log((b*x + a)/(d*x + c)) + (B^3*b*c - B^3*a*d)*g^2*n^2*log(e) + (A*B^2*b*c - A*B^2*a*d)*g^2*n^2)

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bgx + ag)^{-m-2}(dix + ci)^m}{\left(B \log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right) + A\right)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m/(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, algorithm="giac")

[Out] integrate((b*g*x + a*g)^(-m - 2)*(d*i*x + c*i)^m/(B*log(e*((b*x + a)/(d*x + c))^n) + A)^2, x)

maple [F(-1)] time = 180.00, size = 0, normalized size = 0.00

$$\int \frac{(bgx + ag)^{-m-2} (dix + ci)^m}{\left(B \ln \left(e \left(\frac{bx+a}{dx+c} \right)^n \right) + A\right)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)^(-m-2)*(d*i*x+c*i)^m/(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)

[Out] int((b*g*x+a*g)^(-m-2)*(d*i*x+c*i)^m/(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$i^m(m+1) \int -\frac{dx}{(B^2b^2g^{m+2}nx^2 + 2B^2abg^{m+2}nx + B^2a^2g^{m+2}n)(bx+a)^m \log((bx+a)^n) - (B^2b^2g^{m+2}nx^2 + 2B^2abg^{m+2}nx + B^2a^2g^{m+2}n)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m/(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, algorithm="maxima")

[Out] i^m*(m + 1)*integrate(-(d*x + c)^m/((B^2*b^2*g^(m + 2)*n*x^2 + 2*B^2*a*b*g^(m + 2)*n*x + B^2*a^2*g^(m + 2)*n)*(b*x + a)^m*log((b*x + a)^n) - (B^2*b^2*g^(m + 2)*n*x^2 + 2*B^2*a*b*g^(m + 2)*n*x + B^2*a^2*g^(m + 2)*n)*(b*x + a)^m*log((d*x + c)^n) + (B^2*a^2*g^(m + 2)*n*log(e) + A*B*a^2*g^(m + 2)*n + (B^2*b^2*g^(m + 2)*n*log(e) + A*B*b^2*g^(m + 2)*n)*x^2 + 2*(B^2*a*b*g^(m + 2)*n*log(e) + A*B*a*b*g^(m + 2)*n)*x)*(b*x + a)^m), x) - (d*i^m*x + c*i^m)*(d*x + c)^m/(((b^2*c*g^(m + 2)*n - a*b*d*g^(m + 2)*n)*B^2*x + (a*b*c*g^(m + 2)*n - a^2*d*g^(m + 2)*n)*B^2*(b*x + a)^m*log((b*x + a)^n) - ((b^2*c*g^(m + 2)*n - a*b*d*g^(m + 2)*n)*B^2*x + (a*b*c*g^(m + 2)*n - a^2*d*g^(m + 2)*n)*B^2*(b*x + a)^m*log((d*x + c)^n) + ((a*b*c*g^(m + 2)*n - a^2*d*g^(m + 2)*n)*A*B + (a*b*c*g^(m + 2)*n*log(e) - a^2*d*g^(m + 2)*n*log(e))*B^2 + ((b^2*c*g^(m + 2)*n - a*b*d*g^(m + 2)*n)*A*B + (b^2*c*g^(m + 2)*n*log(e) - a*b*d*g^(m + 2)*n*log(e))*B^2)*x)*(b*x + a)^m)

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ci + dix)^m}{(ag + bgx)^{m+2} \left(A + B \ln \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) \right)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*i + d*i*x)^m/((a*g + b*g*x)^(m + 2)*(A + B*log(e*((a + b*x)/(c + d*x))
))^n))^2),x)
```

```
[Out] int((c*i + d*i*x)^m/((a*g + b*g*x)^(m + 2)*(A + B*log(e*((a + b*x)/(c + d*x))
))^n))^2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**(-2-m)*(d*i*x+c*i)**m/(A+B*ln(e*((b*x+a)/(d*x+c))**n))
)**2,x)
```

```
[Out] Timed out
```


$$3.223 \quad \int \frac{(ag+bgx)^{-2-m}(ci+dix)^m}{\left(A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^3} dx$$

Optimal. Leaf size=306

$$\frac{(m+1)^2(a+bx)e^{\frac{A(m+1)}{Bn}}(g(a+bx))^{-m-2}(i(c+dx))^{m+2}\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{\frac{m+1}{n}} \operatorname{Ei}\left(-\frac{(m+1)\left(A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{Bn}\right)}{2B^3i^2n^3(c+dx)(bc-ad)} + \frac{(m+1)(a+bx)^{m+1}}{2B^2i^2n^2(c+dx)}$$

[Out] $\frac{1}{2} \exp\left(\frac{A(1+m)}{Bn}\right) (1+m)^2 (b*x+a) (g*(b*x+a))^{(-2-m)} \left(\frac{e\left(\frac{b*x+a}{d*x+c}\right)}{\left(\frac{1+m}{n}\right) (i*(d*x+c))^{(2+m)} \operatorname{Ei}\left(-\frac{(1+m)\left(A+B \ln\left(e\left(\frac{b*x+a}{d*x+c}\right)^n\right)\right)}{Bn}\right)}\right)^{\frac{m+1}{n}} / B/n / B^3 / (-a*d+b*c) / i^2/n^3 / (d*x+c) - 1/2 * (b*x+a) * (g*(b*x+a))^{(-2-m)} (i*(d*x+c))^{(2+m)} / B / (-a*d+b*c) / i^2/n / (d*x+c) / \left(A+B \ln\left(e\left(\frac{b*x+a}{d*x+c}\right)^n\right)\right)^{2+1/2} (1+m) * (b*x+a) * (g*(b*x+a))^{(-2-m)} (i*(d*x+c))^{(2+m)} / B^2 / (-a*d+b*c) / i^2/n^2 / (d*x+c) / \left(A+B \ln\left(e\left(\frac{b*x+a}{d*x+c}\right)^n\right)\right)$

Rubi [F] time = 0.76, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{(ag+bgx)^{-2-m}(ci+dix)^m}{\left(A+B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^3} dx$$

Verification is Not applicable to the result.

[In] $\operatorname{Int}\left[\left(\frac{(a*g + b*g*x)^{(-2-m)}(c*i + d*i*x)^m}{\left(A + B \operatorname{Log}\left[e\left(\frac{a + b*x}{c + d*x}\right)^n\right]\right)^3}, x\right]$

[Out] $\operatorname{Defer}\left[\operatorname{Int}\left[\left(\frac{(a*g + b*g*x)^{(-2-m)}(c*i + d*i*x)^m}{\left(A + B \operatorname{Log}\left[e\left(\frac{a + b*x}{c + d*x}\right)^n\right]\right)^3}, x\right]\right]$

Rubi steps

$$\int \frac{(223c + 223dx)^m (ag + bgx)^{-2-m}}{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^3} dx = \int \frac{(223c + 223dx)^m (ag + bgx)^{-2-m}}{\left(A + B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^3} dx$$

Mathematica [F] time = 0.33, size = 0, normalized size = 0.00

$$\int \frac{(ag + bgx)^{-2-m}(ci + dix)^m}{\left(A + B \log\left(e \left(\frac{a+bx}{c+dx}\right)^n\right)\right)^3} dx$$

Verification is Not applicable to the result.

[In] Integrate[((a*g + b*g*x)^(-2 - m)*(c*i + d*i*x)^m)/(A + B*Log[e*((a + b*x)/(c + d*x))^n])]^3,x]

[Out] Integrate[((a*g + b*g*x)^(-2 - m)*(c*i + d*i*x)^m)/(A + B*Log[e*((a + b*x)/(c + d*x))^n])]^3, x]

fricas [B] time = 0.93, size = 815, normalized size = 2.66

$$\left(B^2acg^2n^2 + (B^2bdg^2n^2 - (ABbdg^2m + ABbdg^2)n)x^2 - (ABacg^2m + ABacg^2)n + ((B^2bc + B^2ad)g^2n^2 - ((AB$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m/(A+B*log(e*((b*x+a)/(d*x+c))^n))^3,x, algorithm="fricas")

[Out] -1/2*((B^2*a*c*g^2*n^2 + (B^2*b*d*g^2*n^2 - (A*B*b*d*g^2*m + A*B*b*d*g^2)*n)*x^2 - (A*B*a*c*g^2*m + A*B*a*c*g^2)*n + ((B^2*b*c + B^2*a*d)*g^2*n^2 - ((A*B*b*c + A*B*a*d)*g^2*m + (A*B*b*c + A*B*a*d)*g^2)*n)*x - ((B^2*b*d*g^2*m + B^2*b*d*g^2)*n*x^2 + ((B^2*b*c + B^2*a*d)*g^2*m + (B^2*b*c + B^2*a*d)*g^2)*n*x + (B^2*a*c*g^2*m + B^2*a*c*g^2)*n)*log(e) - ((B^2*b*d*g^2*m + B^2*b*d*g^2)*n^2*x^2 + ((B^2*b*c + B^2*a*d)*g^2*m + (B^2*b*c + B^2*a*d)*g^2)*n^2*x + (B^2*a*c*g^2*m + B^2*a*c*g^2)*n^2)*log((b*x + a)/(d*x + c)))*(b*g*x + a*g)^(-m - 2)*e^(m*log(b*g*x + a*g) - m*log((b*x + a)/(d*x + c)) + m*log(i/g)) - ((B^2*m^2 + 2*B^2*m + B^2)*n^2*log((b*x + a)/(d*x + c))^2 + A^2*m^2 + 2*A^2*m + (B^2*m^2 + 2*B^2*m + B^2)*log(e)^2 + 2*(A*B*m^2 + 2*A*B*m + A*B)*n*log((b*x + a)/(d*x + c)) + A^2 + 2*(A*B*m^2 + 2*A*B*m + (B^2*m^2 + 2*B^2*m + B^2)*n*log((b*x + a)/(d*x + c)) + A*B)*log(e))*Ei(-((B*m + B)*n*log((b*x + a)/(d*x + c)) + A*m + (B*m + B)*log(e) + A)/(B*n))*e^((B*m*n*log(i/g) + A*m + (B*m + B)*log(e) + A)/(B*n)))/((B^5*b*c - B^5*a*d)*g^2*n^5*log((b*x + a)/(d*x + c))^2 + (B^5*b*c - B^5*a*d)*g^2*n^3*log(e)^2 + 2*(A*B^4*b*c - A*B^4*a*d)*g^2*n^4*log((b*x + a)/(d*x + c)) + (A^2*B^3*b*c - A^2*B^3*a*d)*g^2*n^3 + 2*((B^5*b*c - B^5*a*d)*g^2*n^4*log((b*x + a)/(d*x + c)) + (A*B^4*b*c - A*B^4*a*d)*g^2*n^3)*log(e))

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bgx + ag)^{-m-2} (dix + ci)^m}{\left(B \log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right) + A\right)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m/(A+B*log(e*((b*x+a)/(d*x+c))^n))^3,x, algorithm="giac")

[Out] integrate((b*g*x + a*g)^(-m - 2)*(d*i*x + c*i)^m/(B*log(e*((b*x + a)/(d*x + c))^n) + A)^3, x)

maple [F(-1)] time = 180.00, size = 0, normalized size = 0.00

$$\int \frac{(bgx + ag)^{-m-2} (dix + ci)^m}{\left(B \ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right) + A\right)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)^(-m-2)*(d*i*x+c*i)^m/(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^3,x)

[Out] int((b*g*x+a*g)^(-m-2)*(d*i*x+c*i)^m/(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^3,x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m/(A+B*log(e*((b*x+a)/(d*x+c))^n))^3,x, algorithm="maxima")

[Out] $-(m^2 + 2m + 1)i^m \int \frac{-1/2(d*x + c)^m / ((B^3*b^2*g^{(m+2)*n^2*x^2} + 2*B^3*a*b*g^{(m+2)*n^2*x} + B^3*a^2*g^{(m+2)*n^2}) * (b*x + a)^m * \log((b*x + a)^n) - (B^3*b^2*g^{(m+2)*n^2*x^2} + 2*B^3*a*b*g^{(m+2)*n^2*x} + B^3*a^2*g^{(m+2)*n^2}) * (b*x + a)^m * \log((d*x + c)^n) + (B^3*a^2*g^{(m+2)*n^2} * \log(e) + A*B^2*a^2*g^{(m+2)*n^2} + (B^3*b^2*g^{(m+2)*n^2} * \log(e) + A*B^2*b^2*g^{(m+2)*n^2}) * x^2 + 2*(B^3*a*b*g^{(m+2)*n^2} * \log(e) + A*B^2*a*b*g^{(m+2)*n^2}) * x)}{((b^2*c*g^{(m+2)*n^2*x^2} + 2*B^3*a*b*g^{(m+2)*n^2*x} + B^3*a^2*g^{(m+2)*n^2}) * (b*x + a)^m * \log((b*x + a)^n) - (B^3*b^2*g^{(m+2)*n^2*x^2} + 2*B^3*a*b*g^{(m+2)*n^2*x} + B^3*a^2*g^{(m+2)*n^2}) * (b*x + a)^m * \log((d*x + c)^n) + (B^3*a^2*g^{(m+2)*n^2} * \log(e) + A*B^2*a^2*g^{(m+2)*n^2} + (B^3*b^2*g^{(m+2)*n^2} * \log(e) + A*B^2*b^2*g^{(m+2)*n^2}) * x^2 + 2*(B^3*a*b*g^{(m+2)*n^2} * \log(e) + A*B^2*a*b*g^{(m+2)*n^2}) * x)}{((b^2*c*g^{(m+2)*n^2*x^2} + 2*B^3*a*b*g^{(m+2)*n^2*x} + B^3*a^2*g^{(m+2)*n^2}) * (b*x + a)^m * \log((b*x + a)^n) - (B^3*b^2*g^{(m+2)*n^2*x^2} + 2*B^3*a*b*g^{(m+2)*n^2*x} + B^3*a^2*g^{(m+2)*n^2}) * (b*x + a)^m * \log((d*x + c)^n) + (B^3*a^2*g^{(m+2)*n^2} * \log(e) + A*B^2*a^2*g^{(m+2)*n^2} + (B^3*b^2*g^{(m+2)*n^2} * \log(e) + A*B^2*b^2*g^{(m+2)*n^2}) * x^2 + 2*(B^3*a*b*g^{(m+2)*n^2} * \log(e) + A*B^2*a*b*g^{(m+2)*n^2}) * x)}$

$(m + 2)n^2 - a*b*d*g^{(m + 2)n^2}*B^4*x + (a*b*c*g^{(m + 2)n^2} - a^2*d*g^{(m + 2)n^2})*B^4*(b*x + a)^m*\log((b*x + a)^n)^2 + ((b^2*c*g^{(m + 2)n^2} - a*b*d*g^{(m + 2)n^2})*B^4*x + (a*b*c*g^{(m + 2)n^2} - a^2*d*g^{(m + 2)n^2})*B^4)*(b*x + a)^m*\log((d*x + c)^n)^2 + 2*((a*b*c*g^{(m + 2)n^2} - a^2*d*g^{(m + 2)n^2})*A*B^3 + (a*b*c*g^{(m + 2)n^2}*log(e) - a^2*d*g^{(m + 2)n^2}*log(e))*B^4 + ((b^2*c*g^{(m + 2)n^2} - a*b*d*g^{(m + 2)n^2})*A*B^3 + (b^2*c*g^{(m + 2)n^2}*log(e) - a*b*d*g^{(m + 2)n^2}*log(e))*B^4)*x)*(b*x + a)^m*\log((b*x + a)^n) + ((a*b*c*g^{(m + 2)n^2} - a^2*d*g^{(m + 2)n^2})*A^2*B^2 + 2*(a*b*c*g^{(m + 2)n^2}*log(e) - a^2*d*g^{(m + 2)n^2}*log(e))*A*B^3 + (a*b*c*g^{(m + 2)n^2}*log(e)^2 - a^2*d*g^{(m + 2)n^2}*log(e)^2)*B^4 + ((b^2*c*g^{(m + 2)n^2} - a*b*d*g^{(m + 2)n^2})*A^2*B^2 + 2*(b^2*c*g^{(m + 2)n^2}*log(e) - a*b*d*g^{(m + 2)n^2}*log(e))*A*B^3 + (b^2*c*g^{(m + 2)n^2}*log(e)^2 - a*b*d*g^{(m + 2)n^2}*log(e)^2)*B^4)*x)*(b*x + a)^m - 2*((b^2*c*g^{(m + 2)n^2} - a*b*d*g^{(m + 2)n^2})*B^4*x + (a*b*c*g^{(m + 2)n^2} - a^2*d*g^{(m + 2)n^2})*B^4)*(b*x + a)^m*\log((b*x + a)^n) + ((a*b*c*g^{(m + 2)n^2} - a^2*d*g^{(m + 2)n^2})*A*B^3 + (a*b*c*g^{(m + 2)n^2}*log(e) - a^2*d*g^{(m + 2)n^2}*log(e))*B^4 + ((b^2*c*g^{(m + 2)n^2} - a*b*d*g^{(m + 2)n^2})*A*B^3 + (b^2*c*g^{(m + 2)n^2}*log(e) - a*b*d*g^{(m + 2)n^2}*log(e))*B^4)*x)*(b*x + a)^m*\log((d*x + c)^n)$

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(ci + dix)^m}{(ag + bgx)^{m+2} \left(A + B \ln \left(e^{\left(\frac{a+bx}{c+dx} \right)^n} \right) \right)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((c*i + d*i*x)^m/((a*g + b*g*x)^(m + 2)*(A + B*log(e*((a + b*x)/(c + d*x))^n))^3), x)

[Out] int((c*i + d*i*x)^m/((a*g + b*g*x)^(m + 2)*(A + B*log(e*((a + b*x)/(c + d*x))^n))^3), x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)**(-2-m)*(d*i*x+c*i)**m/(A+B*ln(e*((b*x+a)/(d*x+c))**n))**3,x)

[Out] Timed out

$$3.224 \quad \int \frac{\log^p \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{(a+bx)(c+dx)} dx$$

Optimal. Leaf size=41

$$\frac{\log^{p+1} \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{n(p+1)(bc-ad)}$$

[Out] $\ln(e*((b*x+a)/(d*x+c))^n)^{(1+p)/(-a*d+b*c)}/n/(1+p)$

Rubi [A] time = 0.11, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.029$, Rules used = {2505}

$$\frac{\log^{p+1} \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{n(p+1)(bc-ad)}$$

Antiderivative was successfully verified.

[In] $\text{Int}[\text{Log}[e*((a + b*x)/(c + d*x))^n]^{p/((a + b*x)*(c + d*x))}, x]$

[Out] $\text{Log}[e*((a + b*x)/(c + d*x))^n]^{(1 + p)/((b*c - a*d)*n*(1 + p))}$

Rule 2505

$\text{Int}[\text{Log}[(e_.)*((f_.)*((a_.) + (b_.)*(x_.))^{p_.})*((c_.) + (d_.)*(x_.))^{q_.})^{r_.}]^{s_.}(u_), x_Symbol] \rightarrow \text{With}[\{h = \text{Simplify}[u*(a + b*x)*(c + d*x)]\}, \text{Simp}[(h*\text{Log}[e*(f*(a + b*x)^p*(c + d*x)^q]^r)^{(s + 1)}/(p*r*(s + 1)*(b*c - a*d)), x] /; \text{FreeQ}[h, x] /; \text{FreeQ}[\{a, b, c, d, e, f, p, q, r, s\}, x] \&\& \text{NeQ}[b*c - a*d, 0] \&\& \text{EqQ}[p + q, 0] \&\& \text{NeQ}[s, -1]$

Rubi steps

$$\int \frac{\log^p \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{(a+bx)(c+dx)} dx = \frac{\log^{1+p} \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{(bc-ad)n(1+p)}$$

Mathematica [A] time = 0.03, size = 40, normalized size = 0.98

$$\frac{\log^{p+1} \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{(p+1)(bcn - adn)}$$

Antiderivative was successfully verified.

[In] Integrate[Log[e*((a + b*x)/(c + d*x))^n]^p/((a + b*x)*(c + d*x)),x]

[Out] Log[e*((a + b*x)/(c + d*x))^n]^(1 + p)/((b*c*n - a*d*n)*(1 + p))

fricas [A] time = 0.69, size = 65, normalized size = 1.59

$$\frac{\left(n \log\left(\frac{bx+a}{dx+c}\right) + \log(e)\right)\left(n \log\left(\frac{bx+a}{dx+c}\right) + \log(e)\right)^p}{(bc - ad)np + (bc - ad)n}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(log(e*((b*x+a)/(d*x+c))^n)^p/(b*x+a)/(d*x+c),x, algorithm="fricas")

[Out] (n*log((b*x + a)/(d*x + c)) + log(e))*(n*log((b*x + a)/(d*x + c)) + log(e))^p/((b*c - a*d)*n*p + (b*c - a*d)*n)

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)^p}{(bx+a)(dx+c)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(log(e*((b*x+a)/(d*x+c))^n)^p/(b*x+a)/(d*x+c),x, algorithm="giac")

[Out] integrate(log(e*((b*x + a)/(d*x + c))^n)^p/((b*x + a)*(d*x + c)), x)

maple [F] time = 0.50, size = 0, normalized size = 0.00

$$\int \frac{\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)^p}{(bx+a)(dx+c)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(ln(e*((b*x+a)/(d*x+c))^n)^p/(b*x+a)/(d*x+c),x)

[Out] int(ln(e*((b*x+a)/(d*x+c))^n)^p/(b*x+a)/(d*x+c),x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)^p}{(bx+a)(dx+c)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*((b*x+a)/(d*x+c))^n)^p/(b*x+a)/(d*x+c),x, algorithm="maxima")
```

```
[Out] integrate(log(e*((b*x + a)/(d*x + c))^n)^p/((b*x + a)*(d*x + c)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\ln\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^p}{(a+bx)(c+dx)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(e*((a + b*x)/(c + d*x))^n)^p/((a + b*x)*(c + d*x)),x)
```

```
[Out] int(log(e*((a + b*x)/(c + d*x))^n)^p/((a + b*x)*(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(e*((b*x+a)/(d*x+c))^n)^p/(b*x+a)/(d*x+c),x)
```

```
[Out] Timed out
```

$$3.225 \quad \int \frac{\log^p \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{ac+(bc+ad)x+bdx^2} dx$$

Optimal. Leaf size=41

$$\frac{\log^{p+1} \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{n(p+1)(bc-ad)}$$

[Out] $\ln(e*((b*x+a)/(d*x+c))^n)^{(1+p)/(-a*d+b*c)/n/(1+p)}$

Rubi [A] time = 0.04, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}} = 0.024$, Rules used = {2505}

$$\frac{\log^{p+1} \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{n(p+1)(bc-ad)}$$

Antiderivative was successfully verified.

[In] $\text{Int}[\text{Log}[e*((a + b*x)/(c + d*x))^n]^p/(a*c + (b*c + a*d)*x + b*d*x^2), x]$

[Out] $\text{Log}[e*((a + b*x)/(c + d*x))^n]^{(1+p)/((b*c - a*d)*n*(1+p))}$

Rule 2505

$\text{Int}[\text{Log}[(e_.)*((f_.)*((a_.) + (b_.)*(x_.))^{(p_.)*((c_.) + (d_.)*(x_.))^{(q_.)})^{(r_.)}]^{(s_.)}*(u_), x_Symbol] :> \text{With}[\{h = \text{Simplify}[u*(a + b*x)*(c + d*x)]\}, \text{Simp}[(h*\text{Log}[e*(f*(a + b*x)^p*(c + d*x)^q]^r)^{(s+1)}/(p*r*(s+1)*(b*c - a*d)), x] /; \text{FreeQ}[h, x] /; \text{FreeQ}[\{a, b, c, d, e, f, p, q, r, s\}, x] \&\& \text{NeQ}[s, -1] \&\& \text{EqQ}[p + q, 0] \&\& \text{EqQ}[b*c - a*d, 0] \&\& \text{NeQ}[s, -1]$

Rubi steps

$$\int \frac{\log^p \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{ac + (bc + ad)x + bdx^2} dx = \frac{\log^{1+p} \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{(bc - ad)n(1 + p)}$$

Mathematica [A] time = 0.01, size = 40, normalized size = 0.98

$$\frac{\log^{p+1} \left(e \left(\frac{a+bx}{c+dx} \right)^n \right)}{(p+1)(bcn - adn)}$$

Antiderivative was successfully verified.

[In] Integrate[Log[e*((a + b*x)/(c + d*x))^n]^p/(a*c + (b*c + a*d)*x + b*d*x^2), x]

[Out] Log[e*((a + b*x)/(c + d*x))^n]^(1 + p)/((b*c*n - a*d*n)*(1 + p))

fricas [A] time = 1.23, size = 65, normalized size = 1.59

$$\frac{\left(n \log\left(\frac{bx+a}{dx+c}\right) + \log(e)\right)\left(n \log\left(\frac{bx+a}{dx+c}\right) + \log(e)\right)^p}{(bc - ad)np + (bc - ad)n}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(log(e*((b*x+a)/(d*x+c))^n)^p/(a*c+(a*d+b*c)*x+b*d*x^2),x, algorithm="fricas")

[Out] (n*log((b*x + a)/(d*x + c)) + log(e))*(n*log((b*x + a)/(d*x + c)) + log(e))^p/((b*c - a*d)*n*p + (b*c - a*d)*n)

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)^p}{bdx^2 + ac + (bc + ad)x} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(log(e*((b*x+a)/(d*x+c))^n)^p/(a*c+(a*d+b*c)*x+b*d*x^2),x, algorithm="giac")

[Out] integrate(log(e*((b*x + a)/(d*x + c))^n)^p/(b*d*x^2 + a*c + (b*c + a*d)*x), x)

maple [F] time = 0.86, size = 0, normalized size = 0.00

$$\int \frac{\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)^p}{bdx^2 + ac + (ad + bc)x} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(ln(e*((b*x+a)/(d*x+c))^n)^p/(b*d*x^2+a*c+(a*d+b*c)*x), x)

[Out] int(ln(e*((b*x+a)/(d*x+c))^n)^p/(b*d*x^2+a*c+(a*d+b*c)*x), x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)^p}{bdx^2 + ac + (bc + ad)x} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(log(e*((b*x+a)/(d*x+c))^n)^p/(a*c+(a*d+b*c)*x+b*d*x^2),x, algorithm="maxima")

[Out] integrate(log(e*((b*x + a)/(d*x + c))^n)^p/(b*d*x^2 + a*c + (b*c + a*d)*x), x)

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\ln\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^p}{bdx^2 + (ad + bc)x + ac} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(log(e*((a + b*x)/(c + d*x))^n)^p/(a*c + x*(a*d + b*c) + b*d*x^2),x)

[Out] int(log(e*((a + b*x)/(c + d*x))^n)^p/(a*c + x*(a*d + b*c) + b*d*x^2), x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(ln(e*((b*x+a)/(d*x+c))**n)**p/(a*c+(a*d+b*c)*x+b*d*x**2),x)

[Out] Timed out

3.226 $\int (ag+bgx)^m (ci+dix)^{-2-m} \left(A + B \log (e(a+bx)^n (c+dx)^{-n}) \right)^p dx$

Optimal. Leaf size=193

$$\frac{(a+bx)e^{-\frac{A(m+1)}{Bn}} (g(a+bx))^m (i(c+dx))^{-m} (e(a+bx)^n (c+dx)^{-n})^{-\frac{m+1}{n}} \left(B \log (e(a+bx)^n (c+dx)^{-n}) + A \right)^p \left(-\frac{(m+1)}{n} \right)}{i^2(m+1)(c+dx)(bc-ad)}$$

[Out] $(b*x+a)*(g*(b*x+a))^m * \text{GAMMA}(1+p, -(1+m)*(A+B*\ln(e*(b*x+a)^n/((d*x+c)^n)))/B/n) * (A+B*\ln(e*(b*x+a)^n/((d*x+c)^n)))^p / (-a*d+b*c) / \exp(A*(1+m)/B/n) / i^{2/(1+m)} / (d*x+c) / ((i*(d*x+c))^m) / ((e*(b*x+a)^n/((d*x+c)^n))^{((1+m)/n)}) / ((-(1+m)*(A+B*\ln(e*(b*x+a)^n/((d*x+c)^n)))/B/n)^p$

Rubi [F] time = 0.81, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int (ag+bgx)^m (ci+dix)^{-2-m} \left(A + B \log (e(a+bx)^n (c+dx)^{-n}) \right)^p dx$$

Verification is Not applicable to the result.

[In] $\text{Int}[(a*g + b*g*x)^m * (c*i + d*i*x)^{-2-m} * (A + B*\text{Log}[(e*(a+bx)^n)/(c+dx)^n])^p, x]$

[Out] $\text{Defer}[\text{Int}[(a*g + b*g*x)^m * (c*i + d*i*x)^{-2-m} * (A + B*\text{Log}[(e*(a+bx)^n)/(c+dx)^n])^p, x]]$

Rubi steps

$$\int (226c + 226dx)^{-2-m} (ag+bgx)^m \left(A + B \log (e(a+bx)^n (c+dx)^{-n}) \right)^p dx = \int (226c + 226dx)^{-2-m} (ag+bgx)^m$$

Mathematica [F] time = 0.45, size = 0, normalized size = 0.00

$$\int (ag+bgx)^m (ci+dix)^{-2-m} \left(A + B \log (e(a+bx)^n (c+dx)^{-n}) \right)^p dx$$

Verification is Not applicable to the result.

[In] $\text{Integrate}[(a*g + b*g*x)^m * (c*i + d*i*x)^{-2-m} * (A + B*\text{Log}[(e*(a+bx)^n)/(c+dx)^n])^p, x]$

[Out] Integrate[(a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m)*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^p, x]

fricas [F] time = 0.87, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(bgx + ag\right)^m (dix + ci)^{-m-2} \left(B \log\left(\frac{(bx + a)^n e}{(dx + c)^n}\right) + A\right)^p, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)*(A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^p,x, algorithm="fricas")

[Out] integral((b*g*x + a*g)^m*(d*i*x + c*i)^(-m - 2)*(B*log((b*x + a)^n*e/(d*x + c)^n) + A)^p, x)

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)*(A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^p,x, algorithm="giac")

[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
 INPUT:sage2OUTPUT:Simplification assuming c near 0Simplification assuming c near 0Simplification assuming t_nostep near 0Simplification assuming t_nostep near 0Simplification assuming a near 0Simplification assuming a near 0Simplification assuming c near 0Simplification assuming c near 0Simplification assuming c near 0Simplification assuming c near 0Simplification assuming t_nostep near 0Simplification assuming t_nostep near 0Simplification assuming a near 0Simplification assuming a near 0Simplification assuming c near 0Simplification assuming c near 0Simplification assuming c near 0Simplification assuming c near 0Simplification assuming x near 0Simplification assuming x near 0Simplification assuming a near 0Simplification assuming a near 0Simplification assuming c near 0Simplification assuming c near 0Unable to divide, perhaps due to rounding error%%{1,[0,0,5,5,0,2,2,3,3,0,0,2]%%}+%%{-2,[0,0,5,4,1,3,1,3,3,0,0,2]%%}+%%{1,[0,0,5,3,2,4,0,3,3,0,0,2]%%}+%%{2,[0,0,4,5,0,1,3,3,3,0,0,2]%%}+%%{-1,[0,0,4,4,1,2,2,3,3,0,0,2]%%}+%%{-4,[0,0,4,3,2,3,1,3,3,0,0,2]%%}+%%{3,[0,0,4,2,3,4,0,3,3,0,0,2]%%}+%%{1,[0,0,3,5,0,0,4,3,3,0,0,2]%%}+%%{4,[0,0,3,4,1,1,3,3,3,0,0,2]%%}+%%{-8,[0,0,3,3,2,2,2,3,3,0,0,2]%%}+%%{3,[0,0,3,1,4,4,0,3,3,0,0,2]%%}+%%{3,[0,0,2,4,1,0,4,3,3,0,0,2]%%}+%%{-8,[0,0,2,2,3,2,2,3,3,0,0,2]%%}+%%{4,[0,0,2,1,4,3,1,3,3,0,0,2]%%}+%%{1,[0,0,2,0,5,4,0,3,3,0,0,2]%%}+%%{3,[0,0,1,3,2,0,4,3,3,0,0,2]%%}+%%{-4,[0,0,1,2,3,1,3,3,3,0,0,2]%%}+%%{-1,[0,0,1,1,4,2,2

,3,3,0,0,2]%%}+%%{2,[0,0,1,0,5,3,1,3,3,0,0,2]%%}+%%{1,[0,0,0,2,3,0,4,3,3,0,0,2]%%}+%%{-2,[0,0,0,1,4,1,3,3,3,0,0,2]%%}+%%{1,[0,0,0,0,5,2,2,3,3,0,0,2]%%} / %%{1,[0,0,6,5,0,3,2,3,3,0,0,2]%%}+%%{-2,[0,0,6,4,1,4,1,3,3,0,0,2]%%}+%%{1,[0,0,6,3,2,5,0,3,3,0,0,2]%%}+%%{3,[0,0,5,5,0,2,3,3,3,0,0,2]%%}+%%{-3,[0,0,5,4,1,3,2,3,3,0,0,2]%%}+%%{-3,[0,0,5,3,2,4,1,3,3,0,0,2]%%}+%%{3,[0,0,5,2,3,5,0,3,3,0,0,2]%%}+%%{3,[0,0,4,5,0,1,4,3,3,0,0,2]%%}+%%{3,[0,0,4,4,1,2,3,3,3,0,0,2]%%}+%%{-12,[0,0,4,3,2,3,2,3,3,0,0,2]%%}+%%{3,[0,0,4,2,3,4,1,3,3,0,0,2]%%}+%%{3,[0,0,4,1,4,5,0,3,3,0,0,2]%%}+%%{1,[0,0,3,5,0,0,5,3,3,0,0,2]%%}+%%{7,[0,0,3,4,1,1,4,3,3,0,0,2]%%}+%%{-8,[0,0,3,3,2,2,3,3,3,0,0,2]%%}+%%{-8,[0,0,3,2,3,3,2,3,3,0,0,2]%%}+%%{7,[0,0,3,1,4,4,1,3,3,0,0,2]%%}+%%{1,[0,0,3,0,5,5,0,3,3,0,0,2]%%}+%%{3,[0,0,2,4,1,0,5,3,3,0,0,2]%%}+%%{3,[0,0,2,3,2,1,4,3,3,0,0,2]%%}+%%{-12,[0,0,2,2,3,2,3,3,3,0,0,2]%%}+%%{3,[0,0,2,1,4,3,2,3,3,0,0,2]%%}+%%{3,[0,0,2,0,5,4,1,3,3,0,0,2]%%}+%%{3,[0,0,1,3,2,0,5,3,3,0,0,2]%%}+%%{-3,[0,0,1,2,3,1,4,3,3,0,0,2]%%}+%%{-3,[0,0,1,1,4,2,3,3,3,0,0,2]%%}+%%{3,[0,0,1,0,5,3,2,3,3,0,0,2]%%}+%%{1,[0,0,0,2,3,0,5,3,3,0,0,2]%%}+%%{-2,[0,0,0,1,4,1,4,3,3,0,0,2]%%}+%%{1,[0,0,0,0,5,2,3,3,3,0,0,2]%%} Error: Bad Argument Value

maple [F] time = 3.35, size = 0, normalized size = 0.00

$$\int (B \ln(e(bx + a)^n (dx + c)^{-n}) + A)^p (bgx + ag)^m (dix + ci)^{-m-2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)^m*(d*i*x+c*i)^(-m-2)*(A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^p,x)

[Out] int((b*g*x+a*g)^m*(d*i*x+c*i)^(-m-2)*(A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^p,x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (bgx + ag)^m (dix + ci)^{-m-2} \left(B \log \left(\frac{(bx + a)^n e}{(dx + c)^n} \right) + A \right)^p dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)*(A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^p,x, algorithm="maxima")

[Out] integrate((b*g*x + a*g)^m*(d*i*x + c*i)^(-m - 2)*(B*log((b*x + a)^n*e/(d*x + c)^n) + A)^p, x)

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(ag + bgx)^m \left(A + B \ln \left(\frac{e(a+bx)^n}{(c+dx)^n} \right) \right)^p}{(ci + dix)^{m+2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)^m*(A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^p)/(c*i + d*i*x)^(m + 2), x)
```

```
[Out] int(((a*g + b*g*x)^m*(A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^p)/(c*i + d*i*x)^(m + 2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**m*(d*i*x+c*i)**(-2-m)*(A+B*ln(e*(b*x+a)**n)/((d*x+c)*n)))**p, x)
```

```
[Out] Timed out
```

3.227 $\int (ag+bgx)^{-2-m}(ci+dix)^m \left(A + B \log (e(a + bx)^n(c + dx)^{-n}) + A \right)^p dx$

Optimal. Leaf size=194

$$\frac{(a + bx)e^{\frac{A(m+1)}{Bn}}(g(a + bx))^{-m-2}(i(c + dx))^{m+2}(e(a + bx)^n(c + dx)^{-n})^{\frac{m+1}{n}}(B \log (e(a + bx)^n(c + dx)^{-n}) + A)^p}{i^2(m + 1)(c + dx)(bc - ad)}$$

[Out] $-\exp(A*(1+m)/B/n)*(b*x+a)*(g*(b*x+a))^{(-2-m)*(i*(d*x+c))^{(2+m)*(e*(b*x+a)^n/(d*x+c)^n)^{(1+m)/n}}*\text{GAMMA}(1+p, (1+m)*(A+B*\ln(e*(b*x+a)^n/(d*x+c)^n)))/B/n*(A+B*\ln(e*(b*x+a)^n/(d*x+c)^n))^p/(-a*d+b*c)/i^{2/(1+m)/(d*x+c)/(((1+m)*(A+B*\ln(e*(b*x+a)^n/(d*x+c)^n)))/B/n)^p}$

Rubi [F] time = 0.71, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int (ag + bgx)^{-2-m}(ci + dix)^m \left(A + B \log (e(a + bx)^n(c + dx)^{-n}) \right)^p dx$$

Verification is Not applicable to the result.

[In] $\text{Int}[(a*g + b*g*x)^{-2 - m}*(c*i + d*i*x)^m*(A + B*\text{Log}[(e*(a + b*x)^n)/(c + d*x)^n])^p, x]$

[Out] $\text{Defer}[\text{Int}[(a*g + b*g*x)^{-2 - m}*(c*i + d*i*x)^m*(A + B*\text{Log}[(e*(a + b*x)^n)/(c + d*x)^n])^p, x]$

Rubi steps

$$\int (227c + 227dx)^m (ag + bgx)^{-2-m} \left(A + B \log (e(a + bx)^n(c + dx)^{-n}) \right)^p dx = \int (227c + 227dx)^m (ag + bgx)^{-2-m}$$

Mathematica [F] time = 0.41, size = 0, normalized size = 0.00

$$\int (ag + bgx)^{-2-m}(ci + dix)^m \left(A + B \log (e(a + bx)^n(c + dx)^{-n}) \right)^p dx$$

Verification is Not applicable to the result.

[In] $\text{Integrate}[(a*g + b*g*x)^{-2 - m}*(c*i + d*i*x)^m*(A + B*\text{Log}[(e*(a + b*x)^n)/(c + d*x)^n])^p, x]$

[Out] Integrate[(a*g + b*g*x)^(-2 - m)*(c*i + d*i*x)^m*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^p, x]

fricas [F] time = 0.82, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(bgx + ag\right)^{-m-2} (dix + ci)^m \left(B \log\left(\frac{(bx + a)^n e}{(dx + c)^n}\right) + A\right)^p, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m*(A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^p,x, algorithm="fricas")

[Out] integral((b*g*x + a*g)^(-m - 2)*(d*i*x + c*i)^m*(B*log((b*x + a)^n*e/(d*x + c)^n) + A)^p, x)

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m*(A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^p,x, algorithm="giac")

[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
 INPUT:sage2OUTPUT:Simplification assuming c near 0Simplification assuming c near 0Simplification assuming t_nostep near 0Simplification assuming t_nostep near 0Simplification assuming a near 0Simplification assuming a near 0Simplification assuming c near 0Simplification assuming c near 0Simplification assuming c near 0Simplification assuming c near 0Simplification assuming t_nostep near 0Simplification assuming t_nostep near 0Simplification assuming a near 0Simplification assuming a near 0Simplification assuming c near 0Simplification assuming c near 0Simplification assuming c near 0Simplification assuming c near 0Simplification assuming x near 0Simplification assuming x near 0Simplification assuming a near 0Simplification assuming a near 0Simplification assuming c near 0Simplification assuming c near 0Unable to divide, perhaps due to rounding error%%{1,[0,0,5,5,0,2,2,3,3,0,0,2]}%%}+%%{-2,[0,0,5,4,1,3,1,3,3,0,0,2]}%%}+%%{1,[0,0,5,3,2,4,0,3,3,0,0,2]}%%}+%%{2,[0,0,4,5,0,1,3,3,3,0,0,2]}%%}+%%{-1,[0,0,4,4,1,2,2,3,3,0,0,2]}%%}+%%{-4,[0,0,4,3,2,3,1,3,3,0,0,2]}%%}+%%{3,[0,0,4,2,3,4,0,3,3,0,0,2]}%%}+%%{1,[0,0,3,5,0,0,4,3,3,0,0,2]}%%}+%%{4,[0,0,3,4,1,1,3,3,3,0,0,2]}%%}+%%{-8,[0,0,3,3,2,2,2,3,3,0,0,2]}%%}+%%{3,[0,0,3,1,4,4,0,3,3,0,0,2]}%%}+%%{3,[0,0,2,4,1,0,4,3,3,0,0,2]}%%}+%%{-8,[0,0,2,2,3,2,2,3,3,0,0,2]}%%}+%%{4,[0,0,2,1,4,3,1,3,3,0,0,2]}%%}+%%{1,[0,0,2,0,5,4,0,3,3,0,0,2]}%%}+%%{3,[0,0,1,3,2,0,4,3,3,0,0,2]}%%}+%%{-4,[0,0,1,2,3,1,3,3,3,0,0,2]}%%}+%%{-1,[0,0,1,1,4,2,2

,3,3,0,0,2]%%}+%%{2,[0,0,1,0,5,3,1,3,3,0,0,2]%%}+%%{1,[0,0,0,2,3,0,4,3,3,0,0,2]%%}+%%{-2,[0,0,0,1,4,1,3,3,3,0,0,2]%%}+%%{1,[0,0,0,0,5,2,2,3,3,0,0,2]%%} / %%{1,[0,0,6,5,0,3,2,3,3,0,0,2]%%}+%%{-2,[0,0,6,4,1,4,1,3,3,0,0,2]%%}+%%{1,[0,0,6,3,2,5,0,3,3,0,0,2]%%}+%%{3,[0,0,5,5,0,2,3,3,3,0,0,2]%%}+%%{-3,[0,0,5,4,1,3,2,3,3,0,0,2]%%}+%%{-3,[0,0,5,3,2,4,1,3,3,0,0,2]%%}+%%{3,[0,0,5,2,3,5,0,3,3,0,0,2]%%}+%%{3,[0,0,4,5,0,1,4,3,3,0,0,2]%%}+%%{3,[0,0,4,4,1,2,3,3,3,0,0,2]%%}+%%{-12,[0,0,4,3,2,3,2,3,3,0,0,2]%%}+%%{3,[0,0,4,2,3,4,1,3,3,0,0,2]%%}+%%{3,[0,0,4,1,4,5,0,3,3,0,0,2]%%}+%%{1,[0,0,3,5,0,0,5,3,3,0,0,2]%%}+%%{7,[0,0,3,4,1,1,4,3,3,0,0,2]%%}+%%{-8,[0,0,3,3,2,2,3,3,3,0,0,2]%%}+%%{-8,[0,0,3,2,3,3,2,3,3,0,0,2]%%}+%%{7,[0,0,3,1,4,4,1,3,3,0,0,2]%%}+%%{1,[0,0,3,0,5,5,0,3,3,0,0,2]%%}+%%{3,[0,0,2,4,1,0,5,3,3,0,0,2]%%}+%%{3,[0,0,2,3,2,1,4,3,3,0,0,2]%%}+%%{-12,[0,0,2,2,3,2,3,3,3,0,0,2]%%}+%%{3,[0,0,2,1,4,3,2,3,3,0,0,2]%%}+%%{3,[0,0,2,0,5,4,1,3,3,0,0,2]%%}+%%{3,[0,0,1,3,2,0,5,3,3,0,0,2]%%}+%%{-3,[0,0,1,2,3,1,4,3,3,0,0,2]%%}+%%{-3,[0,0,1,1,4,2,3,3,3,0,0,2]%%}+%%{3,[0,0,1,0,5,3,2,3,3,0,0,2]%%}+%%{1,[0,0,0,2,3,0,5,3,3,0,0,2]%%}+%%{-2,[0,0,0,1,4,1,4,3,3,0,0,2]%%}+%%{1,[0,0,0,0,5,2,3,3,3,0,0,2]%%} Error: Bad Argument Value

maple [F] time = 3.24, size = 0, normalized size = 0.00

$$\int (B \ln(e(bx+a)^n(dx+c)^{-n}) + A)^p (bgx+ag)^{-m-2} (dix+ci)^m dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*g*x+a*g)^(-m-2)*(d*i*x+c*i)^m*(A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^p,x)
 [Out] int((b*g*x+a*g)^(-m-2)*(d*i*x+c*i)^m*(A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^p,x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (bgx+ag)^{-m-2} (dix+ci)^m \left(B \log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right) + A \right)^p dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m*(A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^p,x, algorithm="maxima")
 [Out] integrate((b*g*x+a*g)^(-m-2)*(d*i*x+c*i)^m*(B*log((b*x+a)^n*e/(d*x+c)^n)+A)^p,x)

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(ci+dix)^m \left(A + B \ln\left(\frac{e(a+bx)^n}{(c+dx)^n}\right) \right)^p}{(ag+bgx)^{m+2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^m*(A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^p)/(a*g + b*g*x)^(m + 2), x)
```

```
[Out] int(((c*i + d*i*x)^m*(A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^p)/(a*g + b*g*x)^(m + 2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**(-2-m)*(d*i*x+c*i)**m*(A+B*ln(e*(b*x+a)**n/((d*x+c)*n)))**p, x)
```

```
[Out] Timed out
```

$$3.228 \quad \int \frac{(A+B \log(e(a+bx)^n(c+dx)^{-n}))^3}{(a+bx)(c+dx)} dx$$

Optimal. Leaf size=45

$$\frac{(B \log(e(a+bx)^n(c+dx)^{-n}) + A)^4}{4Bn(bc-ad)}$$

[Out] 1/4*(A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^4/B/(-a*d+b*c)/n

Rubi [A] time = 0.12, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.025$, Rules used = {6686}

$$\frac{(B \log(e(a+bx)^n(c+dx)^{-n}) + A)^4}{4Bn(bc-ad)}$$

Antiderivative was successfully verified.

[In] Int[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^3/((a + b*x)*(c + d*x)), x]

[Out] (A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^4/(4*B*(b*c - a*d)*n)

Rule 6686

Int[(u_)*(y_)^(m_.), x_Symbol] :=> With[{q = DerivativeDivides[y, u, x]}, Simp[(q*y^(m + 1))/(m + 1), x] /; !FalseQ[q] /; FreeQ[m, x] && NeQ[m, -1]

Rubi steps

$$\int \frac{(A + B \log(e(a+bx)^n(c+dx)^{-n}))^3}{(a+bx)(c+dx)} dx = \frac{(A + B \log(e(a+bx)^n(c+dx)^{-n}))^4}{4B(bc-ad)n}$$

Mathematica [A] time = 0.02, size = 43, normalized size = 0.96

$$\frac{(B \log(e(a+bx)^n(c+dx)^{-n}) + A)^4}{4(bBcn - aBdn)}$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^3/((a + b*x)*(c + d*x)), x]

[Out] $(A + B \cdot \text{Log}[(e \cdot (a + b \cdot x)^n) / (c + d \cdot x)^n])^4 / (4 \cdot (b \cdot B \cdot c \cdot n - a \cdot B \cdot d \cdot n))$

fricas [B] time = 0.80, size = 375, normalized size = 8.33

$$\frac{B^3 n^3 \log(bx + a)^4 + B^3 n^3 \log(dx + c)^4 + 4(B^3 n^2 \log(e) + AB^2 n^2) \log(bx + a)^3 - 4(B^3 n^3 \log(bx + a) + B^3 n^2 \log(dx + c)) \log(bx + a)^2 + 4(B^3 n^2 \log(e) + AB^2 n^2) \log(bx + a)^2 + 4(B^3 n \log(e)^3 + 3AB^2 \log(e)^2 + 3A^2 B \log(e) + A^3) \log(bx + a) - 4(B^3 n^3 \log(bx + a)^3 + B^3 \log(e)^3 + 3AB^2 \log(e)^2 + 3A^2 B \log(e) + A^3 + 3(B^3 n^2 \log(e) + AB^2 n^2) \log(bx + a)^2 + 3(B^3 n \log(e)^2 + 2AB^2 n \log(e) + A^2 B n) \log(bx + a)) \log(dx + c)}{(b \cdot c - a \cdot d)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^3/(b*x+a)/(d*x+c),x, algorithm="fricas")

[Out] $\frac{1}{4} \cdot (B^3 n^3 \log(bx + a)^4 + B^3 n^3 \log(dx + c)^4 + 4 \cdot (B^3 n^2 \log(e) + AB^2 n^2) \cdot \log(bx + a)^3 - 4 \cdot (B^3 n^3 \log(bx + a) + B^3 n^2 \log(e) + AB^2 n^2) \cdot \log(dx + c)^3 + 6 \cdot (B^3 n \log(e)^2 + 2 \cdot AB^2 n \log(e) + A^2 B n) \cdot \log(bx + a)^2 + 6 \cdot (B^3 n^3 \log(bx + a)^2 + B^3 n \log(e)^2 + 2 \cdot AB^2 n \log(e) + A^2 B n + 2 \cdot (B^3 n^2 \log(e) + AB^2 n^2) \cdot \log(bx + a)) \cdot \log(dx + c)^2 + 4 \cdot (B^3 \log(e)^3 + 3 \cdot AB^2 \log(e)^2 + 3 \cdot A^2 B \log(e) + A^3) \cdot \log(bx + a) - 4 \cdot (B^3 n^3 \log(bx + a)^3 + B^3 \log(e)^3 + 3 \cdot AB^2 \log(e)^2 + 3 \cdot A^2 B \log(e) + A^3 + 3 \cdot (B^3 n^2 \log(e) + AB^2 n^2) \cdot \log(bx + a)^2 + 3 \cdot (B^3 n \log(e)^2 + 2 \cdot AB^2 n \log(e) + A^2 B n) \cdot \log(bx + a)) \cdot \log(dx + c)) / (b \cdot c - a \cdot d)$

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(B \log\left(\frac{(bx+a)^n e}{(dx+c)^n} \right) + A \right)^3}{(bx+a)(dx+c)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^3/(b*x+a)/(d*x+c),x, algorithm="giac")

[Out] integrate((B*log((b*x + a)^n*e/(d*x + c)^n) + A)^3/((b*x + a)*(d*x + c)), x)

maple [C] time = 35.35, size = 64288, normalized size = 1428.62

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int((A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^3/(b*x+a)/(d*x+c),x)

[Out] result too large to display

maxima [B] time = 1.78, size = 766, normalized size = 17.02

$$B^3 \left(\frac{\log(bx+a)}{bc-ad} - \frac{\log(dx+c)}{bc-ad} \right) \log \left(\frac{(bx+a)^n e}{(dx+c)^n} \right)^3 + 3AB^2 \left(\frac{\log(bx+a)}{bc-ad} - \frac{\log(dx+c)}{bc-ad} \right) \log \left(\frac{(bx+a)^n e}{(dx+c)^n} \right)^2 + 3A^2$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^3/(b*x+a)/(d*x+c),x, algorithm="maxima")

[Out] $B^3 * (\log(b*x + a)/(b*c - a*d) - \log(d*x + c)/(b*c - a*d)) * \log((b*x + a)^n * e / (d*x + c)^n)^3 + 3 * A * B^2 * (\log(b*x + a)/(b*c - a*d) - \log(d*x + c)/(b*c - a*d)) * \log((b*x + a)^n * e / (d*x + c)^n)^2 + 3 * A^2 * B * (\log(b*x + a)/(b*c - a*d) - \log(d*x + c)/(b*c - a*d)) * \log((b*x + a)^n * e / (d*x + c)^n) - 1/4 * B^3 * (6 * (e^n * \log(b*x + a)^2 - 2 * e^n * \log(b*x + a) * \log(d*x + c) + e^n * \log(d*x + c)^2) * \log((b*x + a)^n * e / (d*x + c)^n)^2 / ((b*c - a*d) * e) - (4 * (e^2 * n^2 * \log(b*x + a)^3 - 3 * e^2 * n^2 * \log(b*x + a)^2 * \log(d*x + c) + 3 * e^2 * n^2 * \log(b*x + a) * \log(d*x + c)^2 - e^2 * n^2 * \log(d*x + c)^3) * \log((b*x + a)^n * e / (d*x + c)^n) / ((b*c - a*d) * e) - (e^3 * n^3 * \log(b*x + a)^4 - 4 * e^3 * n^3 * \log(b*x + a)^3 * \log(d*x + c) + 6 * e^3 * n^3 * \log(b*x + a)^2 * \log(d*x + c)^2 - 4 * e^3 * n^3 * \log(b*x + a) * \log(d*x + c)^3 + e^3 * n^3 * \log(d*x + c)^4) / ((b*c - a*d) * e^2)) / e + A^3 * (\log(b*x + a)/(b*c - a*d) - \log(d*x + c)/(b*c - a*d)) - A * B^2 * (3 * (e^n * \log(b*x + a)^2 - 2 * e^n * \log(b*x + a) * \log(d*x + c) + e^n * \log(d*x + c)^2) * \log((b*x + a)^n * e / (d*x + c)^n) / ((b*c - a*d) * e) - (e^2 * n^2 * \log(b*x + a)^3 - 3 * e^2 * n^2 * \log(b*x + a)^2 * \log(d*x + c) + 3 * e^2 * n^2 * \log(b*x + a) * \log(d*x + c)^2 - e^2 * n^2 * \log(d*x + c)^3) / ((b*c - a*d) * e^2)) - 3/2 * (e^n * \log(b*x + a)^2 - 2 * e^n * \log(b*x + a) * \log(d*x + c) + e^n * \log(d*x + c)^2) * A^2 * B / ((b*c - a*d) * e)$

mupad [B] time = 5.75, size = 141, normalized size = 3.13

$$-\frac{3A^2B \ln\left(\frac{e(a+bx)^n}{(c+dx)^n}\right)^2}{2} + \frac{AB^2 \ln\left(\frac{e(a+bx)^n}{(c+dx)^n}\right)^3}{n(ad-bc)} + \frac{B^3 \ln\left(\frac{e(a+bx)^n}{(c+dx)^n}\right)^4}{4} + \frac{A^3 \operatorname{atan}\left(\frac{ad1i+bc1i+bdx2i}{ad-bc}\right) 2i}{ad-bc}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^3/((a + b*x)*(c + d*x)),x)

[Out] $(A^3 * \operatorname{atan}((a*d*1i + b*c*1i + b*d*x*2i)/(a*d - b*c)) * 2i) / (a*d - b*c) - ((B^3 * \log((e*(a + b*x)^n)/(c + d*x)^n)^4) / 4 + (3 * A^2 * B * \log((e*(a + b*x)^n)/(c + d*x)^n)^2) / 2 + A * B^2 * \log((e*(a + b*x)^n)/(c + d*x)^n)^3) / (n * (a*d - b*c))$

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*ln(e*(b*x+a)**n/((d*x+c)**n)))*3/(b*x+a)/(d*x+c),x)

[Out] Timed out

$$3.229 \quad \int \frac{(A+B \log(e(a+bx)^n(c+dx)^{-n}))^2}{(a+bx)(c+dx)} dx$$

Optimal. Leaf size=45

$$\frac{(B \log(e(a+bx)^n(c+dx)^{-n}) + A)^3}{3Bn(bc-ad)}$$

[Out] 1/3*(A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^3/B/(-a*d+b*c)/n

Rubi [A] time = 0.11, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.025$, Rules used = {6686}

$$\frac{(B \log(e(a+bx)^n(c+dx)^{-n}) + A)^3}{3Bn(bc-ad)}$$

Antiderivative was successfully verified.

[In] Int[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^2/((a + b*x)*(c + d*x)), x]

[Out] (A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^3/(3*B*(b*c - a*d)*n)

Rule 6686

Int[(u_)*(y_)^(m_.), x_Symbol] :> With[{q = DerivativeDivides[y, u, x]}, Simp[(q*y^(m + 1))/(m + 1), x] /; !FalseQ[q] /; FreeQ[m, x] && NeQ[m, -1]

Rubi steps

$$\int \frac{(A + B \log(e(a+bx)^n(c+dx)^{-n}))^2}{(a+bx)(c+dx)} dx = \frac{(A + B \log(e(a+bx)^n(c+dx)^{-n}))^3}{3B(bc-ad)n}$$

Mathematica [A] time = 0.02, size = 43, normalized size = 0.96

$$\frac{(B \log(e(a+bx)^n(c+dx)^{-n}) + A)^3}{3(bBcn - aBdn)}$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^2/((a + b*x)*(c + d*x)), x]

[Out] $(A + B \cdot \text{Log}[(e \cdot (a + b \cdot x)^n) / (c + d \cdot x)^n])^3 / (3 \cdot (b \cdot B \cdot c \cdot n - a \cdot B \cdot d \cdot n))$

fricas [B] time = 0.82, size = 188, normalized size = 4.18

$$\frac{B^2 n^2 \log(bx + a)^3 - B^2 n^2 \log(dx + c)^3 + 3(B^2 n \log(e) + ABn) \log(bx + a)^2 + 3(B^2 n^2 \log(bx + a) + B^2 n \log(e))}{}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^2/(b*x+a)/(d*x+c),x, algorithm="fricas")`

[Out] $\frac{1}{3} \cdot (B^2 \cdot n^2 \cdot \log(b \cdot x + a)^3 - B^2 \cdot n^2 \cdot \log(d \cdot x + c)^3 + 3 \cdot (B^2 \cdot n \cdot \log(e) + A \cdot B \cdot n) \cdot \log(b \cdot x + a)^2 + 3 \cdot (B^2 \cdot n^2 \cdot \log(b \cdot x + a) + B^2 \cdot n \cdot \log(e)) \cdot \log(d \cdot x + c) - 3 \cdot (B^2 \cdot n^2 \cdot \log(e)^2 + 2 \cdot A \cdot B \cdot \log(e) + A^2) \cdot \log(b \cdot x + a) - 3 \cdot (B^2 \cdot n^2 \cdot \log(b \cdot x + a)^2 + B^2 \cdot \log(e)^2 + 2 \cdot A \cdot B \cdot \log(e) + A^2 + 2 \cdot (B^2 \cdot n \cdot \log(e) + A \cdot B \cdot n) \cdot \log(b \cdot x + a)) \cdot \log(d \cdot x + c)) / (b \cdot c - a \cdot d)$

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(B \log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right) + A \right)^2}{(bx+a)(dx+c)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^2/(b*x+a)/(d*x+c),x, algorithm="giac")`

[Out] `integrate((B*log((b*x + a)^n*e/(d*x + c)^n) + A)^2/((b*x + a)*(d*x + c)), x)`

maple [C] time = 3.78, size = 11062, normalized size = 245.82

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^2/(b*x+a)/(d*x+c),x)`

[Out] result too large to display

maxima [B] time = 1.47, size = 387, normalized size = 8.60

$$B^2 \left(\frac{\log(bx + a)}{bc - ad} - \frac{\log(dx + c)}{bc - ad} \right) \log\left(\frac{(bx + a)^n e}{(dx + c)^n}\right)^2 + 2AB \left(\frac{\log(bx + a)}{bc - ad} - \frac{\log(dx + c)}{bc - ad} \right) \log\left(\frac{(bx + a)^n e}{(dx + c)^n}\right) + A^2 \left(\frac{\log(bx + a)}{bc - ad} - \frac{\log(dx + c)}{bc - ad} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^2/(b*x+a)/(d*x+c),x, algorithm="maxima")

[Out] $B^2 \cdot (\log(bx + a)/(bc - ad) - \log(dx + c)/(bc - ad)) \cdot \log((bx + a)^n \cdot e / (dx + c)^n)^2 + 2AB \cdot (\log(bx + a)/(bc - ad) - \log(dx + c)/(bc - ad)) \cdot \log((bx + a)^n \cdot e / (dx + c)^n) + A^2 \cdot (\log(bx + a)/(bc - ad) - \log(dx + c)/(bc - ad)) - \frac{1}{3} B^2 \cdot (3(e^n \log(bx + a))^2 - 2e^n \log(bx + a) \log(dx + c) + e^n \log(dx + c)^2) \cdot \log((bx + a)^n \cdot e / (dx + c)^n) / ((bc - ad) \cdot e) - (e^{2n} \log(bx + a)^3 - 3e^{2n} \log(bx + a)^2 \log(dx + c) + 3e^{2n} \log(bx + a) \log(dx + c)^2 - e^{2n} \log(dx + c)^3) / ((bc - ad) \cdot e^2) - (e^n \log(bx + a)^2 - 2e^n \log(bx + a) \log(dx + c) + e^n \log(dx + c)^2) \cdot AB / ((bc - ad) \cdot e)$

mupad [B] time = 4.77, size = 100, normalized size = 2.22

$$-\frac{-6in \operatorname{atan}\left(\frac{bc2i+bdx2i}{ad-bc} + 1i\right) A^2 + 3AB \ln\left(\frac{e(a+bx)^n}{(c+dx)^n}\right)^2 + B^2 \ln\left(\frac{e(a+bx)^n}{(c+dx)^n}\right)^3}{3n(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^2/((a + b*x)*(c + d*x)),x)

[Out] $-(B^2 \log((e(a + bx)^n)/(c + dx)^n))^3 + 3AB \log((e(a + bx)^n)/(c + dx)^n)^2 - A^2 n \operatorname{atan}((bc \cdot 2i + b \cdot dx \cdot 2i)/(ad - bc) + 1i) \cdot 6i) / (3n \cdot (ad - bc))$

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*ln(e*(b*x+a)**n/((d*x+c)**n)))**2/(b*x+a)/(d*x+c),x)

[Out] Timed out

$$3.230 \quad \int \frac{A+B \log(e(a+bx)^n(c+dx)^{-n})}{(a+bx)(c+dx)} dx$$

Optimal. Leaf size=45

$$\frac{(B \log(e(a+bx)^n(c+dx)^{-n}) + A)^2}{2Bn(bc-ad)}$$

[Out] 1/2*(A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^2/B/(-a*d+b*c)/n

Rubi [A] time = 0.08, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}} = 0.026$, Rules used = {6686}

$$\frac{(B \log(e(a+bx)^n(c+dx)^{-n}) + A)^2}{2Bn(bc-ad)}$$

Antiderivative was successfully verified.

[In] Int[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])/((a + b*x)*(c + d*x)),x]

[Out] (A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^2/(2*B*(b*c - a*d)*n)

Rule 6686

Int[(u_)*(y_)^(m_.), x_Symbol] := With[{q = DerivativeDivides[y, u, x]}, Simp[(q*y^(m + 1))/(m + 1), x] /; !FalseQ[q] /; FreeQ[m, x] && NeQ[m, -1]

Rubi steps

$$\int \frac{A + B \log(e(a+bx)^n(c+dx)^{-n})}{(a+bx)(c+dx)} dx = \frac{(A + B \log(e(a+bx)^n(c+dx)^{-n}))^2}{2B(bc-ad)n}$$

Mathematica [A] time = 0.01, size = 43, normalized size = 0.96

$$\frac{(B \log(e(a+bx)^n(c+dx)^{-n}) + A)^2}{2(bBcn - aBdn)}$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])/((a + b*x)*(c + d*x)),x]

[Out] (A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^2/(2*(b*B*c*n - a*B*d*n))

fricas [A] time = 1.13, size = 72, normalized size = 1.60

$$\frac{Bn \log(bx + a)^2 + Bn \log(dx + c)^2 + 2(B \log(e) + A) \log(bx + a) - 2(Bn \log(bx + a) + B \log(e) + A) \log(dx + c)}{2(bc - ad)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))/(b*x+a)/(d*x+c),x, algorithm="fricas")

[Out] 1/2*(B*n*log(b*x + a)^2 + B*n*log(d*x + c)^2 + 2*(B*log(e) + A)*log(b*x + a) - 2*(B*n*log(b*x + a) + B*log(e) + A)*log(d*x + c))/(b*c - a*d)

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{B \log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right) + A}{(bx+a)(dx+c)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))/(b*x+a)/(d*x+c),x, algorithm="giac")

[Out] integrate((B*log((b*x + a)^n*e/(d*x + c)^n) + A)/((b*x + a)*(d*x + c)), x)

maple [C] time = 0.61, size = 1152, normalized size = 25.60

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int((A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))/(b*x+a)/(d*x+c),x)

[Out] -1/(a*d-b*c)*B*n*ln(b*x+a)*ln(d*x+c)-1/(a*d-b*c)*A*ln(b*x+a)+1/(a*d-b*c)*A*ln(-d*x-c)+1/2/(a*d-b*c)*B*n*ln(d*x+c)^2+1/2/(a*d-b*c)*B*n*ln(b*x+a)^2+1/(a*d-b*c)*B*ln((b*x+a)^n)*ln(d*x+c)-1/(a*d-b*c)*B*ln((b*x+a)^n)*ln(b*x+a)-1/(a*d-b*c)*B*ln(e)*ln(b*x+a)+1/(a*d-b*c)*B*ln(e)*ln(-d*x-c)+B*(ln(b*x+a)-ln(d*x+c))/(a*d-b*c)*ln((d*x+c)^n)-1/2*I/(a*d-b*c)*B*Pi*ln(b*x+a)*csgn(I*(b*x+a)^n)*csgn(I*(b*x+a)^n/((d*x+c)^n))^2+1/2*I/(a*d-b*c)*B*Pi*ln(-d*x-c)*csgn(I*(b*x+a)^n)*csgn(I*(b*x+a)^n/((d*x+c)^n))^2-1/2*I/(a*d-b*c)*B*Pi*ln(b*x+a)*csgn(I/((d*x+c)^n))*csgn(I*(b*x+a)^n/((d*x+c)^n))^2+1/2*I/(a*d-b*c)*B*Pi*ln(-d*x-c)*csgn(I/((d*x+c)^n))*csgn(I*(b*x+a)^n/((d*x+c)^n))^2-1/2*I/(a*d-b*c)*B*Pi*ln(b*x+a)*csgn(I*(b*x+a)^n/((d*x+c)^n))*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)^2+1/2*I/(a*d-b*c)*B*Pi*ln(-d*x-c)*csgn(I*(b*x+a)^n/((d*x+c)^n))*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)^2-1/2*I/(a*d-b*c)*B*Pi*ln(b*x+a)*csgn(I*e)*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)^2+1/2*I/(a*d-b*c)*B*Pi*ln(-d*x-c)*csgn(I*e)*csgn(I

*e/((d*x+c)^n)*(b*x+a)^2+1/2*I/(a*d-b*c)*B*Pi*ln(b*x+a)*csgn(I*(b*x+a)^n)*csgn(I/((d*x+c)^n))*csgn(I*(b*x+a)^n/((d*x+c)^n))-1/2*I/(a*d-b*c)*B*Pi*ln(-d*x-c)*csgn(I*(b*x+a)^n)*csgn(I/((d*x+c)^n))*csgn(I*(b*x+a)^n/((d*x+c)^n))+1/2*I/(a*d-b*c)*B*Pi*ln(b*x+a)*csgn(I*e)*csgn(I*(b*x+a)^n/((d*x+c)^n))*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)-1/2*I/(a*d-b*c)*B*Pi*ln(-d*x-c)*csgn(I*e)*csgn(I*(b*x+a)^n/((d*x+c)^n))*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)-1/2*I/(a*d-b*c)*B*Pi*ln(-d*x-c)*csgn(I*(b*x+a)^n/((d*x+c)^n))^3+1/2*I/(a*d-b*c)*B*Pi*ln(b*x+a)*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)^3-1/2*I/(a*d-b*c)*B*Pi*ln(-d*x-c)*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)^3+1/2*I/(a*d-b*c)*B*Pi*ln(b*x+a)*csgn(I*(b*x+a)^n/((d*x+c)^n))^3

maxima [B] time = 1.20, size = 151, normalized size = 3.36

$$B\left(\frac{\log(bx+a)}{bc-ad} - \frac{\log(dx+c)}{bc-ad}\right)\log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right) + A\left(\frac{\log(bx+a)}{bc-ad} - \frac{\log(dx+c)}{bc-ad}\right) - \frac{(en \log(bx+a))^2 - 2en \log(bx+a) \log(dx+c)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))/(b*x+a)/(d*x+c),x, algorithm="maxima")

[Out] B*(log(b*x + a)/(b*c - a*d) - log(d*x + c)/(b*c - a*d))*log((b*x + a)^n*e/(d*x + c)^n) + A*(log(b*x + a)/(b*c - a*d) - log(d*x + c)/(b*c - a*d)) - 1/2*(e*n*log(b*x + a)^2 - 2*e*n*log(b*x + a)*log(d*x + c) + e*n*log(d*x + c)^2)*B/((b*c - a*d)*e)

mupad [B] time = 4.67, size = 71, normalized size = 1.58

$$\frac{B \ln\left(\frac{e(a+bx)^n}{(c+dx)^n}\right)^2 - A n \operatorname{atan}\left(\frac{bc2i+bdx2i}{ad-bc} + 1i\right) 4i}{2n(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))/((a + b*x)*(c + d*x)),x)

[Out] -(B*log((e*(a + b*x)^n)/(c + d*x)^n)^2 - A*n*atan((b*c*2i + b*d*x*2i)/(a*d - b*c) + 1i)*4i)/(2*n*(a*d - b*c))

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*ln(e*(b*x+a)**n/((d*x+c)**n)))/(b*x+a)/(d*x+c),x)

[Out] Timed out

$$3.231 \quad \int \frac{1}{(a+bx)(c+dx)(A+B \log(e(a+bx)^n(c+dx)^{-n}))} dx$$

Optimal. Leaf size=41

$$\frac{\log(B \log(e(a+bx)^n(c+dx)^{-n}) + A)}{Bn(bc-ad)}$$

[Out] $\ln(A+B*\ln(e*(b*x+a)^n/((d*x+c)^n)))/B/(-a*d+b*c)/n$

Rubi [A] time = 0.12, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.025$, Rules used = {6684}

$$\frac{\log(B \log(e(a+bx)^n(c+dx)^{-n}) + A)}{Bn(bc-ad)}$$

Antiderivative was successfully verified.

[In] `Int[1/((a + b*x)*(c + d*x)*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])), x]`

[Out] `Log[A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n]]/(B*(b*c - a*d)*n)`

Rule 6684

`Int[(u_)/(y_), x_Symbol] := With[{q = DerivativeDivides[y, u, x]}, Simp[q*Log[RemoveContent[y, x]], x] /; !FalseQ[q]]`

Rubi steps

$$\int \frac{1}{(a+bx)(c+dx)(A+B \log(e(a+bx)^n(c+dx)^{-n}))} dx = \frac{\log(A+B \log(e(a+bx)^n(c+dx)^{-n}))}{B(bc-ad)n}$$

Mathematica [A] time = 0.09, size = 39, normalized size = 0.95

$$\frac{\log(B \log(e(a+bx)^n(c+dx)^{-n}) + A)}{bBcn - aBdn}$$

Antiderivative was successfully verified.

[In] `Integrate[1/((a + b*x)*(c + d*x)*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])), x]`

[Out] $\text{Log}[A + B \cdot \text{Log}[(e \cdot (a + b \cdot x)^n) / (c + d \cdot x)^n]] / (b \cdot B \cdot c \cdot n - a \cdot B \cdot d \cdot n)$

fricas [A] time = 0.90, size = 45, normalized size = 1.10

$$\frac{\log(-Bn \log(bx + a) + Bn \log(dx + c) - B \log(e) - A)}{(Bbc - Bad)n}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate(1/(b*x+a)/(d*x+c)/(A+B*log(e*(b*x+a)^n/((d*x+c)^n))),x, algorithm="fricas")`

[Out] $\log(-B \cdot n \cdot \log(b \cdot x + a) + B \cdot n \cdot \log(d \cdot x + c) - B \cdot \log(e) - A) / ((B \cdot b \cdot c - B \cdot a \cdot d) \cdot n)$

giac [A] time = 0.17, size = 38, normalized size = 0.93

$$\frac{\log(Bn \log(bx + a) - Bn \log(dx + c) + A + B)}{Bbcn - Badn}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate(1/(b*x+a)/(d*x+c)/(A+B*log(e*(b*x+a)^n/((d*x+c)^n))),x, algorithm="giac")`

[Out] $\log(B \cdot n \cdot \log(b \cdot x + a) - B \cdot n \cdot \log(d \cdot x + c) + A + B) / (B \cdot b \cdot c \cdot n - B \cdot a \cdot d \cdot n)$

maple [C] time = 0.19, size = 368, normalized size = 8.98

$$\ln\left(\ln\left((dx + c)^n\right) - \frac{-i\pi B \operatorname{csgn}(ie) \operatorname{csgn}(i(bx+a)^n(dx+c)^{-n}) \operatorname{csgn}(ie(bx+a)^n(dx+c)^{-n}) + i\pi B \operatorname{csgn}(ie) \operatorname{csgn}(ie(bx+a)^n(dx+c)^{-n})^2 - i\pi B \operatorname{csgn}(i(bx+a)^n(dx+c)^{-n})}{\dots}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int(1/(b*x+a)/(d*x+c)/(A+B*ln(e*(b*x+a)^n/((d*x+c)^n))),x)`

[Out] $-1/B/n/(a \cdot d - b \cdot c) \cdot \ln(\ln((d \cdot x + c)^n) - 1/2 \cdot (-I \cdot B \cdot \pi \cdot \operatorname{csgn}(I \cdot e) \cdot \operatorname{csgn}(I \cdot (b \cdot x + a)^n / ((d \cdot x + c)^n)) \cdot \operatorname{csgn}(I \cdot e / ((d \cdot x + c)^n) \cdot (b \cdot x + a)^n + I \cdot B \cdot \pi \cdot \operatorname{csgn}(I \cdot e) \cdot \operatorname{csgn}(I \cdot e / ((d \cdot x + c)^n) \cdot (b \cdot x + a)^n)^2 - I \cdot B \cdot \pi \cdot \operatorname{csgn}(I \cdot (b \cdot x + a)^n) \cdot \operatorname{csgn}(I / ((d \cdot x + c)^n)) \cdot \operatorname{csgn}(I \cdot (b \cdot x + a)^n / ((d \cdot x + c)^n)) + I \cdot B \cdot \pi \cdot \operatorname{csgn}(I \cdot (b \cdot x + a)^n) \cdot \operatorname{csgn}(I \cdot (b \cdot x + a)^n / ((d \cdot x + c)^n))^{2+I \cdot B \cdot \pi \cdot \operatorname{csgn}(I / ((d \cdot x + c)^n)) \cdot \operatorname{csgn}(I \cdot (b \cdot x + a)^n / ((d \cdot x + c)^n))^{2-I \cdot B \cdot \pi \cdot \operatorname{csgn}(I \cdot (b \cdot x + a)^n / ((d \cdot x + c)^n))^{3+I \cdot B \cdot \pi \cdot \operatorname{csgn}(I \cdot (b \cdot x + a)^n / ((d \cdot x + c)^n)) \cdot \operatorname{csgn}(I \cdot e / ((d \cdot x + c)^n) \cdot (b \cdot x + a)^n)^2 - I \cdot B \cdot \pi \cdot \operatorname{csgn}(I \cdot e / ((d \cdot x + c)^n) \cdot (b \cdot x + a)^n)^3 + 2 \cdot B \cdot \ln(e) + 2 \cdot B \cdot \ln((b \cdot x + a)^n) + 2 \cdot A) / B)$

maxima [A] time = 2.33, size = 49, normalized size = 1.20

$$\frac{\log\left(-\frac{B\log((bx+a)^n)-B\log((dx+c)^n)+B\log(e)+A}{B}\right)}{(bcn - adn)B}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(b*x+a)/(d*x+c)/(A+B*log(e*(b*x+a)^n/((d*x+c)^n))),x, algorithm="maxima")

[Out] log(-(B*log((b*x + a)^n) - B*log((d*x + c)^n) + B*log(e) + A)/B)/((b*c*n - a*d*n)*B)

mupad [B] time = 4.66, size = 40, normalized size = 0.98

$$-\frac{\ln\left(A + B \ln\left(\frac{e(a+bx)^n}{(c+dx)^n}\right)\right)}{B a d n - B b c n}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(1/((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))*(a + b*x)*(c + d*x)),x)

[Out] -log(A + B*log((e*(a + b*x)^n)/(c + d*x)^n))/(B*a*d*n - B*b*c*n)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(b*x+a)/(d*x+c)/(A+B*ln(e*(b*x+a)**n/((d*x+c)**n))),x)

[Out] Timed out

$$3.232 \quad \int \frac{1}{(a+bx)(c+dx) \left(A+B \log(e(a+bx)^n(c+dx)^{-n}) \right)^2} dx$$

Optimal. Leaf size=43

$$-\frac{1}{Bn(bc-ad) \left(B \log(e(a+bx)^n(c+dx)^{-n}) + A \right)}$$

[Out] -1/B/(-a*d+b*c)/n/(A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))

Rubi [A] time = 0.12, antiderivative size = 43, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.025$, Rules used = {6686}

$$-\frac{1}{Bn(bc-ad) \left(B \log(e(a+bx)^n(c+dx)^{-n}) + A \right)}$$

Antiderivative was successfully verified.

[In] Int[1/((a + b*x)*(c + d*x)*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^2), x]

[Out] -(1/(B*(b*c - a*d)*n*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])))

Rule 6686

Int[(u_)*(y_)^(m_.), x_Symbol] := With[{q = DerivativeDivides[y, u, x]}, Si
mp[(q*y^(m + 1))/(m + 1), x] /; !FalseQ[q]] /; FreeQ[m, x] && NeQ[m, -1]

Rubi steps

$$\int \frac{1}{(a+bx)(c+dx) \left(A+B \log(e(a+bx)^n(c+dx)^{-n}) \right)^2} dx = -\frac{1}{B(bc-ad)n \left(A+B \log(e(a+bx)^n(c+dx)^{-n}) \right)}$$

Mathematica [A] time = 0.02, size = 41, normalized size = 0.95

$$-\frac{1}{(bBcn - aBdn) \left(B \log(e(a+bx)^n(c+dx)^{-n}) + A \right)}$$

Antiderivative was successfully verified.

[In] Integrate[1/((a + b*x)*(c + d*x)*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^2), x]

[Out] $-(1/((b*B*c*n - a*B*d*n)*(A + B*\text{Log}[(e*(a + b*x)^n)/(c + d*x)^n])))$

fricas [A] time = 0.61, size = 86, normalized size = 2.00

1

$$\frac{1}{(B^2bc - B^2ad)n^2 \log(bx + a) - (B^2bc - B^2ad)n^2 \log(dx + c) + (B^2bc - B^2ad)n \log(e) + (ABbc - ABad)n}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate(1/(b*x+a)/(d*x+c)/(A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^2,x, algorithm="fricas")`

[Out] $-1/((B^2*b*c - B^2*a*d)*n^2*\log(b*x + a) - (B^2*b*c - B^2*a*d)*n^2*\log(d*x + c) + (B^2*b*c - B^2*a*d)*n*\log(e) + (A*B*b*c - A*B*a*d)*n)$

giac [B] time = 0.18, size = 95, normalized size = 2.21

1

$$\frac{1}{B^2bcn^2 \log(bx + a) - B^2adn^2 \log(bx + a) - B^2bcn^2 \log(dx + c) + B^2adn^2 \log(dx + c) + ABbcn + B^2bcn - A}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate(1/(b*x+a)/(d*x+c)/(A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^2,x, algorithm="giac")`

[Out] $-1/(B^2*b*c*n^2*\log(b*x + a) - B^2*a*d*n^2*\log(b*x + a) - B^2*b*c*n^2*\log(d*x + c) + B^2*a*d*n^2*\log(d*x + c) + A*B*b*c*n + B^2*b*c*n - A*B*a*d*n - B^2*a*d*n)$

maple [C] time = 0.18, size = 366, normalized size = 8.51

$$(ad - bc) \left(-i\pi B \operatorname{csgn}(ie) \operatorname{csgn}(i(bx + a)^n (dx + c)^{-n}) \operatorname{csgn}(ie (bx + a)^n (dx + c)^{-n}) + i\pi B \operatorname{csgn}(ie) \operatorname{csgn}(ie (bx + a)^n (dx + c)^{-n}) \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int(1/(b*x+a)/(d*x+c)/(A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^2,x)`

[Out] $2/B/n/(a*d-b*c)/(2*A+2*B*\ln(e)+2*B*\ln((b*x+a)^n)-2*B*\ln((d*x+c)^n)-I*B*\operatorname{Pi}*c \operatorname{sgn}(I*(b*x+a)^n)*\operatorname{csgn}(I/((d*x+c)^n))*\operatorname{csgn}(I*(b*x+a)^n/((d*x+c)^n))+I*B*\operatorname{Pi}*c \operatorname{sgn}(I*(b*x+a)^n)*\operatorname{csgn}(I*(b*x+a)^n/((d*x+c)^n))^2+I*B*\operatorname{Pi}*c \operatorname{sgn}(I/((d*x+c)^n))*\operatorname{csgn}(I*(b*x+a)^n/((d*x+c)^n))^2-I*B*\operatorname{Pi}*c \operatorname{sgn}(I*(b*x+a)^n/((d*x+c)^n))^3-I*B*\operatorname{Pi}*c \operatorname{sgn}(I*e)*\operatorname{csgn}(I*(b*x+a)^n/((d*x+c)^n))*\operatorname{csgn}(I*e/((d*x+c)^n)*(b*x+a)^n)+I*B*\operatorname{Pi}*c \operatorname{sgn}(I*e)*\operatorname{csgn}(I*e/((d*x+c)^n)*(b*x+a)^n)^2+I*B*\operatorname{Pi}*c \operatorname{sgn}(I*(b*x+a)^n/((d*x+c)^n))*\operatorname{csgn}(I*e/((d*x+c)^n)*(b*x+a)^n)^2-I*B*\operatorname{Pi}*c \operatorname{sgn}(I*e/((d*x+c)^n))*\operatorname{csgn}(I*(b*x+a)^n)^3)$

maxima [A] time = 2.47, size = 81, normalized size = 1.88

$$\frac{1}{(bcn - adn)B^2 \log((bx + a)^n) - (bcn - adn)B^2 \log((dx + c)^n) + (bcn - adn)AB + (bcn \log(e) - adn \log(e))B^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(b*x+a)/(d*x+c)/(A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^2,x, algorithm="maxima")

[Out] -1/((b*c*n - a*d*n)*B^2*log((b*x + a)^n) - (b*c*n - a*d*n)*B^2*log((d*x + c)^n) + (b*c*n - a*d*n)*A*B + (b*c*n*log(e) - a*d*n*log(e))*B^2)

mupad [B] time = 4.49, size = 42, normalized size = 0.98

$$\frac{1}{B n \left(A + B \ln \left(\frac{e^{(a+bx)^n}}{(c+dx)^n} \right) \right) (ad - bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(1/((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^2*(a + b*x)*(c + d*x)),x)

[Out] 1/(B*n*(A + B*log((e*(a + b*x)^n)/(c + d*x)^n))*(a*d - b*c))

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(b*x+a)/(d*x+c)/(A+B*ln(e*(b*x+a)**n/((d*x+c)**n)))**2,x)

[Out] Timed out

$$3.233 \quad \int \frac{1}{(a+bx)(c+dx) \left(A + B \log(e(a+bx)^n(c+dx)^{-n}) \right)^3} dx$$

Optimal. Leaf size=45

$$-\frac{1}{2Bn(bc-ad) \left(B \log(e(a+bx)^n(c+dx)^{-n}) + A \right)^2}$$

[Out] $-1/2/B/(-a*d+b*c)/n/(A+B*\ln(e*(b*x+a)^n/((d*x+c)^n)))^2$

Rubi [A] time = 0.12, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.025$, Rules used = {6686}

$$-\frac{1}{2Bn(bc-ad) \left(B \log(e(a+bx)^n(c+dx)^{-n}) + A \right)^2}$$

Antiderivative was successfully verified.

[In] Int[1/((a + b*x)*(c + d*x)*(A + B*Log[(e*(a + b*x)^n]/(c + d*x)^n])^3), x]

[Out] $-1/(2*B*(b*c - a*d)*n*(A + B*Log[(e*(a + b*x)^n]/(c + d*x)^n])^2)$

Rule 6686

Int[(u_)*(y_)^(m_.), x_Symbol] :> With[{q = DerivativeDivides[y, u, x]}, Simp[(q*y^(m + 1))/(m + 1), x] /; !FalseQ[q] /; FreeQ[m, x] && NeQ[m, -1]

Rubi steps

$$\int \frac{1}{(a+bx)(c+dx) \left(A + B \log(e(a+bx)^n(c+dx)^{-n}) \right)^3} dx = -\frac{1}{2B(bc-ad)n \left(A + B \log(e(a+bx)^n(c+dx)^{-n}) \right)^2}$$

Mathematica [A] time = 0.02, size = 43, normalized size = 0.96

$$-\frac{1}{2(bBcn - aBdn) \left(B \log(e(a+bx)^n(c+dx)^{-n}) + A \right)^2}$$

Antiderivative was successfully verified.

[In] Integrate[1/((a + b*x)*(c + d*x)*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n]))^3),x]

[Out] -1/2*1/((b*B*c*n - a*B*d*n)*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^2)

fricas [B] time = 0.74, size = 238, normalized size = 5.29

$$2 \left((B^3bc - B^3ad)n^3 \log(bx + a)^2 + (B^3bc - B^3ad)n^3 \log(dx + c)^2 + (B^3bc - B^3ad)n \log(e)^2 + 2(AB^2bc - AB^2ad)n \log(bx + a) \log(dx + c) \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(b*x+a)/(d*x+c)/(A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^3,x, algorithm="fricas")

[Out] -1/2/((B^3*b*c - B^3*a*d)*n^3*log(b*x + a)^2 + (B^3*b*c - B^3*a*d)*n^3*log(d*x + c)^2 + (B^3*b*c - B^3*a*d)*n*log(e)^2 + 2*(A*B^2*b*c - A*B^2*a*d)*n*log(e) + (A^2*B*b*c - A^2*B*a*d)*n + 2*((B^3*b*c - B^3*a*d)*n^2*log(e) + (A*B^2*b*c - A*B^2*a*d)*n^2)*log(b*x + a) - 2*((B^3*b*c - B^3*a*d)*n^3*log(b*x + a) + (B^3*b*c - B^3*a*d)*n^2*log(e) + (A*B^2*b*c - A*B^2*a*d)*n^2)*log(d*x + c))

giac [B] time = 0.24, size = 301, normalized size = 6.69

$$2 \left(B^3bcn^3 \log(bx + a)^2 - B^3adn^3 \log(bx + a)^2 - 2B^3bcn^3 \log(bx + a) \log(dx + c) + 2B^3adn^3 \log(bx + a) \log(dx + c) \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(b*x+a)/(d*x+c)/(A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^3,x, algorithm="giac")

[Out] -1/2/(B^3*b*c*n^3*log(b*x + a)^2 - B^3*a*d*n^3*log(b*x + a)^2 - 2*B^3*b*c*n^3*log(b*x + a)*log(d*x + c) + 2*B^3*a*d*n^3*log(b*x + a)*log(d*x + c) + B^3*b*c*n^3*log(d*x + c)^2 - B^3*a*d*n^3*log(d*x + c)^2 + 2*A*B^2*b*c*n^2*log(b*x + a) + 2*B^3*b*c*n^2*log(b*x + a) - 2*A*B^2*a*d*n^2*log(b*x + a) - 2*B^3*a*d*n^2*log(b*x + a) - 2*A*B^2*b*c*n^2*log(d*x + c) - 2*B^3*b*c*n^2*log(d*x + c) + 2*A*B^2*a*d*n^2*log(d*x + c) + 2*B^3*a*d*n^2*log(d*x + c) + A^2*B*b*c*n + 2*A*B^2*b*c*n + B^3*b*c*n - A^2*B*a*d*n - 2*A*B^2*a*d*n - B^3*a*d*n)

maple [C] time = 0.18, size = 366, normalized size = 8.13

$$(ad - bc) \left(-i\pi B \operatorname{csgn}(ie) \operatorname{csgn} \left(i (bx + a)^n (dx + c)^{-n} \right) \operatorname{csgn} \left(ie (bx + a)^n (dx + c)^{-n} \right) + i\pi B \operatorname{csgn}(ie) \operatorname{csgn} \left(ie (bx + a)^n (dx + c)^{-n} \right) \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int(1/(b*x+a)/(d*x+c)/(A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^3,x)`

[Out]
$$\frac{2}{Bn} \frac{1}{(ad-bc)} \frac{1}{(2A+2B\ln(e)+2B\ln((b*x+a)^n)-2B\ln((d*x+c)^n)-I*B*Pi*csgn(I*(b*x+a)^n)*csgn(I/((d*x+c)^n))*csgn(I*(b*x+a)^n/((d*x+c)^n))+I*B*Pi*csgn(I*(b*x+a)^n)*csgn(I*(b*x+a)^n/((d*x+c)^n))^2+I*B*Pi*csgn(I/((d*x+c)^n))*csgn(I*(b*x+a)^n/((d*x+c)^n))^2-I*B*Pi*csgn(I*(b*x+a)^n/((d*x+c)^n))^3-I*B*Pi*csgn(I*e)*csgn(I*(b*x+a)^n/((d*x+c)^n))*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)+I*B*Pi*csgn(I*e)*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)^2+I*B*Pi*csgn(I*(b*x+a)^n/((d*x+c)^n))*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)^2-I*B*Pi*csgn(I*e/((d*x+c)^n))*csgn(I*(b*x+a)^n)^2}$$

maxima [B] time = 3.19, size = 220, normalized size = 4.89

$$2 \left((bcn - adn)B^3 \log((bx + a)^n)^2 + (bcn - adn)B^3 \log((dx + c)^n)^2 + (bcn - adn)A^2B + 2(bcn \log(e) - adn \log(e)) \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate(1/(b*x+a)/(d*x+c)/(A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^3,x, algorithm="maxima")`

[Out]
$$-1/2/((b*c*n - a*d*n)*B^3*\log((b*x + a)^n)^2 + (b*c*n - a*d*n)*B^3*\log((d*x + c)^n)^2 + (b*c*n - a*d*n)*A^2*B + 2*(b*c*n*\log(e) - a*d*n*\log(e))*A*B^2 + (b*c*n*\log(e)^2 - a*d*n*\log(e)^2)*B^3 + 2*((b*c*n - a*d*n)*A*B^2 + (b*c*n*\log(e) - a*d*n*\log(e))*B^3)*\log((b*x + a)^n) - 2*((b*c*n - a*d*n)*B^3*\log((b*x + a)^n) + (b*c*n - a*d*n)*A*B^2 + (b*c*n*\log(e) - a*d*n*\log(e))*B^3)*\log((d*x + c)^n))$$

mupad [B] time = 4.54, size = 72, normalized size = 1.60

$$\frac{1}{2Bn(ad-bc) \left(A^2 + 2AB \ln\left(\frac{e(a+bx)^n}{(c+dx)^n}\right) + B^2 \ln\left(\frac{e(a+bx)^n}{(c+dx)^n}\right)^2 \right)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int(1/((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^3*(a + b*x)*(c + d*x)),x)`

[Out]
$$1/(2*B*n*(a*d - b*c)*(B^2*\log((e*(a + b*x)^n)/(c + d*x)^n)^2 + A^2 + 2*A*B*\log((e*(a + b*x)^n)/(c + d*x)^n)))$$

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)/(d*x+c)/(A+B*ln(e*(b*x+a)**n/((d*x+c)**n)))*3,x)
```

```
[Out] Timed out
```

$$3.234 \quad \int \frac{(A+B \log(e(a+bx)^n(c+dx)^{-n}))^p}{(a+bx)(c+dx)} dx$$

Optimal. Leaf size=49

$$\frac{(B \log(e(a+bx)^n(c+dx)^{-n}) + A)^{p+1}}{Bn(p+1)(bc-ad)}$$

[Out] $(A+B*\ln(e*(b*x+a)^n/((d*x+c)^n)))^{(1+p)}/B/(-a*d+b*c)/n/(1+p)$

Rubi [A] time = 0.15, antiderivative size = 49, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.025$, Rules used = {6686}

$$\frac{(B \log(e(a+bx)^n(c+dx)^{-n}) + A)^{p+1}}{Bn(p+1)(bc-ad)}$$

Antiderivative was successfully verified.

[In] Int[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^p/((a + b*x)*(c + d*x)), x]

[Out] (A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^(1 + p)/(B*(b*c - a*d)*n*(1 + p))

Rule 6686

Int[(u_)*(y_)^(m_.), x_Symbol] :> With[{q = DerivativeDivides[y, u, x]}, Simp[(q*y^(m + 1))/(m + 1), x] /; !FalseQ[q] /; FreeQ[m, x] && NeQ[m, -1]

Rubi steps

$$\int \frac{(A + B \log(e(a+bx)^n(c+dx)^{-n}))^p}{(a+bx)(c+dx)} dx = \frac{(A + B \log(e(a+bx)^n(c+dx)^{-n}))^{1+p}}{B(bc-ad)n(1+p)}$$

Mathematica [A] time = 0.03, size = 47, normalized size = 0.96

$$\frac{(B \log(e(a+bx)^n(c+dx)^{-n}) + A)^{p+1}}{(p+1)(bBcn - aBdn)}$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^p/((a + b*x)*(c + d*x)), x]

[Out] (A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^(1 + p)/((b*B*c*n - a*B*d*n)*(1 + p))

fricas [A] time = 0.93, size = 81, normalized size = 1.65

$$\frac{(Bn \log (bx + a) - Bn \log (dx + c) + B \log (e) + A)(Bn \log (bx + a) - Bn \log (dx + c) + B \log (e) + A)^p}{(Bbc - Bad)np + (Bbc - Bad)n}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^p/(b*x+a)/(d*x+c),x, algorithm="fricas")

[Out] (B*n*log(b*x + a) - B*n*log(d*x + c) + B*log(e) + A)*(B*n*log(b*x + a) - B*n*log(d*x + c) + B*log(e) + A)^p/((B*b*c - B*a*d)*n*p + (B*b*c - B*a*d)*n)

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(B \log \left(\frac{(bx+a)^n e}{(dx+c)^n}\right) + A\right)^p}{(bx+a)(dx+c)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^p/(b*x+a)/(d*x+c),x, algorithm="giac")

[Out] integrate((B*log((b*x + a)^n*e/(d*x + c)^n) + A)^p/((b*x + a)*(d*x + c)), x)

maple [F] time = 12.80, size = 0, normalized size = 0.00

$$\int \frac{\left(B \ln \left(e (bx + a)^n (dx + c)^{-n}\right) + A\right)^p}{(bx + a)(dx + c)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^p/(b*x+a)/(d*x+c),x)

[Out] int((A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^p/(b*x+a)/(d*x+c),x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(B \log \left(\frac{(bx+a)^n e}{(dx+c)^n}\right) + A\right)^p}{(bx+a)(dx+c)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^p/(b*x+a)/(d*x+c),x, algorithm
="maxima")
```

```
[Out] integrate((B*log((b*x + a)^n*e/(d*x + c)^n) + A)^p/((b*x + a)*(d*x + c)), x
)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\left(A + B \ln\left(\frac{e(a+bx)^n}{(c+dx)^n}\right)\right)^p}{(a+bx)(c+dx)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^p/((a + b*x)*(c + d*x)),x)
```

```
[Out] int((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^p/((a + b*x)*(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)**n/((d*x+c)**n)))**p/(b*x+a)/(d*x+c),x)
```

```
[Out] Timed out
```

$$3.235 \quad \int \frac{(A+B \log(e(a+bx)^n(c+dx)^{-n}))^p}{(af+bfx)(cg+dgx)} dx$$

Optimal. Leaf size=55

$$\frac{(B \log(e(a+bx)^n(c+dx)^{-n}) + A)^{p+1}}{Bfgn(p+1)(bc-ad)}$$

[Out] $(A+B*\ln(e*(b*x+a)^n/((d*x+c)^n)))^{(1+p)}/B/(-a*d+b*c)/f/g/n/(1+p)$

Rubi [A] time = 0.22, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}} = 0.022$, Rules used = {6686}

$$\frac{(B \log(e(a+bx)^n(c+dx)^{-n}) + A)^{p+1}}{Bfgn(p+1)(bc-ad)}$$

Antiderivative was successfully verified.

[In] Int[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^p/((a*f + b*f*x)*(c*g + d*g*x)), x]

[Out] (A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^(1 + p)/(B*(b*c - a*d)*f*g*n*(1 + p))

Rule 6686

Int[(u_)*(y_)^(m_.), x_Symbol] := With[{q = DerivativeDivides[y, u, x]}, Simp[(q*y^(m + 1))/(m + 1), x] /; !FalseQ[q] /; FreeQ[m, x] && NeQ[m, -1]

Rubi steps

$$\int \frac{(A + B \log(e(a+bx)^n(c+dx)^{-n}))^p}{(af+bfx)(cg+dgx)} dx = \frac{(A + B \log(e(a+bx)^n(c+dx)^{-n}))^{1+p}}{B(bc-ad)fgn(1+p)}$$

Mathematica [A] time = 0.06, size = 51, normalized size = 0.93

$$\frac{(B \log(e(a+bx)^n(c+dx)^{-n}) + A)^{p+1}}{(p+1)(bBc fgn - aBd fgn)}$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^p/((a*f + b*f*x)*(c*g + d*g*x)), x]

[Out] (A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^(1 + p)/((b*B*c*f*g*n - a*B*d*f*g*n)*(1 + p))

fricas [A] time = 0.79, size = 85, normalized size = 1.55

$$\frac{(Bn \log(bx + a) - Bn \log(dx + c) + B \log(e) + A)(Bn \log(bx + a) - Bn \log(dx + c) + B \log(e) + A)^p}{(Bbc - Bad)fgnp + (Bbc - Bad)fgn}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^p/(b*f*x+a*f)/(d*g*x+c*g), x, algorithm="fricas")

[Out] (B*n*log(b*x + a) - B*n*log(d*x + c) + B*log(e) + A)*(B*n*log(b*x + a) - B*n*log(d*x + c) + B*log(e) + A)^p/((B*b*c - B*a*d)*f*g*n*p + (B*b*c - B*a*d)*f*g*n)

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(B \log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right) + A\right)^p}{(bfx + af)(dgx + cg)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^p/(b*f*x+a*f)/(d*g*x+c*g), x, algorithm="giac")

[Out] integrate((B*log((b*x + a)^n*e/(d*x + c)^n) + A)^p/((b*f*x + a*f)*(d*g*x + c*g)), x)

maple [F] time = 12.59, size = 0, normalized size = 0.00

$$\int \frac{\left(B \ln\left(e (bx + a)^n (dx + c)^{-n}\right) + A\right)^p}{(bxf + af)(dgx + cg)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^p/(b*f*x+a*f)/(d*g*x+c*g), x)

[Out] int((A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^p/(b*f*x+a*f)/(d*g*x+c*g), x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(B \log \left(\frac{(bx+a)^n e}{(dx+c)^n} \right) + A \right)^p}{(bf x + af)(dg x + cg)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^p/(b*f*x+a*f)/(d*g*x+c*g),x, algorithm="maxima")

[Out] integrate((B*log((b*x + a)^n*e/(d*x + c)^n) + A)^p/((b*f*x + a*f)*(d*g*x + c*g)), x)

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\left(A + B \ln \left(\frac{e(a+bx)^n}{(c+dx)^n} \right) \right)^p}{(af + bfx)(cg + dgx)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^p/((a*f + b*f*x)*(c*g + d*g*x)),x)

[Out] int((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^p/((a*f + b*f*x)*(c*g + d*g*x)), x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*ln(e*(b*x+a)**n/((d*x+c)**n)))**p/(b*f*x+a*f)/(d*g*x+c*g),x)

[Out] Timed out

$$3.236 \quad \int \frac{(A+B \log(e(a+bx)^n(c+dx)^{-n}))^p}{acf+(bc+ad)fx+bdfx^2} dx$$

Optimal. Leaf size=52

$$\frac{(B \log(e(a+bx)^n(c+dx)^{-n})+A)^{p+1}}{Bfn(p+1)(bc-ad)}$$

[Out] (A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^(1+p)/B/(-a*d+b*c)/f/n/(1+p)

Rubi [A] time = 0.11, antiderivative size = 52, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 50, $\frac{\text{number of rules}}{\text{integrand size}} = 0.020$, Rules used = {6686}

$$\frac{(B \log(e(a+bx)^n(c+dx)^{-n})+A)^{p+1}}{Bfn(p+1)(bc-ad)}$$

Antiderivative was successfully verified.

[In] Int[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^p/(a*c*f + (b*c + a*d)*f*x + b*d*f*x^2), x]

[Out] (A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^(1 + p)/(B*(b*c - a*d)*f*n*(1 + p))

Rule 6686

Int[(u_)*(y_)^(m_), x_Symbol] :> With[{q = DerivativeDivides[y, u, x]}, Simp[(q*y^(m + 1))/(m + 1), x] /; !FalseQ[q] /; FreeQ[m, x] && NeQ[m, -1]

Rubi steps

$$\int \frac{(A + B \log(e(a+bx)^n(c+dx)^{-n}))^p}{acf+(bc+ad)fx+bdfx^2} dx = \frac{(A + B \log(e(a+bx)^n(c+dx)^{-n}))^{1+p}}{B(bc-ad)fn(1+p)}$$

Mathematica [A] time = 0.01, size = 50, normalized size = 0.96

$$\frac{(B \log(e(a+bx)^n(c+dx)^{-n})+A)^{p+1}}{f(p+1)(bBcn - aBdn)}$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^p/(a*c*f + (b*c + a*d)*f*x + b*d*f*x^2), x]

[Out] (A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^(1 + p)/(f*(b*B*c*n - a*B*d*n)*(1 + p))

fricas [A] time = 1.03, size = 83, normalized size = 1.60

$$\frac{(Bn \log (bx + a) - Bn \log (dx + c) + B \log (e) + A)(Bn \log (bx + a) - Bn \log (dx + c) + B \log (e) + A)^p}{(Bbc - Bad)fnp + (Bbc - Bad)fn}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^p/(a*c*f+(a*d+b*c)*f*x+b*d*f*x^2), x, algorithm="fricas")

[Out] (B*n*log(b*x + a) - B*n*log(d*x + c) + B*log(e) + A)*(B*n*log(b*x + a) - B*n*log(d*x + c) + B*log(e) + A)^p/((B*b*c - B*a*d)*f*n*p + (B*b*c - B*a*d)*f*n)

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(B \log \left(\frac{(bx+a)^n e}{(dx+c)^n}\right) + A\right)^p}{bdfx^2 + acf + (bc + ad)fx} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^p/(a*c*f+(a*d+b*c)*f*x+b*d*f*x^2), x, algorithm="giac")

[Out] integrate((B*log((b*x + a)^n*e/(d*x + c)^n) + A)^p/(b*d*f*x^2 + a*c*f + (b*c + a*d)*f*x), x)

maple [F] time = 14.17, size = 0, normalized size = 0.00

$$\int \frac{\left(B \ln \left(e (bx + a)^n (dx + c)^{-n}\right) + A\right)^p}{bdfx^2 + acf + (ad + bc)fx} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^p/(a*c*f+(a*d+b*c)*f*x+b*d*f*x^2), x)

[Out] int((A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^p/(a*c*f+(a*d+b*c)*f*x+b*d*f*x^2), x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(B \log \left(\frac{(bx+a)^n e}{(dx+c)^n}\right) + A\right)^p}{bdfx^2 + acf + (bc + ad)fx} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^p/(a*c*f+(a*d+b*c)*f*x+b*d*f*x^2),x, algorithm="maxima")
```

```
[Out] integrate((B*log((b*x + a)^n*e/(d*x + c)^n) + A)^p/(b*d*f*x^2 + a*c*f + (b*c + a*d)*f*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\left(A + B \ln\left(\frac{e^{(a+bx)^n}}{(c+dx)^n}\right)\right)^p}{bdfx^2 + f(ad + bc)x + acf} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^p/(a*c*f + f*x*(a*d + b*c) + b*d*f*x^2),x)
```

```
[Out] int((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^p/(a*c*f + f*x*(a*d + b*c) + b*d*f*x^2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)**n/((d*x+c)**n)))**p/(a*c*f+(a*d+b*c)*f*x+b*d*f*x**2),x)
```

```
[Out] Timed out
```

$$3.237 \quad \int \frac{1}{(a+bx)(c+dx)(A+B \log(e(a+bx)^n(c+dx)^{-n}))} dx$$

Optimal. Leaf size=41

$$\frac{\log(B \log(e(a+bx)^n(c+dx)^{-n}) + A)}{Bn(bc-ad)}$$

[Out] $\ln(A+B*\ln(e*(b*x+a)^n/((d*x+c)^n)))/B/(-a*d+b*c)/n$

Rubi [A] time = 0.12, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.025$, Rules used = {6684}

$$\frac{\log(B \log(e(a+bx)^n(c+dx)^{-n}) + A)}{Bn(bc-ad)}$$

Antiderivative was successfully verified.

[In] `Int[1/((a + b*x)*(c + d*x)*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])),x]`

[Out] `Log[A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n]]/(B*(b*c - a*d)*n)`

Rule 6684

`Int[(u_)/(y_), x_Symbol] := With[{q = DerivativeDivides[y, u, x]}, Simp[q*Log[RemoveContent[y, x]], x] /; !FalseQ[q]]`

Rubi steps

$$\int \frac{1}{(a+bx)(c+dx)(A+B \log(e(a+bx)^n(c+dx)^{-n}))} dx = \frac{\log(A+B \log(e(a+bx)^n(c+dx)^{-n}))}{B(bc-ad)n}$$

Mathematica [A] time = 0.07, size = 39, normalized size = 0.95

$$\frac{\log(B \log(e(a+bx)^n(c+dx)^{-n}) + A)}{bBcn - aBdn}$$

Antiderivative was successfully verified.

[In] `Integrate[1/((a + b*x)*(c + d*x)*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])), x]`

[Out] $\text{Log}[A + B \cdot \text{Log}[(e \cdot (a + b \cdot x)^n) / (c + d \cdot x)^n]] / (b \cdot B \cdot c \cdot n - a \cdot B \cdot d \cdot n)$

fricas [A] time = 0.74, size = 45, normalized size = 1.10

$$\frac{\log(-Bn \log(bx + a) + Bn \log(dx + c) - B \log(e) - A)}{(Bbc - Bad)n}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate(1/(b*x+a)/(d*x+c)/(A+B*log(e*(b*x+a)^n/((d*x+c)^n))),x, algorithm="fricas")`

[Out] $\log(-B \cdot n \cdot \log(b \cdot x + a) + B \cdot n \cdot \log(d \cdot x + c) - B \cdot \log(e) - A) / ((B \cdot b \cdot c - B \cdot a \cdot d) \cdot n)$

giac [A] time = 0.18, size = 38, normalized size = 0.93

$$\frac{\log(Bn \log(bx + a) - Bn \log(dx + c) + A + B)}{Bbcn - Badn}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate(1/(b*x+a)/(d*x+c)/(A+B*log(e*(b*x+a)^n/((d*x+c)^n))),x, algorithm="giac")`

[Out] $\log(B \cdot n \cdot \log(b \cdot x + a) - B \cdot n \cdot \log(d \cdot x + c) + A + B) / (B \cdot b \cdot c \cdot n - B \cdot a \cdot d \cdot n)$

maple [C] time = 0.05, size = 368, normalized size = 8.98

$$\ln\left(\ln((dx + c)^n) - \frac{-i\pi B \operatorname{csgn}(ie) \operatorname{csgn}(i(bx+a)^n(dx+c)^{-n}) \operatorname{csgn}(ie(bx+a)^n(dx+c)^{-n}) + i\pi B \operatorname{csgn}(ie) \operatorname{csgn}(ie(bx+a)^n(dx+c)^{-n})^2 - i\pi B \operatorname{csgn}(i(bx+a)^n(dx+c)^{-n})}{\dots}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int(1/(b*x+a)/(d*x+c)/(A+B*ln(e*(b*x+a)^n/((d*x+c)^n))),x)`

[Out] $-1/B/n/(a \cdot d - b \cdot c) \cdot \ln(\ln((d \cdot x + c)^n) - 1/2 \cdot (-I \cdot B \cdot \pi \cdot \operatorname{csgn}(I \cdot e) \cdot \operatorname{csgn}(I \cdot (b \cdot x + a)^n / ((d \cdot x + c)^n)) \cdot \operatorname{csgn}(I \cdot e / ((d \cdot x + c)^n) \cdot (b \cdot x + a)^n + I \cdot B \cdot \pi \cdot \operatorname{csgn}(I \cdot e) \cdot \operatorname{csgn}(I \cdot e / ((d \cdot x + c)^n) \cdot (b \cdot x + a)^n)^2 - I \cdot B \cdot \pi \cdot \operatorname{csgn}(I \cdot (b \cdot x + a)^n) \cdot \operatorname{csgn}(I / ((d \cdot x + c)^n)) \cdot \operatorname{csgn}(I \cdot (b \cdot x + a)^n / ((d \cdot x + c)^n)) + I \cdot B \cdot \pi \cdot \operatorname{csgn}(I \cdot (b \cdot x + a)^n) \cdot \operatorname{csgn}(I \cdot (b \cdot x + a)^n / ((d \cdot x + c)^n))^2 + I \cdot B \cdot \pi \cdot \operatorname{csgn}(I / ((d \cdot x + c)^n)) \cdot \operatorname{csgn}(I \cdot (b \cdot x + a)^n / ((d \cdot x + c)^n))^2 - I \cdot B \cdot \pi \cdot \operatorname{csgn}(I \cdot (b \cdot x + a)^n / ((d \cdot x + c)^n))^3 + I \cdot B \cdot \pi \cdot \operatorname{csgn}(I \cdot (b \cdot x + a)^n / ((d \cdot x + c)^n)) \cdot \operatorname{csgn}(I \cdot e / ((d \cdot x + c)^n) \cdot (b \cdot x + a)^n)^2 - I \cdot B \cdot \pi \cdot \operatorname{csgn}(I \cdot e / ((d \cdot x + c)^n) \cdot (b \cdot x + a)^n)^3 + 2 \cdot B \cdot \ln(e) + 2 \cdot B \cdot \ln((b \cdot x + a)^n) + 2 \cdot A) / B)$

maxima [A] time = 2.29, size = 49, normalized size = 1.20

$$\frac{\log\left(\frac{-B\log((bx+a)^n) - B\log((dx+c)^n) + B\log(e) + A}{B}\right)}{(bcn - adn)B}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(b*x+a)/(d*x+c)/(A+B*log(e*(b*x+a)^n/((d*x+c)^n))),x, algorithm="maxima")

[Out] log(-(B*log((b*x + a)^n) - B*log((d*x + c)^n) + B*log(e) + A)/B)/((b*c*n - a*d*n)*B)

mupad [B] time = 0.00, size = 40, normalized size = 0.98

$$-\frac{\ln\left(A + B \ln\left(\frac{e^{(a+bx)^n}}{(c+dx)^n}\right)\right)}{B a d n - B b c n}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(1/((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))*(a + b*x)*(c + d*x)),x)

[Out] -log(A + B*log((e*(a + b*x)^n)/(c + d*x)^n))/(B*a*d*n - B*b*c*n)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(b*x+a)/(d*x+c)/(A+B*ln(e*(b*x+a)**n/((d*x+c)**n))),x)

[Out] Timed out

$$3.238 \quad \int \frac{1}{(af+bfx)(cg+dgx)(A+B \log(e(a+bx)^n(c+dx)^{-n}))} dx$$

Optimal. Leaf size=47

$$\frac{\log(B \log(e(a+bx)^n(c+dx)^{-n}) + A)}{Bfgn(bc-ad)}$$

[Out] $\ln(A+B*\ln(e*(b*x+a)^n/((d*x+c)^n)))/B/(-a*d+b*c)/f/g/n$

Rubi [A] time = 0.17, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}} = 0.022$, Rules used = {6684}

$$\frac{\log(B \log(e(a+bx)^n(c+dx)^{-n}) + A)}{Bfgn(bc-ad)}$$

Antiderivative was successfully verified.

[In] $\text{Int}[1/((a*f + b*f*x)*(c*g + d*g*x)*(A + B*\text{Log}[(e*(a + b*x)^n]/(c + d*x)^n))], x]$

[Out] $\text{Log}[A + B*\text{Log}[(e*(a + b*x)^n]/(c + d*x)^n]]/(B*(b*c - a*d)*f*g*n)$

Rule 6684

$\text{Int}[(u_)/(y_), x_Symbol] \rightarrow \text{With}[\{q = \text{DerivativeDivides}[y, u, x]\}, \text{Simp}[q*\text{Log}[\text{RemoveContent}[y, x]], x] /; \text{!FalseQ}[q]]$

Rubi steps

$$\int \frac{1}{(af+bfx)(cg+dgx)(A+B \log(e(a+bx)^n(c+dx)^{-n}))} dx = \frac{\log(A + B \log(e(a+bx)^n(c+dx)^{-n}))}{B(bc-ad)fgn}$$

Mathematica [A] time = 0.15, size = 43, normalized size = 0.91

$$\frac{\log(B \log(e(a+bx)^n(c+dx)^{-n}) + A)}{bBc fgn - aBd fgn}$$

Antiderivative was successfully verified.

$n(I*(b*x+a)^n/((d*x+c)^n))^3 + I*B*\text{Pi}*c\text{sgn}(I*(b*x+a)^n/((d*x+c)^n))*c\text{sgn}(I*e/((d*x+c)^n)*(b*x+a)^n)^2 - I*B*\text{Pi}*c\text{sgn}(I*e/((d*x+c)^n)*(b*x+a)^n)^3 + 2*B*\ln(e) + 2*B*\ln((b*x+a)^n + 2*A)/B$

maxima [A] time = 1.69, size = 53, normalized size = 1.13

$$\frac{\log\left(-\frac{B\log((bx+a)^n) - B\log((dx+c)^n) + B\log(e) + A}{B}\right)}{(bcfgn - adfgn)B}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(b*f*x+a*f)/(d*g*x+c*g)/(A+B*log(e*(b*x+a)^n/((d*x+c)^n))),x, algorithm="maxima")

[Out] log(-(B*log((b*x + a)^n) - B*log((d*x + c)^n) + B*log(e) + A)/B)/((b*c*f*g*n - a*d*f*g*n)*B)

mupad [B] time = 4.43, size = 44, normalized size = 0.94

$$\frac{\ln\left(A + B \ln\left(\frac{e(a+bx)^n}{(c+dx)^n}\right)\right)}{Badfgn - Bbcfgn}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(1/((a*f + b*f*x)*(c*g + d*g*x)*(A + B*log((e*(a + b*x)^n)/(c + d*x)^n))),x)

[Out] -log(A + B*log((e*(a + b*x)^n)/(c + d*x)^n))/(B*a*d*f*g*n - B*b*c*f*g*n)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(b*f*x+a*f)/(d*g*x+c*g)/(A+B*ln(e*(b*x+a)**n/((d*x+c)**n))),x)

[Out] Timed out

$$3.239 \quad \int \frac{1}{(acf + (bc + ad)fx + bdfx^2)(A + B \log(e(a + bx)^n(c + dx)^{-n}))} dx$$

Optimal. Leaf size=44

$$\frac{\log(B \log(e(a + bx)^n(c + dx)^{-n}) + A)}{Bfn(bc - ad)}$$

[Out] $\ln(A + B \cdot \ln(e \cdot (b \cdot x + a)^n / ((d \cdot x + c)^n))) / B / (-a \cdot d + b \cdot c) / f / n$

Rubi [A] time = 0.08, antiderivative size = 44, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 50, $\frac{\text{number of rules}}{\text{integrand size}} = 0.020$, Rules used = {6684}

$$\frac{\log(B \log(e(a + bx)^n(c + dx)^{-n}) + A)}{Bfn(bc - ad)}$$

Antiderivative was successfully verified.

[In] $\text{Int}[1/((a*c*f + (b*c + a*d)*f*x + b*d*f*x^2)*(A + B*\text{Log}[(e*(a + b*x)^n)/(c + d*x)^n])), x]$

[Out] $\text{Log}[A + B*\text{Log}[(e*(a + b*x)^n)/(c + d*x)^n]]/(B*(b*c - a*d)*f*n)$

Rule 6684

$\text{Int}[(u_)/(y_), x_Symbol] \rightarrow \text{With}[\{q = \text{DerivativeDivides}[y, u, x]\}, \text{Simp}[q*\text{Log}[\text{RemoveContent}[y, x]], x] /; \text{!FalseQ}[q]]$

Rubi steps

$$\int \frac{1}{(acf + (bc + ad)fx + bdfx^2)(A + B \log(e(a + bx)^n(c + dx)^{-n}))} dx = \frac{\log(A + B \log(e(a + bx)^n(c + dx)^{-n}))}{B(bc - ad)fn}$$

Mathematica [A] time = 0.07, size = 42, normalized size = 0.95

$$\frac{\log(B \log(e(a + bx)^n(c + dx)^{-n}) + A)}{f(bBcn - aBdn)}$$

Antiderivative was successfully verified.

[In] Integrate[1/((a*c*f + (b*c + a*d)*f*x + b*d*f*x^2)*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])),x]

[Out] Log[A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n]]/(f*(b*B*c*n - a*B*d*n))

fricas [A] time = 0.98, size = 48, normalized size = 1.09

$$\frac{\log(-Bn \log(bx + a) + Bn \log(dx + c) - B \log(e) - A)}{(Bbc - Bad)fn}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(a*c*f+(a*d+b*c)*f*x+b*d*f*x^2)/(A+B*log(e*(b*x+a)^n/((d*x+c)^n))),x, algorithm="fricas")

[Out] log(-B*n*log(b*x + a) + B*n*log(d*x + c) - B*log(e) - A)/((B*b*c - B*a*d)*f*n)

giac [A] time = 0.17, size = 40, normalized size = 0.91

$$\frac{\log(Bn \log(bx + a) - Bn \log(dx + c) + A + B)}{Bbcfn - Badfn}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(a*c*f+(a*d+b*c)*f*x+b*d*f*x^2)/(A+B*log(e*(b*x+a)^n/((d*x+c)^n))),x, algorithm="giac")

[Out] log(B*n*log(b*x + a) - B*n*log(d*x + c) + A + B)/(B*b*c*f*n - B*a*d*f*n)

maple [C] time = 0.21, size = 371, normalized size = 8.43

$$\ln\left(\ln((dx + c)^n) - \frac{-i\pi B \operatorname{csgn}(ie) \operatorname{csgn}(i(bx+a)^n(dx+c)^{-n}) \operatorname{csgn}(ie(bx+a)^n(dx+c)^{-n}) + i\pi B \operatorname{csgn}(ie) \operatorname{csgn}(ie(bx+a)^n(dx+c)^{-n})^2 - i\pi B \operatorname{csgn}(i(bx+a)^n(dx+c)^{-n})}{\dots}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(1/(b*d*f*x^2+a*c*f+(a*d+b*c)*f*x)/(A+B*ln(e*(b*x+a)^n/((d*x+c)^n))),x)

[Out] -1/B/f/n/(a*d-b*c)*ln(ln((d*x+c)^n)-1/2*(-I*B*Pi*csgn(I*e)*csgn(I*(b*x+a)^n/((d*x+c)^n))*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)+I*B*Pi*csgn(I*e)*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)^2-I*B*Pi*csgn(I*(b*x+a)^n)*csgn(I/((d*x+c)^n))*csgn(I*(b*x+a)^n/((d*x+c)^n))+I*B*Pi*csgn(I*(b*x+a)^n)*csgn(I*(b*x+a)^n/((d*x+c)^n))^2+I*B*Pi*csgn(I/((d*x+c)^n))*csgn(I*(b*x+a)^n/((d*x+c)^n))^2-I*B*Pi*csgn(I*(b*x+a)^n/((d*x+c)^n))^3+I*B*Pi*csgn(I*(b*x+a)^n/((d*x+c)^n))*csgn(I*e/((

$(d*x+c)^n*(b*x+a)^n)^2-I*B*Pi*csgn(I*e/((d*x+c)^n*(b*x+a)^n)^3+2*B*\ln(e)+2*B*\ln((b*x+a)^n)+2*A)/B)$

maxima [A] time = 1.58, size = 51, normalized size = 1.16

$$\frac{\log\left(-\frac{B\log((bx+a)^n)-B\log((dx+c)^n)+B\log(e)+A}{B}\right)}{(bcfn - adfn)B}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(a*c*f+(a*d+b*c)*f*x+b*d*f*x^2)/(A+B*log(e*(b*x+a)^n/((d*x+c)^n))),x, algorithm="maxima")

[Out] log(-(B*log((b*x + a)^n) - B*log((d*x + c)^n) + B*log(e) + A)/B)/((b*c*f*n - a*d*f*n)*B)

mupad [B] time = 4.51, size = 42, normalized size = 0.95

$$\frac{\ln\left(A + B \ln\left(\frac{e(a+bx)^n}{(c+dx)^n}\right)\right)}{B a d f n - B b c f n}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(1/((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))*(a*c*f + f*x*(a*d + b*c) + b*d*f*x^2)),x)

[Out] -log(A + B*log((e*(a + b*x)^n)/(c + d*x)^n))/(B*a*d*f*n - B*b*c*f*n)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(a*c*f+(a*d+b*c)*f*x+b*d*f*x**2)/(A+B*\ln(e*(b*x+a)**n/((d*x+c)*n))),x)

[Out] Timed out

$$3.240 \quad \int \frac{(a+bx)^m(c+dx)^{-2-m}}{\log(e(a+bx)^n(c+dx)^{-n})} dx$$

Optimal. Leaf size=88

$$\frac{(a+bx)^{m+1}(c+dx)^{-m-1}(e(a+bx)^n(c+dx)^{-n})^{-\frac{m+1}{n}} \operatorname{Ei}\left(\frac{(m+1)\log(e(a+bx)^n(c+dx)^{-n})}{n}\right)}{n(bc-ad)}$$

[Out] (b*x+a)^(1+m)*(d*x+c)^(-1-m)*Ei(((1+m)*ln(e*(b*x+a)^n/((d*x+c)^n))/n)/(-a*d+b*c)/n/((e*(b*x+a)^n/((d*x+c)^n))^(1+m)/n))

Rubi [A] time = 0.11, antiderivative size = 88, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.025$, Rules used = {2510}

$$\frac{(a+bx)^{m+1}(c+dx)^{-m-1}(e(a+bx)^n(c+dx)^{-n})^{-\frac{m+1}{n}} \operatorname{Ei}\left(\frac{(m+1)\log(e(a+bx)^n(c+dx)^{-n})}{n}\right)}{n(bc-ad)}$$

Antiderivative was successfully verified.

[In] Int[((a + b*x)^m*(c + d*x)^(-2 - m))/Log[(e*(a + b*x)^n)/(c + d*x)^n], x]

[Out] ((a + b*x)^(1 + m)*(c + d*x)^(-1 - m)*ExpIntegralEi[((1 + m)*Log[(e*(a + b*x)^n)/(c + d*x)^n])/n])/((b*c - a*d)*n*((e*(a + b*x)^n)/(c + d*x)^n)^(1 + m)/n))

Rule 2510

```
Int[(((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.))/Log[(e_.)*((f_.)
)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))^(r_.)], x_Symbol]
:> Simp[((a + b*x)^(m + 1)*(c + d*x)^(n + 1)*ExpIntegralEi[((m + 1)*Log[e*(
f*(a + b*x)^p*(c + d*x)^q]^r)]/(p*r))]/(p*r*(b*c - a*d)*(e*(f*(a + b*x)^p*(
c + d*x)^q]^r)^(m + 1)/(p*r))), x] /; FreeQ[{a, b, c, d, e, f, m, n, p, q,
r}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ[m + n + 2, 0] && NeQ[m
, -1]
```

Rubi steps

$$\int \frac{(a+bx)^m(c+dx)^{-2-m}}{\log(e(a+bx)^n(c+dx)^{-n})} dx = \frac{(a+bx)^{1+m}(c+dx)^{-1-m}(e(a+bx)^n(c+dx)^{-n})^{-\frac{1+m}{n}} \operatorname{Ei}\left(\frac{(1+m)\log(e(a+bx)^n(c+dx)^{-n})}{n}\right)}{(bc-ad)n}$$

Mathematica [F] time = 0.40, size = 0, normalized size = 0.00

$$\int \frac{(a + bx)^m (c + dx)^{-2-m}}{\log(e(a + bx)^n (c + dx)^{-n})} dx$$

Verification is Not applicable to the result.

[In] Integrate[((a + b*x)^m*(c + d*x)^(-2 - m))/Log[(e*(a + b*x)^n)/(c + d*x)^n], x]

[Out] Integrate[((a + b*x)^m*(c + d*x)^(-2 - m))/Log[(e*(a + b*x)^n)/(c + d*x)^n], x]

fricas [F] time = 0.85, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{(bx + a)^m (dx + c)^{-m-2}}{\log \left(\frac{(bx+a)^n e}{(dx+c)^n} \right)}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*x+a)^m*(d*x+c)^(-2-m)/log(e*(b*x+a)^n/((d*x+c)^n)), x, algorithm="fricas")

[Out] integral((b*x + a)^m*(d*x + c)^(-m - 2)/log((b*x + a)^n*e/(d*x + c)^n), x)

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bx + a)^m (dx + c)^{-m-2}}{\log \left(\frac{(bx+a)^n e}{(dx+c)^n} \right)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*x+a)^m*(d*x+c)^(-2-m)/log(e*(b*x+a)^n/((d*x+c)^n)), x, algorithm="giac")

[Out] integrate((b*x + a)^m*(d*x + c)^(-m - 2)/log((b*x + a)^n*e/(d*x + c)^n), x)

maple [F] time = 0.87, size = 0, normalized size = 0.00

$$\int \frac{(bx + a)^m (dx + c)^{-m-2}}{\ln(e (bx + a)^n (dx + c)^{-n})} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((b*x+a)^m*(d*x+c)^(-m-2)/ln(e*(b*x+a)^n/((d*x+c)^n)),x)`

[Out] `int((b*x+a)^m*(d*x+c)^(-m-2)/ln(e*(b*x+a)^n/((d*x+c)^n)),x)`

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)^m(dx+c)^{-m-2}}{\log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((b*x+a)^m*(d*x+c)^(-2-m)/log(e*(b*x+a)^n/((d*x+c)^n)),x, algorithm m="maxima")`

[Out] `integrate((b*x+a)^m*(d*x+c)^(-m-2)/log((b*x+a)^n*e/(d*x+c)^n),x)`

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(a+bx)^m}{\ln\left(\frac{e(a+bx)^n}{(c+dx)^n}\right) (c+dx)^{m+2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int((a+b*x)^m/(log((e*(a+b*x)^n)/(c+d*x)^n)*(c+d*x)^(m+2)),x)`

[Out] `int((a+b*x)^m/(log((e*(a+b*x)^n)/(c+d*x)^n)*(c+d*x)^(m+2)),x)`

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate((b*x+a)**m*(d*x+c)**(-2-m)/ln(e*(b*x+a)**n/((d*x+c)**n)),x)`

[Out] Timed out

$$3.241 \quad \int \frac{(a+bx)^3}{(c+dx)^5 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)} dx$$

Optimal. Leaf size=75

$$\frac{(a+bx)^4 \left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{-4/n} \operatorname{Ei}\left(\frac{4 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{n(c+dx)^4(bc-ad)}$$

[Out] (b*x+a)^4*Ei(4*ln(e*((b*x+a)/(d*x+c))^n)/n)/(-a*d+b*c)/n/((e*((b*x+a)/(d*x+c))^n)^(4/n))/(d*x+c)^4

Rubi [A] time = 0.08, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.029$, Rules used = {2510}

$$\frac{(a+bx)^4 \left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{-4/n} \operatorname{Ei}\left(\frac{4 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{n(c+dx)^4(bc-ad)}$$

Antiderivative was successfully verified.

[In] Int[(a + b*x)^3/((c + d*x)^5*Log[e*((a + b*x)/(c + d*x))^n]),x]

[Out] ((a + b*x)^4*ExpIntegralEi[(4*Log[e*((a + b*x)/(c + d*x))^n])/n])/((b*c - a*d)*n*(e*((a + b*x)/(c + d*x))^n)^(4/n)*(c + d*x)^4)

Rule 2510

```
Int[(((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.))/Log[(e_.)*((f_.)
)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))^(r_.)], x_Symbol]
:= Simp[(((a + b*x)^(m + 1)*(c + d*x)^(n + 1)*ExpIntegralEi[((m + 1)*Log[e*(
f*(a + b*x)^p*(c + d*x)^q]^r)]/(p*r)))/(p*r*(b*c - a*d)*(e*(f*(a + b*x)^p*(
c + d*x)^q)^r)^((m + 1)/(p*r))), x] /; FreeQ[{a, b, c, d, e, f, m, n, p, q,
r}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ[m + n + 2, 0] && NeQ[m
, -1]
```

Rubi steps

$$\int \frac{(a+bx)^3}{(c+dx)^5 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)} dx = \frac{(a+bx)^4 \left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{-4/n} \operatorname{Ei}\left(\frac{4 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{(bc-ad)n(c+dx)^4}$$

Mathematica [A] time = 0.03, size = 75, normalized size = 1.00

$$\frac{(a+bx)^4 \left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{-4/n} \operatorname{Ei}\left(\frac{4 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{n(c+dx)^4(bc-ad)}$$

Antiderivative was successfully verified.

[In] Integrate[(a + b*x)^3/((c + d*x)^5*Log[e*((a + b*x)/(c + d*x))^n]),x]

[Out] ((a + b*x)^4*ExpIntegralEi[(4*Log[e*((a + b*x)/(c + d*x))^n])/n])/((b*c - a*d)*n*(e*((a + b*x)/(c + d*x))^n)^(4/n)*(c + d*x)^4)

fricas [A] time = 0.87, size = 110, normalized size = 1.47

$$\frac{\log_integral\left(\frac{(b^4x^4+4ab^3x^3+6a^2b^2x^2+4a^3bx+a^4)e^{\frac{4}{n}}}{d^4x^4+4cd^3x^3+6c^2d^2x^2+4c^3dx+c^4}\right)}{(bc-ad)e^{\frac{4}{n}}n}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*x+a)^3/(d*x+c)^5/log(e*((b*x+a)/(d*x+c))^n),x, algorithm="fricas")

[Out] log_integral((b^4*x^4 + 4*a*b^3*x^3 + 6*a^2*b^2*x^2 + 4*a^3*b*x + a^4)*e^(4/n))/(d^4*x^4 + 4*c*d^3*x^3 + 6*c^2*d^2*x^2 + 4*c^3*d*x + c^4)/((b*c - a*d)*e^(4/n)*n)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*x+a)^3/(d*x+c)^5/log(e*((b*x+a)/(d*x+c))^n),x, algorithm="giac")

[Out] Timed out

maple [F] time = 0.48, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)^3}{(dx+c)^5 \ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*x+a)^3/(d*x+c)^5/ln(e*((b*x+a)/(d*x+c))^n),x)

[Out] int((b*x+a)^3/(d*x+c)^5/ln(e*((b*x+a)/(d*x+c))^n),x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)^3}{(dx+c)^5 \log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*x+a)^3/(d*x+c)^5/log(e*((b*x+a)/(d*x+c))^n),x, algorithm="maxima")

[Out] integrate((b*x+a)^3/((d*x+c)^5*log(e*((b*x+a)/(d*x+c))^n)),x)

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(a+bx)^3}{\ln\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) (c+dx)^5} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a+b*x)^3/(log(e*((a+b*x)/(c+d*x))^n)*(c+d*x)^5),x)

[Out] int((a+b*x)^3/(log(e*((a+b*x)/(c+d*x))^n)*(c+d*x)^5),x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)**3/(d*x+c)**5/ln(e*((b*x+a)/(d*x+c))**n),x)
```

```
[Out] Timed out
```

$$3.242 \quad \int \frac{(a+bx)^2}{(c+dx)^4 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)} dx$$

Optimal. Leaf size=75

$$\frac{(a+bx)^3 \left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{-3/n} \operatorname{Ei}\left(\frac{3 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{n(c+dx)^3(bc-ad)}$$

[Out] (b*x+a)^3*Ei(3*ln(e*((b*x+a)/(d*x+c))^n)/n)/(-a*d+b*c)/n/((e*((b*x+a)/(d*x+c))^n)^(3/n))/(d*x+c)^3

Rubi [A] time = 0.07, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.029$, Rules used = {2510}

$$\frac{(a+bx)^3 \left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{-3/n} \operatorname{Ei}\left(\frac{3 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{n(c+dx)^3(bc-ad)}$$

Antiderivative was successfully verified.

[In] Int[(a + b*x)^2/((c + d*x)^4*Log[e*((a + b*x)/(c + d*x))^n]),x]

[Out] ((a + b*x)^3*ExpIntegralEi[(3*Log[e*((a + b*x)/(c + d*x))^n])/n])/((b*c - a*d)*n*(e*((a + b*x)/(c + d*x))^n)^(3/n)*(c + d*x)^3)

Rule 2510

```
Int[(((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.))/Log[(e_.)*((f_.)
)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))^(r_.)], x_Symbol]
:= Simp[(((a + b*x)^(m + 1)*(c + d*x)^(n + 1)*ExpIntegralEi[((m + 1)*Log[e*(
f*(a + b*x)^p*(c + d*x)^q]^r)]/(p*r)))/(p*r*(b*c - a*d)*(e*(f*(a + b*x)^p*(
c + d*x)^q)^r)^((m + 1)/(p*r))), x] /; FreeQ[{a, b, c, d, e, f, m, n, p, q,
r}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ[m + n + 2, 0] && NeQ[m
, -1]
```

Rubi steps

$$\int \frac{(a+bx)^2}{(c+dx)^4 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)} dx = \frac{(a+bx)^3 \left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{-3/n} \operatorname{Ei}\left(\frac{3 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{(bc-ad)n(c+dx)^3}$$

Mathematica [A] time = 0.03, size = 75, normalized size = 1.00

$$\frac{(a+bx)^3 \left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{-3/n} \operatorname{Ei}\left(\frac{3 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{n(c+dx)^3(bc-ad)}$$

Antiderivative was successfully verified.

[In] Integrate[(a + b*x)^2/((c + d*x)^4*Log[e*((a + b*x)/(c + d*x))^n]),x]

[Out] ((a + b*x)^3*ExpIntegralEi[(3*Log[e*((a + b*x)/(c + d*x))^n])/n])/((b*c - a*d)*n*(e*((a + b*x)/(c + d*x))^n)^(3/n)*(c + d*x)^3)

fricas [A] time = 0.96, size = 88, normalized size = 1.17

$$\frac{\log_integral\left(\frac{(b^3x^3+3ab^2x^2+3a^2bx+a^3)e^{\frac{3}{n}}}{d^3x^3+3cd^2x^2+3c^2dx+c^3}\right)}{(bc-ad)e^{\frac{3}{n}}n}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*x+a)^2/(d*x+c)^4/log(e*((b*x+a)/(d*x+c))^n),x, algorithm="fricas")

[Out] log_integral((b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3)*e^(3/n)/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3))/((b*c - a*d)*e^(3/n)*n)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*x+a)^2/(d*x+c)^4/log(e*((b*x+a)/(d*x+c))^n),x, algorithm="giac")

[Out] Timed out

maple [F] time = 0.44, size = 0, normalized size = 0.00

$$\int \frac{(bx + a)^2}{(dx + c)^4 \ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*x+a)^2/(d*x+c)^4/ln(e*((b*x+a)/(d*x+c))^n), x)

[Out] int((b*x+a)^2/(d*x+c)^4/ln(e*((b*x+a)/(d*x+c))^n), x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bx + a)^2}{(dx + c)^4 \log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*x+a)^2/(d*x+c)^4/log(e*((b*x+a)/(d*x+c))^n), x, algorithm="maxima")

[Out] integrate((b*x + a)^2/((d*x + c)^4*log(e*((b*x + a)/(d*x + c))^n)), x)

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(a + bx)^2}{\ln\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) (c + dx)^4} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a + b*x)^2/(log(e*((a + b*x)/(c + d*x))^n)*(c + d*x)^4), x)

[Out] int((a + b*x)^2/(log(e*((a + b*x)/(c + d*x))^n)*(c + d*x)^4), x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*x+a)**2/(d*x+c)**4/ln(e*((b*x+a)/(d*x+c))**n), x)

[Out] Timed out

$$3.243 \quad \int \frac{a+bx}{(c+dx)^3 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)} dx$$

Optimal. Leaf size=75

$$\frac{(a+bx)^2 \left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{-2/n} \operatorname{Ei}\left(\frac{2\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{n(c+dx)^2(bc-ad)}$$

[Out] (b*x+a)^2*Ei(2*ln(e*((b*x+a)/(d*x+c))^n)/n)/(-a*d+b*c)/n/((e*((b*x+a)/(d*x+c))^n)^(2/n))/(d*x+c)^2

Rubi [A] time = 0.05, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.030$, Rules used = {2510}

$$\frac{(a+bx)^2 \left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{-2/n} \operatorname{Ei}\left(\frac{2\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{n(c+dx)^2(bc-ad)}$$

Antiderivative was successfully verified.

[In] Int[(a + b*x)/((c + d*x)^3*Log[e*((a + b*x)/(c + d*x))^n]),x]

[Out] ((a + b*x)^2*ExpIntegralEi[(2*Log[e*((a + b*x)/(c + d*x))^n])/n])/((b*c - a*d)*n*(e*((a + b*x)/(c + d*x))^n)^(2/n)*(c + d*x)^2)

Rule 2510

```
Int[(((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.))/Log[(e_.)*((f_.)
)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)]^(r_.)], x_Symbol]
:> Simp[((a + b*x)^(m + 1)*(c + d*x)^(n + 1)*ExpIntegralEi[((m + 1)*Log[e*(
f*(a + b*x)^p*(c + d*x)^q]^r)]/(p*r))]/(p*r*(b*c - a*d)*(e*(f*(a + b*x)^p*(
c + d*x)^q)^r)^(m + 1)/(p*r)), x] /; FreeQ[{a, b, c, d, e, f, m, n, p, q,
r}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ[m + n + 2, 0] && NeQ[m
, -1]
```

Rubi steps

$$\int \frac{a + bx}{(c + dx)^3 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)} dx = \frac{(a + bx)^2 \left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{-2/n} \operatorname{Ei}\left(\frac{2 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{(bc - ad)n(c + dx)^2}$$

Mathematica [A] time = 0.02, size = 75, normalized size = 1.00

$$\frac{(a + bx)^2 \left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{-2/n} \operatorname{Ei}\left(\frac{2 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{n(c + dx)^2(bc - ad)}$$

Antiderivative was successfully verified.

[In] Integrate[(a + b*x)/((c + d*x)^3*Log[e*((a + b*x)/(c + d*x))^n]),x]

[Out] ((a + b*x)^2*ExpIntegralEi[(2*Log[e*((a + b*x)/(c + d*x))^n])/n])/((b*c - a*d)*n*(e*((a + b*x)/(c + d*x))^n)^(2/n)*(c + d*x)^2)

fricas [A] time = 0.82, size = 66, normalized size = 0.88

$$\frac{\log_integral\left(\frac{(b^2x^2+2abx+a^2)e^{\frac{2}{n}}}{d^2x^2+2cdx+c^2}\right)}{(bc - ad)e^{\frac{2}{n}}n}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*x+a)/(d*x+c)^3/log(e*((b*x+a)/(d*x+c))^n),x, algorithm="fricas")

[Out] log_integral((b^2*x^2 + 2*a*b*x + a^2)*e^(2/n)/(d^2*x^2 + 2*c*d*x + c^2))/((b*c - a*d)*e^(2/n)*n)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*x+a)/(d*x+c)^3/log(e*((b*x+a)/(d*x+c))^n),x, algorithm="giac")

[Out] Timed out

maple [F] time = 0.30, size = 0, normalized size = 0.00

$$\int \frac{bx + a}{(dx + c)^3 \ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*x+a)/(d*x+c)^3/ln(e*((b*x+a)/(d*x+c))^n), x)

[Out] int((b*x+a)/(d*x+c)^3/ln(e*((b*x+a)/(d*x+c))^n), x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{bx + a}{(dx + c)^3 \log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*x+a)/(d*x+c)^3/log(e*((b*x+a)/(d*x+c))^n), x, algorithm="maxima")

[Out] integrate((b*x + a)/((d*x + c)^3*log(e*((b*x + a)/(d*x + c))^n)), x)

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a + bx}{\ln\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) (c + dx)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a + b*x)/(log(e*((a + b*x)/(c + d*x))^n)*(c + d*x)^3), x)

[Out] int((a + b*x)/(log(e*((a + b*x)/(c + d*x))^n)*(c + d*x)^3), x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*x+a)/(d*x+c)**3/ln(e*((b*x+a)/(d*x+c))**n), x)

[Out] Timed out

$$3.244 \quad \int \frac{1}{(c+dx)^2 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)} dx$$

Optimal. Leaf size=72

$$\frac{(a+bx) \left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{-1/n} \operatorname{Ei}\left(\frac{\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{n(c+dx)(bc-ad)}$$

[Out] (b*x+a)*Ei(ln(e*((b*x+a)/(d*x+c))^n)/n)/(-a*d+b*c)/n/((e*((b*x+a)/(d*x+c))^n)^(1/n))/(d*x+c)

Rubi [A] time = 0.03, antiderivative size = 72, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.036$, Rules used = {2493}

$$\frac{(a+bx) \left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{-1/n} \operatorname{Ei}\left(\frac{\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{n(c+dx)(bc-ad)}$$

Antiderivative was successfully verified.

[In] Int[1/((c + d*x)^2*Log[e*((a + b*x)/(c + d*x))^n]),x]

[Out] ((a + b*x)*ExpIntegralEi[Log[e*((a + b*x)/(c + d*x))^n]/n])/((b*c - a*d)*n*(e*((a + b*x)/(c + d*x))^n)^(-1)*(c + d*x))

Rule 2493

Int[1/(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.))^r_.])*((g_.) + (h_.)*(x_))^2), x_Symbol] := Simp[(b*(c + d*x)*(e*(f*(a + b*x)^p*(c + d*x)^q)^r)^(1/(p*r))*ExpIntegralEi[-(Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r)/(p*r)]]/(h*p*r*(b*c - a*d)*(g + h*x)), x] /; FreeQ[{a, b, c, d, e, f, g, h, p, q, r}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ[b*g - a*h, 0]

Rubi steps

$$\int \frac{1}{(c+dx)^2 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)} dx = \frac{(a+bx)\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{-1/n} \operatorname{Ei}\left(\frac{\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{(bc-ad)n(c+dx)}$$

Mathematica [A] time = 0.07, size = 72, normalized size = 1.00

$$\frac{(a+bx)\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{-1/n} \operatorname{Ei}\left(\frac{\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{n(c+dx)(bc-ad)}$$

Antiderivative was successfully verified.

[In] Integrate[1/((c + d*x)^2*Log[e*((a + b*x)/(c + d*x))^n]),x]

[Out] ((a + b*x)*ExpIntegralEi[Log[e*((a + b*x)/(c + d*x))^n]/n])/((b*c - a*d)*n*(e*((a + b*x)/(c + d*x))^n)^(-1)*(c + d*x))

fricas [A] time = 0.85, size = 40, normalized size = 0.56

$$\frac{\log_integral\left(\frac{(bx+a)e^{\left(\frac{1}{n}\right)}}{dx+c}\right)}{(bc-ad)e^{\left(\frac{1}{n}\right)}n}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(d*x+c)^2/log(e*((b*x+a)/(d*x+c))^n),x, algorithm="fricas")

[Out] log_integral((b*x + a)*e^(1/n)/(d*x + c))/((b*c - a*d)*e^(1/n)*n)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(d*x+c)^2/log(e*((b*x+a)/(d*x+c))^n),x, algorithm="giac")

[Out] Timed out

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int \frac{1}{(dx+c)^2 \ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int(1/(d*x+c)^2/ln(e*((b*x+a)/(d*x+c))^n),x)`

[Out] `int(1/(d*x+c)^2/ln(e*((b*x+a)/(d*x+c))^n),x)`

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(dx+c)^2 \log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate(1/(d*x+c)^2/log(e*((b*x+a)/(d*x+c))^n),x, algorithm="maxima")`

[Out] `integrate(1/((d*x + c)^2*log(e*((b*x + a)/(d*x + c))^n)), x)`

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\ln\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) (c+dx)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int(1/(log(e*((a + b*x)/(c + d*x))^n)*(c + d*x)^2),x)`

[Out] `int(1/(log(e*((a + b*x)/(c + d*x))^n)*(c + d*x)^2), x)`

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate(1/(d*x+c)**2/ln(e*((b*x+a)/(d*x+c))**n),x)`

[Out] Timed out

$$3.245 \quad \int \frac{1}{(a+bx)(c+dx) \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)} dx$$

Optimal. Leaf size=33

$$\frac{\log\left(\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{n(bc-ad)}$$

[Out] $\ln(\ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)/n$

Rubi [A] time = 0.07, antiderivative size = 33, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.029$, Rules used = {2504}

$$\frac{\log\left(\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{n(bc-ad)}$$

Antiderivative was successfully verified.

[In] $\text{Int}[1/((a + b*x)*(c + d*x)*\text{Log}[e*((a + b*x)/(c + d*x))^n]), x]$

[Out] $\text{Log}[\text{Log}[e*((a + b*x)/(c + d*x))^n]]/((b*c - a*d)*n)$

Rule 2504

$\text{Int}[(u_)/\text{Log}[(e_)*((f_)*((a_)+(b_)*(x_))^p_)*((c_)+(d_)*(x_))^q_])^r_], x_Symbol] \rightarrow \text{With}[\{h = \text{Simplify}[u*(a + b*x)*(c + d*x)]\}, \text{Simp}[(h*\text{Log}[\text{Log}[e*(f*(a + b*x)^p*(c + d*x)^q]^r]])/(p*r*(b*c - a*d)), x] /; \text{FreeQ}[h, x] /; \text{FreeQ}\{a, b, c, d, e, f, p, q, r\}, x\} \&\& \text{NeQ}[b*c - a*d, 0] \&\& \text{EqQ}[p + q, 0]$

Rubi steps

$$\int \frac{1}{(a+bx)(c+dx) \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)} dx = \frac{\log\left(\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(bc-ad)n}$$

Mathematica [A] time = 0.08, size = 34, normalized size = 1.03

$$\frac{\log\left(\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{n(ad-bc)}$$

Antiderivative was successfully verified.

[In] Integrate[1/((a + b*x)*(c + d*x)*Log[e*((a + b*x)/(c + d*x))^n]),x]

[Out] -(Log[Log[e*((a + b*x)/(c + d*x))^n]]/((-b*c) + a*d)*n)

fricas [A] time = 0.93, size = 34, normalized size = 1.03

$$\frac{\log\left(n \log\left(\frac{bx+a}{dx+c}\right) + \log(e)\right)}{(bc - ad)n}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(b*x+a)/(d*x+c)/log(e*((b*x+a)/(d*x+c))^n),x, algorithm="fricas")

[Out] log(n*log((b*x + a)/(d*x + c)) + log(e))/((b*c - a*d)*n)

giac [B] time = 0.52, size = 82, normalized size = 2.48

$$\frac{\left(\frac{bc}{(bc-ad)^2} - \frac{ad}{(bc-ad)^2}\right) \log\left(\frac{1}{4} \pi^2 (\operatorname{sgn}(bx+a) \operatorname{sgn}(dx+c) - 1)^2 n^2 + \left(n \log\left(\frac{|bx+a|}{|dx+c|}\right) + 1\right)^2\right)}{2n}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(b*x+a)/(d*x+c)/log(e*((b*x+a)/(d*x+c))^n),x, algorithm="giac")

[Out] 1/2*(b*c/(b*c - a*d)^2 - a*d/(b*c - a*d)^2)*log(1/4*pi^2*(sgn(b*x + a)*sgn(d*x + c) - 1)^2*n^2 + (n*log(abs(b*x + a)/abs(d*x + c)) + 1)^2)/n

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{1}{(bx+a)(dx+c) \ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(1/(b*x+a)/(d*x+c)/ln(e*((b*x+a)/(d*x+c))^n),x)

[Out] int(1/(b*x+a)/(d*x+c)/ln(e*((b*x+a)/(d*x+c))^n),x)

maxima [A] time = 1.69, size = 37, normalized size = 1.12

$$\frac{\log(-\log((bx+a)^n) + \log((dx+c)^n) - \log(e))}{bcn - adn}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(b*x+a)/(d*x+c)/log(e*((b*x+a)/(d*x+c))^n),x, algorithm="maxima")

[Out] log(-log((b*x + a)^n) + log((d*x + c)^n) - log(e))/(b*c*n - a*d*n)

mupad [B] time = 4.48, size = 33, normalized size = 1.00

$$\frac{\ln\left(\ln\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{adn - bcn}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(1/(log(e*((a + b*x)/(c + d*x))^n)*(a + b*x)*(c + d*x)),x)

[Out] -log(log(e*((a + b*x)/(c + d*x))^n))/(a*d*n - b*c*n)

sympy [A] time = 82.02, size = 160, normalized size = 4.85

$$\left\{ \begin{array}{ll} \frac{1}{(bc+bdx)\log(e)} & \text{for } a = \frac{bc}{d} \wedge n = 0 \\ \frac{1}{bcn \log\left(\frac{bc}{cd+d^2x} + \frac{bx}{c+dx}\right) + bc \log(e) + bdnx \log\left(\frac{bc}{cd+d^2x} + \frac{bx}{c+dx}\right) + bdx \log(e)} & \text{for } a = \frac{bc}{d} \\ \frac{\log\left(\frac{a}{b} + x\right) \log\left(\frac{c}{d} + x\right)}{\log(e)} & \text{for } n = 0 \\ \frac{\log\left(n \log\left(\frac{a}{c+dx} + \frac{bx}{c+dx}\right) + \log(e)\right)}{adn - bcn} & \text{otherwise} \end{array} \right.$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(b*x+a)/(d*x+c)/ln(e*((b*x+a)/(d*x+c))^n),x)

[Out] Piecewise((-1/((b*c + b*d*x)*log(e)), Eq(n, 0) & Eq(a, b*c/d)), (-1/(b*c*n*log(b*c/(c*d + d**2*x) + b*x/(c + d*x)) + b*c*log(e) + b*d*n*x*log(b*c/(c*d + d**2*x) + b*x/(c + d*x)) + b*d*x*log(e)), Eq(a, b*c/d)), ((-log(a/b + x)/(a*d - b*c) + log(c/d + x)/(a*d - b*c))/log(e), Eq(n, 0)), (-log(n*log(a/(c + d*x) + b*x/(c + d*x)) + log(e))/(a*d*n - b*c*n), True))

$$3.246 \quad \int \frac{1}{(a+bx)^2 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)} dx$$

Optimal. Leaf size=71

$$\frac{(c+dx) \left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{\frac{1}{n}} \operatorname{Ei}\left(-\frac{\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{n(a+bx)(bc-ad)}$$

[Out] (e*((b*x+a)/(d*x+c))^n)^(1/n)*(d*x+c)*Ei(-ln(e*((b*x+a)/(d*x+c))^n)/n)/(-a*d+b*c)/n/(b*x+a)

Rubi [A] time = 0.03, antiderivative size = 71, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.036$, Rules used = {2493}

$$\frac{(c+dx) \left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{\frac{1}{n}} \operatorname{Ei}\left(-\frac{\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{n(a+bx)(bc-ad)}$$

Antiderivative was successfully verified.

[In] Int[1/((a + b*x)^2*Log[e*((a + b*x)/(c + d*x))^n]),x]

[Out] ((e*((a + b*x)/(c + d*x))^n)^(1/n)*(c + d*x)*ExpIntegralEi[-(Log[e*((a + b*x)/(c + d*x))^n]/n)]/(b*c - a*d)*n*(a + b*x))

Rule 2493

Int[1/(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]*((g_.) + (h_.)*(x_))^2), x_Symbol] :> Simp[(b*(c + d*x)*(e*(f*(a + b*x)^p*(c + d*x)^q)^r)^(1/(p*r))*ExpIntegralEi[-(Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r)/(p*r)]]/(h*p*r*(b*c - a*d)*(g + h*x)), x] /; FreeQ[{a, b, c, d, e, f, g, h, p, q, r}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ[b*g - a*h, 0]

Rubi steps

$$\int \frac{1}{(a+bx)^2 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)} dx = \frac{\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{\frac{1}{n}} (c+dx) \operatorname{Ei}\left(-\frac{\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{(bc-ad)n(a+bx)}$$

Mathematica [A] time = 0.07, size = 71, normalized size = 1.00

$$\frac{(c+dx)\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{\frac{1}{n}} \operatorname{Ei}\left(-\frac{\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{n(a+bx)(bc-ad)}$$

Antiderivative was successfully verified.

[In] Integrate[1/((a + b*x)^2*Log[e*((a + b*x)/(c + d*x))^n]),x]

[Out] ((e*((a + b*x)/(c + d*x))^n)^n^(-1)*(c + d*x)*ExpIntegralEi[-(Log[e*((a + b*x)/(c + d*x))^n]/n)]/(b*c - a*d)*n*(a + b*x))

fricas [A] time = 1.07, size = 40, normalized size = 0.56

$$\frac{e^{\left(\frac{1}{n}\right)} \log_integral\left(\frac{dx+c}{(bx+a)e^{\left(\frac{1}{n}\right)}}\right)}{(bc-ad)n}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(b*x+a)^2/log(e*((b*x+a)/(d*x+c))^n),x, algorithm="fricas")

[Out] e^(1/n)*log_integral((d*x + c)/((b*x + a)*e^(1/n)))/((b*c - a*d)*n)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(b*x+a)^2/log(e*((b*x+a)/(d*x+c))^n),x, algorithm="giac")

[Out] Timed out

maple [F] time = 0.30, size = 0, normalized size = 0.00

$$\int \frac{1}{(bx+a)^2 \ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(1/(b*x+a)^2/ln(e*((b*x+a)/(d*x+c))^n), x)

[Out] int(1/(b*x+a)^2/ln(e*((b*x+a)/(d*x+c))^n), x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(bx+a)^2 \log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(b*x+a)^2/log(e*((b*x+a)/(d*x+c))^n), x, algorithm="maxima")

[Out] integrate(1/((b*x + a)^2*log(e*((b*x + a)/(d*x + c))^n)), x)

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\ln\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) (a+bx)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(1/(log(e*((a + b*x)/(c + d*x))^n)*(a + b*x)^2), x)

[Out] int(1/(log(e*((a + b*x)/(c + d*x))^n)*(a + b*x)^2), x)

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(a+bx)^2 \log\left(e\left(\frac{a}{c+dx} + \frac{bx}{c+dx}\right)^n\right)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(b*x+a)**2/ln(e*((b*x+a)/(d*x+c))**n), x)

[Out] Integral(1/((a + b*x)**2*log(e*(a/(c + d*x) + b*x/(c + d*x))**n)), x)

$$3.247 \quad \int \frac{c+dx}{(a+bx)^3 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)} dx$$

Optimal. Leaf size=75

$$\frac{(c+dx)^2 \left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{2/n} \operatorname{Ei}\left(-\frac{2\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{n(a+bx)^2(bc-ad)}$$

[Out] $(e*((b*x+a)/(d*x+c))^n)^{(2/n)}*(d*x+c)^2*\operatorname{Ei}(-2*\ln(e*((b*x+a)/(d*x+c))^n)/n)/(-a*d+b*c)/n/(b*x+a)^2$

Rubi [A] time = 0.05, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.030$, Rules used = {2510}

$$\frac{(c+dx)^2 \left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{2/n} \operatorname{Ei}\left(-\frac{2\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{n(a+bx)^2(bc-ad)}$$

Antiderivative was successfully verified.

[In] $\operatorname{Int}[(c+d*x)/((a+b*x)^3*\operatorname{Log}[e*((a+b*x)/(c+d*x))^n]),x]$

[Out] $((e*((a+b*x)/(c+d*x))^n)^{(2/n)}*(c+d*x)^2*\operatorname{ExpIntegralEi}[(-2*\operatorname{Log}[e*((a+b*x)/(c+d*x))^n])/n])/((b*c-a*d)*n*(a+b*x)^2)$

Rule 2510

```
Int[(((a_.) + (b_.)*(x_))^(m_.))*((c_.) + (d_.)*(x_))^(n_.)]/Log[(e_.)*((f_.)
)*((a_.) + (b_.)*(x_))^(p_.))*((c_.) + (d_.)*(x_))^(q_.)]^(r_.)], x_Symbol]
:> Simp[((a + b*x)^(m + 1)*(c + d*x)^(n + 1)*ExpIntegralEi[((m + 1)*Log[e*(
f*(a + b*x)^p*(c + d*x)^q]^r)]/(p*r))]/(p*r*(b*c - a*d)*(e*(f*(a + b*x)^p*(
c + d*x)^q]^r)^((m + 1)/(p*r))), x] /; FreeQ[{a, b, c, d, e, f, m, n, p, q,
r}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ[m + n + 2, 0] && NeQ[m
, -1]
```

Rubi steps

$$\int \frac{c + dx}{(a + bx)^3 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)} dx = \frac{\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{2/n} (c + dx)^2 \operatorname{Ei}\left(-\frac{2 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{(bc - ad)n(a + bx)^2}$$

Mathematica [A] time = 0.02, size = 75, normalized size = 1.00

$$\frac{(c + dx)^2 \left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{2/n} \operatorname{Ei}\left(-\frac{2 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{n(a + bx)^2(bc - ad)}$$

Antiderivative was successfully verified.

[In] Integrate[(c + d*x)/((a + b*x)^3*Log[e*((a + b*x)/(c + d*x))^n]),x]

[Out] ((e*((a + b*x)/(c + d*x))^n)^(2/n)*(c + d*x)^2*ExpIntegralEi[(-2*Log[e*((a + b*x)/(c + d*x))^n])/n])/((b*c - a*d)*n*(a + b*x)^2)

fricas [A] time = 1.00, size = 66, normalized size = 0.88

$$\frac{e^{\frac{2}{n}} \log_integral\left(\frac{d^2x^2+2cdx+c^2}{(b^2x^2+2abx+a^2)e^{\frac{2}{n}}}\right)}{(bc - ad)n}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*x+c)/(b*x+a)^3/log(e*((b*x+a)/(d*x+c))^n),x, algorithm="fricas")

[Out] e^(2/n)*log_integral((d^2*x^2 + 2*c*d*x + c^2)/((b^2*x^2 + 2*a*b*x + a^2)*e^(2/n)))/((b*c - a*d)*n)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*x+c)/(b*x+a)^3/log(e*((b*x+a)/(d*x+c))^n),x, algorithm="giac")

[Out] Timed out

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int \frac{dx + c}{(bx + a)^3 \ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*x+c)/(b*x+a)^3/ln(e*((b*x+a)/(d*x+c))^n), x)

[Out] int((d*x+c)/(b*x+a)^3/ln(e*((b*x+a)/(d*x+c))^n), x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{dx + c}{(bx + a)^3 \log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*x+c)/(b*x+a)^3/log(e*((b*x+a)/(d*x+c))^n), x, algorithm="maxima")

[Out] integrate((d*x + c)/((b*x + a)^3*log(e*((b*x + a)/(d*x + c))^n)), x)

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{c + dx}{\ln\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) (a + bx)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((c + d*x)/(log(e*((a + b*x)/(c + d*x))^n)*(a + b*x)^3), x)

[Out] int((c + d*x)/(log(e*((a + b*x)/(c + d*x))^n)*(a + b*x)^3), x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*x+c)/(b*x+a)**3/ln(e*((b*x+a)/(d*x+c))**n), x)

[Out] Timed out

$$3.248 \quad \int \frac{(c+dx)^2}{(a+bx)^4 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)} dx$$

Optimal. Leaf size=75

$$\frac{(c+dx)^3 \left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{3/n} \operatorname{Ei}\left(-\frac{3 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{n(a+bx)^3(bc-ad)}$$

[Out] (e*((b*x+a)/(d*x+c))^n)^(3/n)*(d*x+c)^3*Ei(-3*ln(e*((b*x+a)/(d*x+c))^n)/n)/(-a*d+b*c)/n/(b*x+a)^3

Rubi [A] time = 0.07, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.029$, Rules used = {2510}

$$\frac{(c+dx)^3 \left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{3/n} \operatorname{Ei}\left(-\frac{3 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{n(a+bx)^3(bc-ad)}$$

Antiderivative was successfully verified.

[In] Int[(c + d*x)^2/((a + b*x)^4*Log[e*((a + b*x)/(c + d*x))^n]),x]

[Out] ((e*((a + b*x)/(c + d*x))^n)^(3/n)*(c + d*x)^3*ExpIntegralEi[(-3*Log[e*((a + b*x)/(c + d*x))^n])/n])/((b*c - a*d)*n*(a + b*x)^3)

Rule 2510

```
Int[(((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.))/Log[(e_.)*((f_.)
)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))^(r_.)], x_Symbol]
:= Simp[(((a + b*x)^(m + 1)*(c + d*x)^(n + 1)*ExpIntegralEi[((m + 1)*Log[e*(
f*(a + b*x)^p*(c + d*x)^q]^r)]/(p*r)))/(p*r*(b*c - a*d)*(e*(f*(a + b*x)^p*(
c + d*x)^q]^r)^((m + 1)/(p*r))), x] /; FreeQ[{a, b, c, d, e, f, m, n, p, q,
r}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ[m + n + 2, 0] && NeQ[m
, -1]
```

Rubi steps

$$\int \frac{(c+dx)^2}{(a+bx)^4 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)} dx = \frac{\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{3/n} (c+dx)^3 \operatorname{Ei}\left(-\frac{3 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{(bc-ad)n(a+bx)^3}$$

Mathematica [A] time = 0.02, size = 75, normalized size = 1.00

$$\frac{(c+dx)^3 \left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{3/n} \operatorname{Ei}\left(-\frac{3 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{n(a+bx)^3(bc-ad)}$$

Antiderivative was successfully verified.

[In] Integrate[(c + d*x)^2/((a + b*x)^4*Log[e*((a + b*x)/(c + d*x))^n]),x]

[Out] ((e*((a + b*x)/(c + d*x))^n)^(3/n)*(c + d*x)^3*ExpIntegralEi[(-3*Log[e*((a + b*x)/(c + d*x))^n])/n])/((b*c - a*d)*n*(a + b*x)^3)

fricas [A] time = 0.63, size = 88, normalized size = 1.17

$$\frac{e^{\frac{3}{n}} \log_integral\left(\frac{d^3x^3+3cd^2x^2+3c^2dx+c^3}{(b^3x^3+3ab^2x^2+3a^2bx+a^3)e^{\frac{3}{n}}}\right)}{(bc-ad)n}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*x+c)^2/(b*x+a)^4/log(e*((b*x+a)/(d*x+c))^n),x, algorithm="fricas")

[Out] e^(3/n)*log_integral((d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3)/((b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3)*e^(3/n)))/((b*c - a*d)*n)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*x+c)^2/(b*x+a)^4/log(e*((b*x+a)/(d*x+c))^n),x, algorithm="giac")

[Out] Timed out

maple [F] time = 0.44, size = 0, normalized size = 0.00

$$\int \frac{(dx + c)^2}{(bx + a)^4 \ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*x+c)^2/(b*x+a)^4/ln(e*((b*x+a)/(d*x+c))^n), x)

[Out] int((d*x+c)^2/(b*x+a)^4/ln(e*((b*x+a)/(d*x+c))^n), x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(dx + c)^2}{(bx + a)^4 \log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*x+c)^2/(b*x+a)^4/log(e*((b*x+a)/(d*x+c))^n), x, algorithm="maxima")

[Out] integrate((d*x + c)^2/((b*x + a)^4*log(e*((b*x + a)/(d*x + c))^n)), x)

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(c + dx)^2}{\ln\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) (a + bx)^4} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((c + d*x)^2/(log(e*((a + b*x)/(c + d*x))^n)*(a + b*x)^4), x)

[Out] int((c + d*x)^2/(log(e*((a + b*x)/(c + d*x))^n)*(a + b*x)^4), x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*x+c)**2/(b*x+a)**4/ln(e*((b*x+a)/(d*x+c))**n), x)

[Out] Timed out

$$3.249 \quad \int \frac{(A+B \log(e(a+bx)^n(c+dx)^{-n}))^4}{(f+gx)(ah+bhx)} dx$$

Optimal. Leaf size=361

$$\frac{24B^3n^3\text{Li}_4\left(\frac{(bf-ag)(c+dx)}{(df-cg)(a+bx)}\right)\left(B \log(e(a+bx)^n(c+dx)^{-n})+A\right)}{h(bf-ag)} + \frac{12B^2n^2\text{Li}_3\left(\frac{(bf-ag)(c+dx)}{(df-cg)(a+bx)}\right)\left(B \log(e(a+bx)^n(c+dx)^{-n})+A\right)}{h(bf-ag)}$$

[Out] $-(A+B*\ln(e*(b*x+a)^n/((d*x+c)^n)))^4*\ln(1-(-a*g+b*f)*(d*x+c)/(-c*g+d*f)/(b*x+a))/(-a*g+b*f)/h+4*B*n*(A+B*\ln(e*(b*x+a)^n/((d*x+c)^n)))^3*\text{polylog}(2,(-a*g+b*f)*(d*x+c)/(-c*g+d*f)/(b*x+a))/(-a*g+b*f)/h+12*B^2*n^2*(A+B*\ln(e*(b*x+a)^n/((d*x+c)^n)))^2*\text{polylog}(3,(-a*g+b*f)*(d*x+c)/(-c*g+d*f)/(b*x+a))/(-a*g+b*f)/h+24*B^3*n^3*(A+B*\ln(e*(b*x+a)^n/((d*x+c)^n)))*\text{polylog}(4,(-a*g+b*f)*(d*x+c)/(-c*g+d*f)/(b*x+a))/(-a*g+b*f)/h+24*B^4*n^4*\text{polylog}(5,(-a*g+b*f)*(d*x+c)/(-c*g+d*f)/(b*x+a))/(-a*g+b*f)/h$

Rubi [B] time = 1.93, antiderivative size = 1021, normalized size of antiderivative = 2.83, number of steps used = 20, number of rules used = 9, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.209$, Rules used = {6742, 36, 31, 2503, 2502, 2315, 2506, 6610, 2508}

$$\frac{\log(a+bx)A^4}{(bf-ag)h} - \frac{\log(f+gx)A^4}{(bf-ag)h} - \frac{4B \log(e(a+bx)^n(c+dx)^{-n}) \log\left(-\frac{(bc-ad)(f+gx)}{(df-cg)(a+bx)}\right) A^3}{(bf-ag)h} + \frac{4Bn \text{PolyLog}\left(2, \frac{(bc-ad)(f+gx)}{(df-cg)(a+bx)}\right) A^3}{(bf-ag)h}$$

Antiderivative was successfully verified.

[In] Int[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^4/((f + g*x)*(a*h + b*h*x)), x]

[Out] $(A^4*\text{Log}[a + b*x])/((b*f - a*g)*h) - (A^4*\text{Log}[f + g*x])/((b*f - a*g)*h) - (4*A^3*B*\text{Log}[(e*(a + b*x)^n)/(c + d*x)^n]*\text{Log}[-((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x))])/((b*f - a*g)*h) - (6*A^2*B^2*\text{Log}[(e*(a + b*x)^n)/(c + d*x)^n]^2*\text{Log}[-((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x))])/((b*f - a*g)*h) - (4*A*B^3*\text{Log}[(e*(a + b*x)^n)/(c + d*x)^n]^3*\text{Log}[-((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x))])/((b*f - a*g)*h) - (B^4*\text{Log}[(e*(a + b*x)^n)/(c + d*x)^n]^4*\text{Log}[-((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x))])/((b*f - a*g)*h) + (4*A^3*B*n*\text{PolyLog}[2, 1 + ((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x))])/((b*f - a*g)*h) + (12*A^2*B^2*n*\text{Log}[(e*(a + b*x)^n)/(c + d*x)^n]*\text{PolyLog}[2, 1 + ((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x))])/((b*f - a*g)*h) + (12*A*B^3*n*\text{Log}[(e*(a + b*x)^n)/(c + d*x)^n]^2*\text{PolyLog}[2, 1 + ((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x))])/((b*f - a*g)*h) + (4*B^4*n*\text{Log}[(e*(a + b*x)^n)/(c + d*x)^n]^3*\text{PolyLog}[2, 1 + ((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x))])/((b*f - a*g)*h) + (12*A^2*B^2*n^2*\text{PolyLog}[3, 1 + ((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x))])/((b*f - a*g)*h) + (24*A*B^3*n^2*\text{Log}[(e*(a + b*x)^n)/(c + d*x)^n]*\text{PolyLog}[3, 1 + ((b*c - a*d)$

```

*(f + g*x))/((d*f - c*g)*(a + b*x))]/((b*f - a*g)*h) + (12*B^4*n^2*Log[(e*
(a + b*x)^n)/(c + d*x)^n]^2*PolyLog[3, 1 + ((b*c - a*d)*(f + g*x))/((d*f -
c*g)*(a + b*x))])/((b*f - a*g)*h) + (24*A*B^3*n^3*PolyLog[4, 1 + ((b*c - a*
d)*(f + g*x))/((d*f - c*g)*(a + b*x))])/((b*f - a*g)*h) + (24*B^4*n^3*Log[(
e*(a + b*x)^n)/(c + d*x)^n]*PolyLog[4, 1 + ((b*c - a*d)*(f + g*x))/((d*f -
c*g)*(a + b*x))])/((b*f - a*g)*h) + (24*B^4*n^4*PolyLog[5, 1 + ((b*c - a*d)
*(f + g*x))/((d*f - c*g)*(a + b*x))])/((b*f - a*g)*h)

```

Rule 31

```

Int[((a_) + (b_)*(x_))^(n_), x_Symbol] := Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]

```

Rule 36

```

Int[1/(((a_) + (b_)*(x_))*((c_) + (d_)*(x_))), x_Symbol] := Dist[b/(b*c
- a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]

```

Rule 2315

```

Int[Log[(c_)*(x_)]/((d_) + (e_)*(x_)), x_Symbol] := -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]

```

Rule 2502

```

Int[Log[((e_)*((c_) + (d_)*(x_)))/((a_) + (b_)*(x_))]*(u_), x_Symbol]
:= With[{g = Coeff[Simplify[1/(u*(a + b*x))], x, 0], h = Coeff[Simplify[1/(
u*(a + b*x))], x, 1]}, -Dist[(b - d*e)/(h*(b*c - a*d)), Subst[Int[Log[e*x]/
(1 - e*x), x], x, (c + d*x)/(a + b*x)], x] /; EqQ[g*(b - d*e) - h*(a - c*e)
, 0] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b*c - a*d, 0] && LinearQ[Simplify
[1/(u*(a + b*x))], x]

```

Rule 2503

```

Int[Log[(e_)*((f_)*((a_) + (b_)*(x_))^(p_)*((c_) + (d_)*(x_))^(q_))
^(r_)]^(s_)*(u_), x_Symbol] := With[{g = Coeff[Simplify[1/(u*(a + b*x))],
x, 0], h = Coeff[Simplify[1/(u*(a + b*x))], x, 1]}, -Simp[(Log[e*(f*(a +
b*x)^p*(c + d*x)^q]^r]^s*Log[-((b*c - a*d)*(g + h*x))/((d*g - c*h)*(a + b*x
))])/((b*g - a*h), x] + Dist[(p*r*s*(b*c - a*d))/(b*g - a*h), Int[(Log[e*(f
*(a + b*x)^p*(c + d*x)^q]^r)]^(s - 1)*Log[-((b*c - a*d)*(g + h*x))/((d*g -
c*h)*(a + b*x))])/((a + b*x)*(c + d*x)), x], x] /; NeQ[b*g - a*h, 0] && Ne
Q[d*g - c*h, 0] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a
*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0] && LinearQ[Simplify[1/(u*(a + b*x))],
x]

```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] := With[{g = Simplify[((v - 1)*(c + d*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/(b*c - a*d), x] + Dist[h*p*r*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1)/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2508

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))^(r_.)]^(s_.)*(u_)*PolyLog[n_, v_], x_Symbol] := With[{g = Simplify[(v*(c + d*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, Simp[(h*PolyLog[n + 1, v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/(b*c - a*d), x] - Dist[h*p*r*s, Int[(PolyLog[n + 1, v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1)/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x] /; FreeQ[{a, b, c, d, e, f, n, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] := With[{w = DerivativeDivides[v, u*v, x]}, Simp[w*PolyLog[n + 1, v], x] /; !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6742

```
Int[u_, x_Symbol] := With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A + B \log(e(a + bx)^n(c + dx)^{-n}))^4}{(f + gx)(ah + bhx)} dx &= \int \left(\frac{A^4}{h(a + bx)(f + gx)} + \frac{4A^3B \log(e(a + bx)^n(c + dx)^{-n})}{h(a + bx)(f + gx)} + \frac{6A^2B^2 \log^2(e(a + bx)^n(c + dx)^{-n})}{h(a + bx)(f + gx)} \right. \\
&= \frac{A^4 \int \frac{1}{(a+bx)(f+gx)} dx}{h} + \frac{(4A^3B) \int \frac{\log(e(a+bx)^n(c+dx)^{-n})}{(a+bx)(f+gx)} dx}{h} + \frac{(6A^2B^2) \int \frac{\log^2(e(a+bx)^n(c+dx)^{-n})}{(a+bx)(f+gx)} dx}{h} \\
&= -\frac{4A^3B \log(e(a + bx)^n(c + dx)^{-n}) \log\left(-\frac{(bc-ad)(f+gx)}{(df-cg)(a+bx)}\right)}{(bf - ag)h} - \frac{6A^2B^2 \log^2\left(-\frac{(bc-ad)(f+gx)}{(df-cg)(a+bx)}\right)}{(bf - ag)h} \\
&= \frac{A^4 \log(a + bx)}{(bf - ag)h} - \frac{A^4 \log(f + gx)}{(bf - ag)h} - \frac{4A^3B \log(e(a + bx)^n(c + dx)^{-n})}{(bf - ag)h} \\
&= \frac{A^4 \log(a + bx)}{(bf - ag)h} - \frac{A^4 \log(f + gx)}{(bf - ag)h} - \frac{4A^3B \log(e(a + bx)^n(c + dx)^{-n})}{(bf - ag)h} \\
&= \frac{A^4 \log(a + bx)}{(bf - ag)h} - \frac{A^4 \log(f + gx)}{(bf - ag)h} - \frac{4A^3B \log(e(a + bx)^n(c + dx)^{-n})}{(bf - ag)h} \\
&= \frac{A^4 \log(a + bx)}{(bf - ag)h} - \frac{A^4 \log(f + gx)}{(bf - ag)h} - \frac{4A^3B \log(e(a + bx)^n(c + dx)^{-n})}{(bf - ag)h}
\end{aligned}$$

Mathematica [F] time = 4.41, size = 0, normalized size = 0.00

$$\int \frac{(A + B \log(e(a + bx)^n(c + dx)^{-n}))^4}{(f + gx)(ah + bhx)} dx$$

Verification is Not applicable to the result.

[In] Integrate[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^4/((f + g*x)*(a*h + b*h*x)), x]

[Out] Integrate[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^4/((f + g*x)*(a*h + b*h*x)), x]

fricas [F] time = 1.09, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{B^4 \log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right)^4 + 4AB^3 \log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right)^3 + 6A^2B^2 \log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right)^2 + 4A^3B \log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right) + A^4}{bghx^2 + afh + (bf + ag)hx}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^4/(g*x+f)/(b*h*x+a*h),x, algorithm="fricas")
```

```
[Out] integral((B^4*log((b*x + a)^n*e/(d*x + c)^n)^4 + 4*A*B^3*log((b*x + a)^n*e/(d*x + c)^n)^3 + 6*A^2*B^2*log((b*x + a)^n*e/(d*x + c)^n)^2 + 4*A^3*B*log((b*x + a)^n*e/(d*x + c)^n) + A^4)/(b*g*h*x^2 + a*f*h + (b*f + a*g)*h*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(B \log \left(\frac{(bx+a)^n e}{(dx+c)^n} \right) + A \right)^4}{(bhx + ah)(gx + f)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^4/(g*x+f)/(b*h*x+a*h),x, algorithm="giac")
```

```
[Out] integrate((B*log((b*x + a)^n*e/(d*x + c)^n) + A)^4/((b*h*x + a*h)*(g*x + f)), x)
```

maple [F] time = 5.97, size = 0, normalized size = 0.00

$$\int \frac{\left(B \ln \left(e (bx + a)^n (dx + c)^{-n} \right) + A \right)^4}{(gx + f)(bhx + ah)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^4/(g*x+f)/(b*h*x+a*h),x)
```

```
[Out] int((A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^4/(g*x+f)/(b*h*x+a*h),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$A^4 \left(\frac{\log(bx + a)}{(bf - ag)h} - \frac{\log(gx + f)}{(bf - ag)h} \right) + \int \frac{B^4 \log((bx + a)^n)^4 + B^4 \log((dx + c)^n)^4 + B^4 \log(e)^4 + 4AB^3 \log(e)^3 + \dots}{(bf - ag)h} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^4/(g*x+f)/(b*h*x+a*h),x, algorithm="maxima")
```

```
[Out] A^4*(log(b*x + a)/((b*f - a*g)*h) - log(g*x + f)/((b*f - a*g)*h)) + integrate((B^4*log((b*x + a)^n)^4 + B^4*log((d*x + c)^n)^4 + B^4*log(e)^4 + 4*A*B^3*log(e)^3 + \dots), x)
```

$3*\log(e)^3 + 6*A^2*B^2*\log(e)^2 + 4*A^3*B*\log(e) + 4*(B^4*\log(e) + A*B^3)*\log((b*x + a)^n)^3 - 4*(B^4*\log((b*x + a)^n) + B^4*\log(e) + A*B^3)*\log((d*x + c)^n)^3 + 6*(B^4*\log(e)^2 + 2*A*B^3*\log(e) + A^2*B^2)*\log((b*x + a)^n)^2 + 6*(B^4*\log((b*x + a)^n)^2 + B^4*\log(e)^2 + 2*A*B^3*\log(e) + A^2*B^2 + 2*(B^4*\log(e) + A*B^3)*\log((b*x + a)^n))*\log((d*x + c)^n)^2 + 4*(B^4*\log(e)^3 + 3*A*B^3*\log(e)^2 + 3*A^2*B^2*\log(e) + A^3*B)*\log((b*x + a)^n) - 4*(B^4*\log((b*x + a)^n)^3 + B^4*\log(e)^3 + 3*A*B^3*\log(e)^2 + 3*A^2*B^2*\log(e) + A^3*B + 3*(B^4*\log(e) + A*B^3)*\log((b*x + a)^n)^2 + 3*(B^4*\log(e)^2 + 2*A*B^3*\log(e) + A^2*B^2)*\log((b*x + a)^n))*\log((d*x + c)^n))/(b*g*h*x^2 + a*f*h + (b*f*h + a*g*h)*x), x$

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(A + B \ln\left(\frac{e^{(a+bx)^n}}{(c+dx)^n}\right)\right)^4}{(f+gx)(ah+bhx)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^4/((f + g*x)*(a*h + b*h*x)),x)

[Out] int((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^4/((f + g*x)*(a*h + b*h*x)), x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*ln(e*(b*x+a)**n/((d*x+c)**n)))**4/(g*x+f)/(b*h*x+a*h),x)

[Out] Timed out

$$3.250 \quad \int \frac{(A+B \log(e(a+bx)^n(c+dx)^{-n}))^3}{(f+gx)(ah+bhx)} dx$$

Optimal. Leaf size=282

$$\frac{6B^2n^2\text{Li}_3\left(\frac{(bf-ag)(c+dx)}{(df-cg)(a+bx)}\right)\left(B \log(e(a+bx)^n(c+dx)^{-n})+A\right)}{h(bf-ag)} + \frac{3Bn\text{Li}_2\left(\frac{(bf-ag)(c+dx)}{(df-cg)(a+bx)}\right)\left(B \log(e(a+bx)^n(c+dx)^{-n})\right)}{h(bf-ag)}$$

[Out] $-(A+B*\ln(e*(b*x+a)^n/((d*x+c)^n)))^3*\ln(1-(-a*g+b*f)*(d*x+c)/(-c*g+d*f)/(b*x+a))/(-a*g+b*f)/h+3*B*n*(A+B*\ln(e*(b*x+a)^n/((d*x+c)^n)))^2*\text{polylog}(2,(-a*g+b*f)*(d*x+c)/(-c*g+d*f)/(b*x+a))/(-a*g+b*f)/h+6*B^2*n^2*(A+B*\ln(e*(b*x+a)^n/((d*x+c)^n)))*\text{polylog}(3,(-a*g+b*f)*(d*x+c)/(-c*g+d*f)/(b*x+a))/(-a*g+b*f)/h+6*B^3*n^3*\text{polylog}(4,(-a*g+b*f)*(d*x+c)/(-c*g+d*f)/(b*x+a))/(-a*g+b*f)/h$

Rubi [B] time = 1.21, antiderivative size = 656, normalized size of antiderivative = 2.33, number of steps used = 15, number of rules used = 9, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.209$, Rules used = {6742, 36, 31, 2503, 2502, 2315, 2506, 6610, 2508}

$$\frac{3A^2Bn\text{PolyLog}\left(2, \frac{(f+gx)(bc-ad)}{(a+bx)(df-cg)} + 1\right)}{h(bf-ag)} + \frac{6AB^2n \log(e(a+bx)^n(c+dx)^{-n})\text{PolyLog}\left(2, \frac{(f+gx)(bc-ad)}{(a+bx)(df-cg)} + 1\right)}{h(bf-ag)} + \frac{6AB^2n^2}{h(bf-ag)}$$

Antiderivative was successfully verified.

[In] Int[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^3/((f + g*x)*(a*h + b*h*x)), x]

[Out] $(A^3*\text{Log}[a + b*x])/((b*f - a*g)*h) - (A^3*\text{Log}[f + g*x])/((b*f - a*g)*h) - (3*A^2*B*\text{Log}[(e*(a + b*x)^n)/(c + d*x)^n]*\text{Log}[-(((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x)))])/((b*f - a*g)*h) - (3*A*B^2*\text{Log}[(e*(a + b*x)^n)/(c + d*x)^n]^2*\text{Log}[-(((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x)))])/((b*f - a*g)*h) - (B^3*\text{Log}[(e*(a + b*x)^n)/(c + d*x)^n]^3*\text{Log}[-(((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x)))])/((b*f - a*g)*h) + (3*A^2*B*n*\text{PolyLog}[2, 1 + ((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x))])/((b*f - a*g)*h) + (6*A*B^2*n*\text{Log}[(e*(a + b*x)^n)/(c + d*x)^n]*\text{PolyLog}[2, 1 + ((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x))])/((b*f - a*g)*h) + (3*B^3*n*\text{Log}[(e*(a + b*x)^n)/(c + d*x)^n]^2*\text{PolyLog}[2, 1 + ((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x))])/((b*f - a*g)*h) + (6*A*B^2*n^2*\text{PolyLog}[3, 1 + ((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x))])/((b*f - a*g)*h) + (6*B^3*n^2*\text{Log}[(e*(a + b*x)^n)/(c + d*x)^n]*\text{PolyLog}[3, 1 + ((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x))])/((b*f - a*g)*h) + (6*B^3*n^3*\text{PolyLog}[4, 1 + ((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x))])/((b*f - a*g)*h)$

Rule 31

```
Int[((a_) + (b_)*(x_))(-1), x_Symbol] := Simp[Log[RemoveContent[a + b*x, x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_) + (b_)*(x_))*((c_) + (d_)*(x_))), x_Symbol] := Dist[b/(b*c - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 2315

```
Int[Log[(c_)*(x_)]/((d_) + (e_)*(x_)), x_Symbol] := -Simp[PolyLog[2, 1 - c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2502

```
Int[Log[((e_)*((c_) + (d_)*(x_)))/((a_) + (b_)*(x_))]*(u_), x_Symbol] := With[{g = Coeff[Simplify[1/(u*(a + b*x))], x, 0], h = Coeff[Simplify[1/(u*(a + b*x))], x, 1]}, -Dist[(b - d*e)/(h*(b*c - a*d)), Subst[Int[Log[e*x]/(1 - e*x), x], x, (c + d*x)/(a + b*x)], x] /; EqQ[g*(b - d*e) - h*(a - c*e), 0] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b*c - a*d, 0] && LinearQ[Simplify[1/(u*(a + b*x))], x]
```

Rule 2503

```
Int[Log[(e_)*((f_)*((a_) + (b_)*(x_))(p_)*((c_) + (d_)*(x_))(q_))(r_)](s_)*(u_), x_Symbol] := With[{g = Coeff[Simplify[1/(u*(a + b*x))], x, 0], h = Coeff[Simplify[1/(u*(a + b*x))], x, 1]}, -Simp[(Log[e*(f*(a + b*x)p*(c + d*x)q]r]s*Log[-((b*c - a*d)*(g + h*x))/((d*g - c*h)*(a + b*x))])]/(b*g - a*h), x] + Dist[(p*r*s*(b*c - a*d))/(b*g - a*h), Int[(Log[e*(f*(a + b*x)p*(c + d*x)q]r](s - 1)*Log[-((b*c - a*d)*(g + h*x))/((d*g - c*h)*(a + b*x))])]/((a + b*x)*(c + d*x)), x], x] /; NeQ[b*g - a*h, 0] && NeQ[d*g - c*h, 0] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0] && LinearQ[Simplify[1/(u*(a + b*x))], x]
```

Rule 2506

```
Int[Log[v_*Log[(e_)*((f_)*((a_) + (b_)*(x_))(p_)*((c_) + (d_)*(x_))(q_))(r_)](s_)*(u_), x_Symbol] := With[{g = Simplify[(v - 1)*(c + d*x)/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)p*(c + d*x)q]r]s)/(b*c - a*d), x] + Dist[h*p*r*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)p*(c + d*x)q]r](s - 1)]/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x] /; FreeQ[{a, b, c, d, e, f
```

, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]

Rule 2508

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*(u_)*PolyLog[n_, v_], x_Symbol] := With[{g = Simplify[(v*(c +
d*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, Simp[(h*PolyLog[n
+ 1, v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/(b*c - a*d), x] - Dist[h*p*
r*s, Int[(PolyLog[n + 1, v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1))/(
(a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x] /; FreeQ[{a, b, c, d, e,
f, n, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] := With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /; !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6742

```
Int[u_, x_Symbol] := With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A + B \log(e(a + bx)^n(c + dx)^{-n}))^3}{(f + gx)(ah + bhx)} dx &= \int \left(\frac{A^3}{h(a + bx)(f + gx)} + \frac{3A^2B \log(e(a + bx)^n(c + dx)^{-n})}{h(a + bx)(f + gx)} + \frac{3AB^2 \log^2(e(a + bx)^n(c + dx)^{-n})}{h(a + bx)(f + gx)} \right) dx \\
&= \frac{A^3 \int \frac{1}{(a+bx)(f+gx)} dx}{h} + \frac{(3A^2B) \int \frac{\log(e(a+bx)^n(c+dx)^{-n})}{(a+bx)(f+gx)} dx}{h} + \frac{(3AB^2) \int \frac{\log^2(e(a+bx)^n(c+dx)^{-n})}{(a+bx)(f+gx)} dx}{h} \\
&= -\frac{3A^2B \log(e(a + bx)^n(c + dx)^{-n}) \log\left(-\frac{(bc-ad)(f+gx)}{(df-cg)(a+bx)}\right)}{(bf - ag)h} - \frac{3AB^2 \log^2\left(-\frac{(bc-ad)(f+gx)}{(df-cg)(a+bx)}\right)}{(bf - ag)h} \\
&= \frac{A^3 \log(a + bx)}{(bf - ag)h} - \frac{A^3 \log(f + gx)}{(bf - ag)h} - \frac{3A^2B \log(e(a + bx)^n(c + dx)^{-n})}{(bf - ag)h} \\
&= \frac{A^3 \log(a + bx)}{(bf - ag)h} - \frac{A^3 \log(f + gx)}{(bf - ag)h} - \frac{3A^2B \log(e(a + bx)^n(c + dx)^{-n})}{(bf - ag)h} \\
&= \frac{A^3 \log(a + bx)}{(bf - ag)h} - \frac{A^3 \log(f + gx)}{(bf - ag)h} - \frac{3A^2B \log(e(a + bx)^n(c + dx)^{-n})}{(bf - ag)h}
\end{aligned}$$

Mathematica [F] time = 3.23, size = 0, normalized size = 0.00

$$\int \frac{(A + B \log(e(a + bx)^n(c + dx)^{-n}))^3}{(f + gx)(ah + bhx)} dx$$

Verification is Not applicable to the result.

[In] Integrate[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^3/((f + g*x)*(a*h + b*h*x)), x]

[Out] Integrate[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^3/((f + g*x)*(a*h + b*h*x)), x]

fricas [F] time = 1.03, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{B^3 \log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right)^3 + 3AB^2 \log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right)^2 + 3A^2B \log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right) + A^3}{bghx^2 + afh + (bf + ag)hx}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^3/(g*x+f)/(b*h*x+a*h),x, algorithm="fricas")

[Out] integral((B^3*log((b*x + a)^n*e/(d*x + c)^n)^3 + 3*A*B^2*log((b*x + a)^n*e/(d*x + c)^n)^2 + 3*A^2*B*log((b*x + a)^n*e/(d*x + c)^n) + A^3)/(b*g*h*x^2 + a*f*h + (b*f + a*g)*h*x), x)

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(B \log \left(\frac{(bx+a)^n e}{(dx+c)^n} \right) + A \right)^3}{(bhx + ah)(gx + f)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^3/(g*x+f)/(b*h*x+a*h),x, algorithm="giac")

[Out] integrate((B*log((b*x + a)^n*e/(d*x + c)^n) + A)^3/((b*h*x + a*h)*(g*x + f)), x)

maple [F] time = 3.19, size = 0, normalized size = 0.00

$$\int \frac{\left(B \ln \left(e (bx + a)^n (dx + c)^{-n} \right) + A \right)^3}{(gx + f)(bhx + ah)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^3/(g*x+f)/(b*h*x+a*h),x)

[Out] int((A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^3/(g*x+f)/(b*h*x+a*h),x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$A^3 \left(\frac{\log(bx + a)}{(bf - ag)h} - \frac{\log(gx + f)}{(bf - ag)h} \right) - \int \frac{B^3 \log((bx + a)^n)^3 - B^3 \log((dx + c)^n)^3 + B^3 \log(e)^3 + 3AB^2 \log(e)^2 + \dots}{(bf - ag)h} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^3/(g*x+f)/(b*h*x+a*h),x, algorithm="maxima")

[Out] A^3*(log(b*x + a)/((b*f - a*g)*h) - log(g*x + f)/((b*f - a*g)*h)) - integrate(-(B^3*log((b*x + a)^n)^3 - B^3*log((d*x + c)^n)^3 + B^3*log(e)^3 + 3*A*B^2*log(e)^2 + 3*A^2*B*log(e) + 3*(B^3*log(e) + A*B^2)*log((b*x + a)^n)^2 + \dots)

$3*(B^3*\log((b*x + a)^n) + B^3*\log(e) + A*B^2)*\log((d*x + c)^n)^2 + 3*(B^3*\log(e)^2 + 2*A*B^2*\log(e) + A^2*B)*\log((b*x + a)^n) - 3*(B^3*\log((b*x + a)^n)^2 + B^3*\log(e)^2 + 2*A*B^2*\log(e) + A^2*B + 2*(B^3*\log(e) + A*B^2)*\log((b*x + a)^n))*\log((d*x + c)^n)/(b*g*h*x^2 + a*f*h + (b*f*h + a*g*h)*x), x$

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(A + B \ln\left(\frac{e^{(a+bx)^n}}{(c+dx)^n}\right)\right)^3}{(f+gx)(ah+bhx)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^3/((f + g*x)*(a*h + b*h*x)),x)

[Out] int((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^3/((f + g*x)*(a*h + b*h*x)), x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*ln(e*(b*x+a)**n/((d*x+c)**n)))**3/(g*x+f)/(b*h*x+a*h),x)

[Out] Timed out

$$3.251 \quad \int \frac{(A+B \log(e(a+bx)^n(c+dx)^{-n}))^2}{(f+gx)(ah+bhx)} dx$$

Optimal. Leaf size=203

$$\frac{2Bn \operatorname{Li}_2\left(\frac{(bf-ag)(c+dx)}{(df-cg)(a+bx)}\right) \left(B \log(e(a+bx)^n(c+dx)^{-n}) + A\right) \log\left(1 - \frac{(c+dx)(bf-ag)}{(a+bx)(df-cg)}\right) \left(B \log(e(a+bx)^n(c+dx)^{-n}) + A\right)}{h(bf-ag) \quad h(bf-ag)}$$

[Out] $-(A+B \ln(e*(b*x+a)^n/((d*x+c)^n)))^2 * \ln(1 - (-a*g+b*f)*(d*x+c)/(-c*g+d*f)/(b*x+a))/(-a*g+b*f)/h + 2*B*n*(A+B \ln(e*(b*x+a)^n/((d*x+c)^n))) * \operatorname{polylog}(2, (-a*g+b*f)*(d*x+c)/(-c*g+d*f)/(b*x+a))/(-a*g+b*f)/h + 2*B^2*n^2 * \operatorname{polylog}(3, (-a*g+b*f)*(d*x+c)/(-c*g+d*f)/(b*x+a))/(-a*g+b*f)/h$

Rubi [A] time = 0.76, antiderivative size = 371, normalized size of antiderivative = 1.83, number of steps used = 11, number of rules used = 8, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.186$, Rules used = {6742, 36, 31, 2503, 2502, 2315, 2506, 6610}

$$\frac{2ABn \operatorname{PolyLog}\left(2, \frac{(f+gx)(bc-ad)}{(a+bx)(df-cg)} + 1\right)}{h(bf-ag)} + \frac{2B^2n \log(e(a+bx)^n(c+dx)^{-n}) \operatorname{PolyLog}\left(2, \frac{(f+gx)(bc-ad)}{(a+bx)(df-cg)} + 1\right)}{h(bf-ag)} + \frac{2B^2n^2 \operatorname{PolyLog}\left(3, \frac{(f+gx)(bc-ad)}{(a+bx)(df-cg)} + 1\right)}{h(bf-ag)}$$

Antiderivative was successfully verified.

[In] $\operatorname{Int}[(A + B \operatorname{Log}[(e*(a + b*x)^n]/(c + d*x)^n])^2 / ((f + g*x)*(a*h + b*h*x)), x]$

[Out] $(A^2 * \operatorname{Log}[a + b*x]) / ((b*f - a*g)*h) - (A^2 * \operatorname{Log}[f + g*x]) / ((b*f - a*g)*h) - (2*A*B * \operatorname{Log}[(e*(a + b*x)^n]/(c + d*x)^n] * \operatorname{Log}[-(((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x)))] / ((b*f - a*g)*h) - (B^2 * \operatorname{Log}[(e*(a + b*x)^n]/(c + d*x)^n])^2 * \operatorname{Log}[-(((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x)))] / ((b*f - a*g)*h) + (2*A*B*n * \operatorname{PolyLog}[2, 1 + ((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x))] / ((b*f - a*g)*h) + (2*B^2*n * \operatorname{Log}[(e*(a + b*x)^n]/(c + d*x)^n] * \operatorname{PolyLog}[2, 1 + ((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x))] / ((b*f - a*g)*h) + (2*B^2*n^2 * \operatorname{PolyLog}[3, 1 + ((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x))] / ((b*f - a*g)*h)$

Rule 31

$\operatorname{Int}[(a + (b_*)*(x_))^{-1}, x_Symbol] \rightarrow \operatorname{Simp}[\operatorname{Log}[\operatorname{RemoveContent}[a + b*x, x]]/b, x] /; \operatorname{FreeQ}\{a, b\}, x]$

Rule 36

$\operatorname{Int}[1/(((a_*) + (b_*)*(x_))*((c_*) + (d_*)*(x_))), x_Symbol] \rightarrow \operatorname{Dist}[b/(b*c - a*d), \operatorname{Int}[1/(a + b*x), x], x] - \operatorname{Dist}[d/(b*c - a*d), \operatorname{Int}[1/(c + d*x), x], x]$

$x] /; \text{FreeQ}[\{a, b, c, d\}, x] \ \&\& \ \text{NeQ}[b*c - a*d, 0]$

Rule 2315

$\text{Int}[\text{Log}[(c_.)*(x_)]/((d_.) + (e_.)*(x_)), x_Symbol] \text{ :> } -\text{Simp}[\text{PolyLog}[2, 1 - c*x]/e, x] /; \text{FreeQ}[\{c, d, e\}, x] \ \&\& \ \text{EqQ}[e + c*d, 0]$

Rule 2502

$\text{Int}[\text{Log}[(e_.)*((c_.) + (d_.)*(x_))]/((a_.) + (b_.)*(x_))* (u_), x_Symbol] \text{ :> } \text{With}[\{g = \text{Coeff}[\text{Simplify}[1/(u*(a + b*x))], x, 0], h = \text{Coeff}[\text{Simplify}[1/(u*(a + b*x))], x, 1]\}, -\text{Dist}[(b - d*e)/(h*(b*c - a*d)), \text{Subst}[\text{Int}[\text{Log}[e*x]/(1 - e*x), x], x, (c + d*x)/(a + b*x)], x] /; \text{EqQ}[g*(b - d*e) - h*(a - c*e), 0] /; \text{FreeQ}[\{a, b, c, d, e\}, x] \ \&\& \ \text{NeQ}[b*c - a*d, 0] \ \&\& \ \text{LinearQ}[\text{Simplify}[1/(u*(a + b*x))], x]$

Rule 2503

$\text{Int}[\text{Log}[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^{(p_.)}*((c_.) + (d_.)*(x_))^{(q_.)})^{(r_.)})^{(s_.)}*(u_), x_Symbol] \text{ :> } \text{With}[\{g = \text{Coeff}[\text{Simplify}[1/(u*(a + b*x))], x, 0], h = \text{Coeff}[\text{Simplify}[1/(u*(a + b*x))], x, 1]\}, -\text{Simp}[(\text{Log}[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s * \text{Log}[-((b*c - a*d)*(g + h*x))/((d*g - c*h)*(a + b*x))])]/(b*g - a*h), x] + \text{Dist}[(p*r*s*(b*c - a*d))/(b*g - a*h), \text{Int}[(\text{Log}[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1) * \text{Log}[-((b*c - a*d)*(g + h*x))/((d*g - c*h)*(a + b*x))])]/((a + b*x)*(c + d*x)), x], x] /; \text{NeQ}[b*g - a*h, 0] \ \&\& \ \text{NeQ}[d*g - c*h, 0] /; \text{FreeQ}[\{a, b, c, d, e, f, p, q, r, s\}, x] \ \&\& \ \text{NeQ}[b*c - a*d, 0] \ \&\& \ \text{IGtQ}[s, 0] \ \&\& \ \text{EqQ}[p + q, 0] \ \&\& \ \text{LinearQ}[\text{Simplify}[1/(u*(a + b*x))], x]$

Rule 2506

$\text{Int}[\text{Log}[v_]*\text{Log}[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^{(p_.)}*((c_.) + (d_.)*(x_))^{(q_.)})^{(r_.)})^{(s_.)}*(u_), x_Symbol] \text{ :> } \text{With}[\{g = \text{Simplify}[(v - 1)*(c + d*x)/(a + b*x)], h = \text{Simplify}[u*(a + b*x)*(c + d*x)]\}, -\text{Simp}[(h*\text{PolyLog}[2, 1 - v]*\text{Log}[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/(b*c - a*d), x] + \text{Dist}[h*p*r*s, \text{Int}[(\text{PolyLog}[2, 1 - v]*\text{Log}[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1)]/((a + b*x)*(c + d*x)), x], x] /; \text{FreeQ}[\{g, h\}, x] /; \text{FreeQ}[\{a, b, c, d, e, f, p, q, r, s\}, x] \ \&\& \ \text{NeQ}[b*c - a*d, 0] \ \&\& \ \text{IGtQ}[s, 0] \ \&\& \ \text{EqQ}[p + q, 0]$

Rule 6610

$\text{Int}[(u_)*\text{PolyLog}[n_., v_], x_Symbol] \text{ :> } \text{With}[\{w = \text{DerivativeDivides}[v, u*v, x]\}, \text{Simp}[w*\text{PolyLog}[n + 1, v], x] /; \text{!FalseQ}[w] /; \text{FreeQ}[n, x]$

Rule 6742

Int[u_, x_Symbol] := With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]]

Rubi steps

$$\begin{aligned}
 \int \frac{(A + B \log(e(a + bx)^n(c + dx)^{-n}))^2}{(f + gx)(ah + bhx)} dx &= \int \left(\frac{A^2}{h(a + bx)(f + gx)} + \frac{2AB \log(e(a + bx)^n(c + dx)^{-n})}{h(a + bx)(f + gx)} + \frac{B^2 \log^2(e(a + bx)^n(c + dx)^{-n})}{h(a + bx)(f + gx)} \right) dx \\
 &= \frac{A^2 \int \frac{1}{(a + bx)(f + gx)} dx}{h} + \frac{(2AB) \int \frac{\log(e(a + bx)^n(c + dx)^{-n})}{(a + bx)(f + gx)} dx}{h} + \frac{B^2 \int \frac{\log^2(e(a + bx)^n(c + dx)^{-n})}{(a + bx)(f + gx)} dx}{h} \\
 &= -\frac{2AB \log(e(a + bx)^n(c + dx)^{-n}) \log\left(-\frac{(bc - ad)(f + gx)}{(df - cg)(a + bx)}\right)}{(bf - ag)h} - \frac{B^2 \log^2(e(a + bx)^n(c + dx)^{-n})}{(bf - ag)h} \\
 &= \frac{A^2 \log(a + bx)}{(bf - ag)h} - \frac{A^2 \log(f + gx)}{(bf - ag)h} - \frac{2AB \log(e(a + bx)^n(c + dx)^{-n})}{(bf - ag)h} \\
 &= \frac{A^2 \log(a + bx)}{(bf - ag)h} - \frac{A^2 \log(f + gx)}{(bf - ag)h} - \frac{2AB \log(e(a + bx)^n(c + dx)^{-n})}{(bf - ag)h}
 \end{aligned}$$

Mathematica [B] time = 1.05, size = 1415, normalized size = 6.97

result too large to display

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^2/((f + g*x)*(a*h + b*h*x)), x]

[Out] (3*Log[a + b*x]*(A + B*(-(n*Log[a + b*x]) + n*Log[c + d*x] + Log[(e*(a + b*x)^n)/(c + d*x)^n]))^2 - 3*(A + B*(-(n*Log[a + b*x]) + n*Log[c + d*x] + Log[(e*(a + b*x)^n)/(c + d*x)^n]))^2*Log[f + g*x] + 3*B*n*(A + B*(-(n*Log[a + b*x]) + n*Log[c + d*x] + Log[(e*(a + b*x)^n)/(c + d*x)^n]))*(Log[a + b*x]^2 - 2*(Log[a + b*x]*Log[(b*(f + g*x))/(b*f - a*g]) + PolyLog[2, (g*(a + b*x))/(-(b*f) + a*g)])) - 6*A*B*n*(Log[c + d*x]*(Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[(d*(f + g*x))/(d*f - c*g)]) + PolyLog[2, (b*(c + d*x))/(b*c - a*d)]) - PolyLog[2, (g*(c + d*x))/(-(d*f) + c*g)]) + 6*B^2*n*(n*Log[a + b*x] - n*Log[c + d*x] - Log[(e*(a + b*x)^n)/(c + d*x)^n])*(Log[c + d*x]*(Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[(d*(f + g*x))/(d*f - c*g)]) + PolyLog[2, (b*(c + d*x))/(b*c - a*d)]) - PolyLog[2, (g*(c + d*x))/(-(d*f) + c*g)])

$$\begin{aligned}
& + b*x))/(-(b*c) + a*d)] - \text{Log}[(d*(f + g*x))/(d*f - c*g)] + \text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)] - \text{PolyLog}[2, (g*(c + d*x))/(-(d*f) + c*g)] + B^2*n \\
& ^2*(\text{Log}[a + b*x]^2*(\text{Log}[a + b*x] - 3*\text{Log}[(b*(f + g*x))/(b*f - a*g)]) - 6*\text{Log}[a + b*x]*\text{PolyLog}[2, (g*(a + b*x))/(-(b*f) + a*g)] + 6*\text{PolyLog}[3, (g*(a + \\
& b*x))/(-(b*f) + a*g)] + 3*B^2*n^2*(\text{Log}[(d*(a + b*x))/(-(b*c) + a*d)]*\text{Log}[c + d*x]^2 - \text{Log}[c + d*x]^2*\text{Log}[(d*(f + g*x))/(d*f - c*g)] + 2*\text{Log}[c + d*x]* \\
& \text{PolyLog}[2, (b*(c + d*x))/(b*c - a*d)] - 2*\text{Log}[c + d*x]*\text{PolyLog}[2, (g*(c + d*x))/(-(d*f) + c*g)] - 2*\text{PolyLog}[3, (b*(c + d*x))/(b*c - a*d)] + 2*\text{PolyLog}[\\
& 3, (g*(c + d*x))/(-(d*f) + c*g)] - 6*B^2*n^2*((\text{Log}[a + b*x]^2*(\text{Log}[c + d*x] - \text{Log}[(b*(c + d*x))/(b*c - a*d)]))/2 - \text{Log}[a + b*x]*\text{Log}[c + d*x]*\text{Log}[(b*(f + g*x))/(b*f - a*g)] - (\text{Log}[(g*(c + d*x))/(-(d*f) + c*g)]*(-2*\text{Log}[a + b*x] \\
& + \text{Log}[(g*(c + d*x))/(-(d*f) + c*g)]*(\text{Log}[(b*(f + g*x))/(b*f - a*g)] - \text{Log}[(d*(f + g*x))/(d*f - c*g)]))/2 + \text{Log}[(g*(c + d*x))/(-(d*f) + c*g)]*\text{Log}[(\\
& b*f - a*g)*(c + d*x))/((d*f - c*g)*(a + b*x))]*(\text{Log}[(b*(f + g*x))/(b*f - a*g)] - \text{Log}[(d*(f + g*x))/(d*f - c*g)] - (\text{Log}[(b*f - a*g)*(c + d*x))/((d*f - \\
& c*g)*(a + b*x))]^2*(\text{Log}[(-(b*c) + a*d)/(d*(a + b*x))] + \text{Log}[(b*(f + g*x))/(b*f - a*g)] - \text{Log}[(-(b*c) + a*d)*(f + g*x))/((d*f - c*g)*(a + b*x))])/2 \\
& - \text{Log}[a + b*x]*\text{PolyLog}[2, (d*(a + b*x))/(-(b*c) + a*d)] - (\text{Log}[c + d*x] - \text{Log}[(b*f - a*g)*(c + d*x))/((d*f - c*g)*(a + b*x))]*\text{PolyLog}[2, (g*(a + b*x))/(-(b*f) + a*g)] - (\text{Log}[a + b*x] + \text{Log}[(b*f - a*g)*(c + d*x))/((d*f - c \\
& *g)*(a + b*x)))*\text{PolyLog}[2, (g*(c + d*x))/(-(d*f) + c*g)] - \text{Log}[(b*f - a*g)*(c + d*x))/((d*f - c*g)*(a + b*x))]*(\text{PolyLog}[2, (b*(c + d*x))/(d*(a + b*x))] - \text{PolyLog}[2, ((b*f - a*g)*(c + d*x))/((d*f - c*g)*(a + b*x))]) + \text{PolyLo \\
& g}[3, (d*(a + b*x))/(-(b*c) + a*d)] + \text{PolyLog}[3, (g*(a + b*x))/(-(b*f) + a*g)] + \text{PolyLog}[3, (g*(c + d*x))/(-(d*f) + c*g)] + \text{PolyLog}[3, (b*(c + d*x))/(d \\
& *(a + b*x))] - \text{PolyLog}[3, ((b*f - a*g)*(c + d*x))/((d*f - c*g)*(a + b*x))])/(3*(b*f - a*g)*h)
\end{aligned}$$

fricas [F] time = 1.04, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{B^2 \log \left(\frac{(bx+a)^n e}{(dx+c)^n} \right)^2 + 2AB \log \left(\frac{(bx+a)^n e}{(dx+c)^n} \right) + A^2}{bghx^2 + afh + (bf + ag)hx}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^2/(g*x+f)/(b*h*x+a*h),x, algorith="fricas")

[Out] integral((B^2*log((b*x + a)^n*e/(d*x + c)^n)^2 + 2*A*B*log((b*x + a)^n*e/(d*x + c)^n) + A^2)/(b*g*h*x^2 + a*f*h + (b*f + a*g)*h*x), x)

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(B \log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right) + A\right)^2}{(bhx+ah)(gx+f)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^2/(g*x+f)/(b*h*x+a*h),x, algorithm="giac")

[Out] integrate((B*log((b*x + a)^n*e/(d*x + c)^n) + A)^2/((b*h*x + a*h)*(g*x + f)), x)

maple [F] time = 3.17, size = 0, normalized size = 0.00

$$\int \frac{\left(B \ln\left(e (bx + a)^n (dx + c)^{-n}\right) + A\right)^2}{(gx + f)(bhx + ah)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^2/(g*x+f)/(b*h*x+a*h),x)

[Out] int((A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^2/(g*x+f)/(b*h*x+a*h),x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$A^2 \left(\frac{\log(bx+a)}{(bf-ag)h} - \frac{\log(gx+f)}{(bf-ag)h} \right) + \int \frac{B^2 \log((bx+a)^n)^2 + B^2 \log((dx+c)^n)^2 + B^2 \log(e)^2 + 2AB \log(e) + 2}{bghx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^2/(g*x+f)/(b*h*x+a*h),x, algorithm="maxima")

[Out] A^2*(log(b*x + a)/((b*f - a*g)*h) - log(g*x + f)/((b*f - a*g)*h)) + integrate((B^2*log((b*x + a)^n)^2 + B^2*log((d*x + c)^n)^2 + B^2*log(e)^2 + 2*A*B*log(e) + 2*(B^2*log(e) + A*B)*log((b*x + a)^n) - 2*(B^2*log((b*x + a)^n) + B^2*log(e) + A*B)*log((d*x + c)^n))/(b*g*h*x^2 + a*f*h + (b*f*h + a*g*h)*x), x)

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(A + B \ln\left(\frac{e(a+bx)^n}{(c+dx)^n}\right)\right)^2}{(f+gx)(ah+bhx)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^2/((f + g*x)*(a*h + b*h*x)),x)
```

```
[Out] int((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^2/((f + g*x)*(a*h + b*h*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)**n/((d*x+c)**n)))**2/(g*x+f)/(b*h*x+a*h),x)
```

```
[Out] Timed out
```

$$3.252 \quad \int \frac{A+B \log(e(a+bx)^n(c+dx)^{-n})}{(f+gx)(ah+bhx)} dx$$

Optimal. Leaf size=123

$$\frac{Bn\text{Li}_2\left(\frac{(bf-ag)(c+dx)}{(df-cg)(a+bx)}\right)}{h(bf-ag)} - \frac{\log\left(1 - \frac{(c+dx)(bf-ag)}{(a+bx)(df-cg)}\right) \left(B \log(e(a+bx)^n(c+dx)^{-n}) + A\right)}{h(bf-ag)}$$

[Out] $-(A+B*\ln(e*(b*x+a)^n/((d*x+c)^n)))*\ln(1-(-a*g+b*f)*(d*x+c)/(-c*g+d*f)/(b*x+a))/(-a*g+b*f)/h+B*n*\text{polylog}(2,(-a*g+b*f)*(d*x+c)/(-c*g+d*f)/(b*x+a))/(-a*g+b*f)/h$

Rubi [A] time = 0.37, antiderivative size = 163, normalized size of antiderivative = 1.33, number of steps used = 8, number of rules used = 6, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}} = 0.146$, Rules used = {6742, 36, 31, 2503, 2502, 2315}

$$\frac{Bn\text{PolyLog}\left(2, \frac{(f+gx)(bc-ad)}{(a+bx)(df-cg)} + 1\right)}{h(bf-ag)} + \frac{A \log(a+bx)}{h(bf-ag)} - \frac{A \log(f+gx)}{h(bf-ag)} - \frac{B \log(e(a+bx)^n(c+dx)^{-n}) \log\left(-\frac{(f+gx)(bc-ad)}{(a+bx)(df-cg)}\right)}{h(bf-ag)}$$

Antiderivative was successfully verified.

[In] $\text{Int}[(A + B*\text{Log}[(e*(a + b*x)^n]/(c + d*x)^n])/((f + g*x)*(a*h + b*h*x)), x]$

[Out] $(A*\text{Log}[a + b*x])/((b*f - a*g)*h) - (A*\text{Log}[f + g*x])/((b*f - a*g)*h) - (B*\text{Log}[(e*(a + b*x)^n]/(c + d*x)^n]*\text{Log}[-(((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x)))])/((b*f - a*g)*h) + (B*n*\text{PolyLog}[2, 1 + ((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x))])/((b*f - a*g)*h)$

Rule 31

$\text{Int}[(a_ + (b_)*(x_))^{-1}, x_Symbol] \rightarrow \text{Simp}[\text{Log}[\text{RemoveContent}[a + b*x, x]]/b, x] \text{ ; FreeQ}\{a, b\}, x]$

Rule 36

$\text{Int}[1/(((a_) + (b_)*(x_))*((c_) + (d_)*(x_))), x_Symbol] \rightarrow \text{Dist}[b/(b*c - a*d), \text{Int}[1/(a + b*x), x], x] - \text{Dist}[d/(b*c - a*d), \text{Int}[1/(c + d*x), x], x] \text{ ; FreeQ}\{a, b, c, d\}, x \ \&\& \ \text{NeQ}[b*c - a*d, 0]$

Rule 2315

$\text{Int}[\text{Log}[(c_)*(x_)]/((d_) + (e_)*(x_)), x_Symbol] \rightarrow -\text{Simp}[\text{PolyLog}[2, 1 - c*x]/e, x] \text{ ; FreeQ}\{c, d, e\}, x \ \&\& \ \text{EqQ}[e + c*d, 0]$

Rule 2502

```
Int[Log[((e_.)*((c_.) + (d_.)*(x_)))/((a_.) + (b_.)*(x_))]*(u_), x_Symbol]
:> With[{g = Coeff[Simplify[1/(u*(a + b*x))], x, 0], h = Coeff[Simplify[1/(
u*(a + b*x))], x, 1]}, -Dist[(b - d*e)/(h*(b*c - a*d)), Subst[Int[Log[e*x]/
(1 - e*x), x], x, (c + d*x)/(a + b*x)], x] /; EqQ[g*(b - d*e) - h*(a - c*e)
, 0]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b*c - a*d, 0] && LinearQ[Simplify
[1/(u*(a + b*x))], x]
```

Rule 2503

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Coeff[Simplify[1/(u*(a + b*x))],
x, 0], h = Coeff[Simplify[1/(u*(a + b*x))], x, 1]}, -Simp[(Log[e*(f*(a + b
*x)^p*(c + d*x)^q]^r]^s*Log[-(((b*c - a*d)*(g + h*x))/((d*g - c*h)*(a + b*x
))))]/(b*g - a*h), x] + Dist[(p*r*s*(b*c - a*d))/(b*g - a*h), Int[(Log[e*(f
*(a + b*x)^p*(c + d*x)^q]^r]^(s - 1)*Log[-(((b*c - a*d)*(g + h*x))/((d*g -
c*h)*(a + b*x))))]/((a + b*x)*(c + d*x)), x], x] /; NeQ[b*g - a*h, 0] && Ne
Q[d*g - c*h, 0]] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a
*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0] && LinearQ[Simplify[1/(u*(a + b*x))],
x]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\begin{aligned}
\int \frac{A + B \log(e(a + bx)^n(c + dx)^{-n})}{(f + gx)(ah + bhx)} dx &= \int \left(\frac{A}{h(a + bx)(f + gx)} + \frac{B \log(e(a + bx)^n(c + dx)^{-n})}{h(a + bx)(f + gx)} \right) dx \\
&= \frac{A \int \frac{1}{(a+bx)(f+gx)} dx}{h} + \frac{B \int \frac{\log(e(a+bx)^n(c+dx)^{-n})}{(a+bx)(f+gx)} dx}{h} \\
&= -\frac{B \log(e(a + bx)^n(c + dx)^{-n}) \log\left(-\frac{(bc-ad)(f+gx)}{(df-cg)(a+bx)}\right)}{(bf - ag)h} + \frac{(Ab) \int \frac{1}{a+bx} dx}{(bf - ag)h} \\
&= \frac{A \log(a + bx)}{(bf - ag)h} - \frac{A \log(f + gx)}{(bf - ag)h} - \frac{B \log(e(a + bx)^n(c + dx)^{-n}) \log\left(-\frac{(bc-ad)(f+gx)}{(df-cg)(a+bx)}\right)}{(bf - ag)h} \\
&= \frac{A \log(a + bx)}{(bf - ag)h} - \frac{A \log(f + gx)}{(bf - ag)h} - \frac{B \log(e(a + bx)^n(c + dx)^{-n}) \log\left(-\frac{(bc-ad)(f+gx)}{(df-cg)(a+bx)}\right)}{(bf - ag)h}
\end{aligned}$$

Mathematica [B] time = 0.31, size = 304, normalized size = 2.47

$$-2A \log(a + bx) + 2B \log(f + gx) \log(e(a + bx)^n(c + dx)^{-n}) - 2B \log(a + bx) \log(e(a + bx)^n(c + dx)^{-n}) + 2B$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])/((f + g*x)*(a*h + b*h*x)), x]

[Out] -1/2*(-2*A*Log[a + b*x] + B*n*Log[a + b*x]^2 - 2*B*n*Log[a + b*x]*Log[c + d*x] + 2*B*n*Log[(d*(a + b*x))/(-b*c) + a*d])*Log[c + d*x] - 2*B*Log[a + b*x]*Log[(e*(a + b*x)^n)/(c + d*x)^n] + 2*A*Log[f + g*x] - 2*B*n*Log[a + b*x]*Log[f + g*x] + 2*B*n*Log[c + d*x]*Log[f + g*x] + 2*B*Log[(e*(a + b*x)^n)/(c + d*x)^n]*Log[f + g*x] + 2*B*n*Log[a + b*x]*Log[(b*(f + g*x))/(b*f - a*g)] - 2*B*n*Log[c + d*x]*Log[(d*(f + g*x))/(d*f - c*g)] + 2*B*n*PolyLog[2, (g*(a + b*x))/(-b*f) + a*g] + 2*B*n*PolyLog[2, (b*(c + d*x))/(b*c - a*d)] - 2*B*n*PolyLog[2, (g*(c + d*x))/(-d*f) + c*g])/((b*f - a*g)*h)

fricas [F] time = 0.86, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{B \log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right) + A}{bghx^2 + afh + (bf + ag)hx}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))/(g*x+f)/(b*h*x+a*h),x, algorithm="fricas")
```

```
[Out] integral((B*log((b*x + a)^n*e/(d*x + c)^n) + A)/(b*g*h*x^2 + a*f*h + (b*f + a*g)*h*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{B \log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right) + A}{(bhx + ah)(gx + f)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))/(g*x+f)/(b*h*x+a*h),x, algorithm="giac")
```

```
[Out] integrate((B*log((b*x + a)^n*e/(d*x + c)^n) + A)/((b*h*x + a*h)*(g*x + f)), x)
```

maple [C] time = 0.36, size = 1447, normalized size = 11.76

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))/(g*x+f)/(b*h*x+a*h),x)
```

```
[Out] 1/2*I/h/(a*g-b*f)*ln(b*x+a)*B*Pi*csgn(I*(b*x+a)^n)*csgn(I/((d*x+c)^n))*csgn(I*(b*x+a)^n/((d*x+c)^n))-1/2*I/h/(a*g-b*f)*ln(g*x+f)*B*Pi*csgn(I*(b*x+a)^n/((d*x+c)^n))^3+1/h*A/(a*g-b*f)*ln(g*x+f)-1/h*A/(a*g-b*f)*ln(b*x+a)+1/2*I/h/(a*g-b*f)*ln(g*x+f)*B*Pi*csgn(I*(b*x+a)^n)*csgn(I*(b*x+a)^n/((d*x+c)^n))^2+1/2*I/h/(a*g-b*f)*ln(g*x+f)*B*Pi*csgn(I*e)*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)^2-1/2*I/h/(a*g-b*f)*ln(b*x+a)*B*Pi*csgn(I*(b*x+a)^n)*csgn(I*(b*x+a)^n/((d*x+c)^n))^2+1/h*B*n/(a*g-b*f)*ln(g*x+f)*ln(((g*x+f)*d+c*g-d*f)/(c*g-d*f))-1/h*B*n/(a*g-b*f)*ln(b*x+a)*ln((-a*d+b*c+(b*x+a)*d)/(-a*d+b*c))-1/h*B*n/(a*g-b*f)*ln(g*x+f)*ln((b*(g*x+f)+a*g-b*f)/(a*g-b*f))-1/2*I/h/(a*g-b*f)*ln(g*x+f)*B*Pi*csgn(I*(b*x+a)^n)*csgn(I/((d*x+c)^n))*csgn(I*(b*x+a)^n/((d*x+c)^n))+1/2*I/h/(a*g-b*f)*ln(g*x+f)*B*Pi*csgn(I/((d*x+c)^n))*csgn(I*(b*x+a)^n/((d*x+c)^n))^2-1/2*I/h/(a*g-b*f)*ln(b*x+a)*B*Pi*csgn(I*e)*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)^2-1/h*B*ln((b*x+a)^n)/(a*g-b*f)*ln(b*x+a)-1/h*B*ln((d*x+c)^n)/(a*g-b*f)*ln(g*x+f)-1/2*I/h/(a*g-b*f)*ln(b*x+a)*B*Pi*csgn(I*(b*x+a)^n/((d*x+c)^n))*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)^2-1/2*I/h/(a*g-b*f)*ln(g*x+f)*B*Pi*csgn(I*e)*csgn(I*(b*x+a)^n/((d*x+c)^n))*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)-1/2*I/h/(a*g-b*f)*ln(b*x+a)*B*Pi*csgn(I/((d*x+c)^n))*csgn(I*(b*x+a)^n/((d*x+c)^n))
```

$$\begin{aligned} &)^2 + 1/2 * I/h/(a*g-b*f) * \ln(g*x+f) * B * \text{Pi} * \text{csgn}(I*(b*x+a)^n / ((d*x+c)^n)) * \text{csgn}(I * e / ((d*x+c)^n) * (b*x+a)^n)^2 + 1/2 * I/h/(a*g-b*f) * \ln(b*x+a) * B * \text{Pi} * \text{csgn}(I * e) * \text{csgn}(I * (b*x+a)^n / ((d*x+c)^n)) * \text{csgn}(I * e / ((d*x+c)^n) * (b*x+a)^n) + 1/2 * I/h/(a*g-b*f) * \ln(b*x+a) * B * \text{Pi} * \text{csgn}(I * (b*x+a)^n / ((d*x+c)^n))^{3-1/2} * I/h/(a*g-b*f) * \ln(g*x+f) * B * \text{Pi} * \text{csgn}(I * e / ((d*x+c)^n) * (b*x+a)^n)^3 + 1/h * B * \ln((d*x+c)^n) / (a*g-b*f) * \ln(b*x+a) + 1/h * B / (a*g-b*f) * \ln(g*x+f) * \ln((b*x+a)^n) + 1/2 * I/h/(a*g-b*f) * \ln(b*x+a) * B * \text{Pi} * \text{csgn}(I * e / ((d*x+c)^n) * (b*x+a)^n)^3 + 1/h * B * n / (a*g-b*f) * \text{dilog}(((g*x+f)*d + c*g - d*f) / (c*g - d*f)) - 1/h * B * n / (a*g-b*f) * \text{dilog}((b*(g*x+f) + a*g - b*f) / (a*g - b*f)) + 1/2/h * B * n / (a*g-b*f) * \ln(b*x+a)^2 - 1/h * B * n / (a*g-b*f) * \text{dilog}((-a*d + b*c + (b*x+a)*d) / (-a*d + b*c)) + 1/h / (a*g-b*f) * \ln(g*x+f) * B * \ln(e) - 1/h / (a*g-b*f) * \ln(b*x+a) * B * \ln(e) \end{aligned}$$

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$A \left(\frac{\log(bx+a)}{(bf-ag)h} - \frac{\log(gx+f)}{(bf-ag)h} \right) - B \int - \frac{\log((bx+a)^n) - \log((dx+c)^n) + \log(e)}{bghx^2 + afh + (bfh + agh)x} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))/(g*x+f)/(b*h*x+a*h),x, algorithm="maxima")

[Out] A*(log(b*x + a)/((b*f - a*g)*h) - log(g*x + f)/((b*f - a*g)*h)) - B*integrate(-(log((b*x + a)^n) - log((d*x + c)^n) + log(e))/(b*g*h*x^2 + a*f*h + (b*f*h + a*g*h)*x), x)

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A + B \ln\left(\frac{e(a+bx)^n}{(c+dx)^n}\right)}{(f+gx)(ah+bhx)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))/((f + g*x)*(a*h + b*h*x)),x)

[Out] int((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))/((f + g*x)*(a*h + b*h*x)), x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*ln(e*(b*x+a)**n/((d*x+c)**n)))/(g*x+f)/(b*h*x+a*h),x)

[Out] Timed out

$$3.253 \quad \int \frac{1}{(f+gx)(ah+bhx)(A+B \log(e(a+bx)^n(c+dx)^{-n}))} dx$$

Optimal. Leaf size=82

$$\text{Subst} \left(\text{Int} \left(\frac{1}{(f+gx)(ah+bhx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}, x \right), e \left(\frac{a+bx}{c+dx} \right)^n, e(a+bx)^n(c+dx)^{-n} \right)$$

[Out] `_eval(Unintegrable(1/(g*x+f)/(b*h*x+a*h)/(A+B*ln(e*((b*x+a)/(d*x+c))^n)),x),e*((b*x+a)/(d*x+c))^n = e*(b*x+a)^n/((d*x+c)^n))`

Rubi [A] time = 0.43, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(f+gx)(ah+bhx)(A+B \log(e(a+bx)^n(c+dx)^{-n}))} dx$$

Verification is Not applicable to the result.

[In] `Int[1/((f + g*x)*(a*h + b*h*x)*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])),x]`

[Out] `(b*Defer[Int][1/((a + b*x)*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])), x])/((b*f - a*g)*h) - (g*Defer[Int][1/((f + g*x)*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])), x])/((b*f - a*g)*h)`

Rubi steps

$$\begin{aligned} \int \frac{1}{(f+gx)(ah+bhx)(A+B \log(e(a+bx)^n(c+dx)^{-n}))} dx &= \int \left(\frac{b}{(bf-ag)h(a+bx)(A+B \log(e(a+bx)^n(c+dx)^{-n}))} \right. \\ &= \frac{b \int \frac{1}{(a+bx)(A+B \log(e(a+bx)^n(c+dx)^{-n}))} dx}{(bf-ag)h} - \frac{g \int \frac{1}{(f+gx)(A+B \log(e(a+bx)^n(c+dx)^{-n}))} dx}{(bf-ag)h} \end{aligned}$$

Mathematica [A] time = 0.16, size = 0, normalized size = 0.00

$$\int \frac{1}{(f+gx)(ah+bhx)(A+B \log(e(a+bx)^n(c+dx)^{-n}))} dx$$

Verification is Not applicable to the result.

[In] Integrate[1/((f + g*x)*(a*h + b*h*x)*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])),x]

[Out] Integrate[1/((f + g*x)*(a*h + b*h*x)*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])), x]

fricas [A] time = 0.72, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{1}{Abghx^2 + Aafh + (Abf + Aag)hx + (Bbghx^2 + Bafh + (Bbf + Bag)hx) \log \left(\frac{(bx+a)^n e}{(dx+c)^n} \right)}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(g*x+f)/(b*h*x+a*h)/(A+B*log(e*(b*x+a)^n/((d*x+c)^n))),x, algorithm="fricas")

[Out] integral(1/(A*b*g*h*x^2 + A*a*f*h + (A*b*f + A*a*g)*h*x + (B*b*g*h*x^2 + B*a*f*h + (B*b*f + B*a*g)*h*x)*log((b*x + a)^n*e/(d*x + c)^n)), x)

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(bhx + ah)(gx + f) \left(B \log \left(\frac{(bx+a)^n e}{(dx+c)^n} \right) + A \right)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(g*x+f)/(b*h*x+a*h)/(A+B*log(e*(b*x+a)^n/((d*x+c)^n))),x, algorithm="giac")

[Out] integrate(1/((b*h*x + a*h)*(g*x + f)*(B*log((b*x + a)^n*e/(d*x + c)^n) + A)), x)

maple [A] time = 7.59, size = 0, normalized size = 0.00

$$\int \frac{1}{(gx + f)(bhx + ah) \left(B \ln \left(e (bx + a)^n (dx + c)^{-n} \right) + A \right)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(1/(g*x+f)/(b*h*x+a*h)/(A+B*ln(e*(b*x+a)^n/((d*x+c)^n))),x)

[Out] int(1/(g*x+f)/(b*h*x+a*h)/(A+B*ln(e*(b*x+a)^n/((d*x+c)^n))),x)

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(bhx + ah)(gx + f) \left(B \log \left(\frac{(bx+a)^n e}{(dx+c)^n} \right) + A \right)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(b*h*x+a*h)/(A+B*log(e*(b*x+a)^n/((d*x+c)^n))),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*h*x + a*h)*(g*x + f)*(B*log((b*x + a)^n*e/(d*x + c)^n) + A)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{(f + g x) (a h + b h x) \left(A + B \ln \left(\frac{e(a+b x)^n}{(c+d x)^n} \right) \right)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((f + g*x)*(a*h + b*h*x)*(A + B*log((e*(a + b*x)^n)/(c + d*x)^n))),x)
```

```
[Out] int(1/((f + g*x)*(a*h + b*h*x)*(A + B*log((e*(a + b*x)^n)/(c + d*x)^n))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(b*h*x+a*h)/(A+B*ln(e*(b*x+a)**n/((d*x+c)**n))),x)
```

```
[Out] Timed out
```

$$3.254 \quad \int \frac{1}{(f+gx)(ah+bhx)\left(A+B \log(e(a+bx)^n(c+dx)^{-n})\right)^2} dx$$

Optimal. Leaf size=82

$$\text{Subst} \left(\text{Int} \left(\frac{1}{(f+gx)(ah+bhx)\left(B \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + A\right)^2}, x \right), e\left(\frac{a+bx}{c+dx}\right)^n, e(a+bx)^n(c+dx)^{-n} \right)$$

[Out] _eval(Unintegrable(1/(g*x+f)/(b*h*x+a*h)/(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2, x), e*((b*x+a)/(d*x+c))^n = e*(b*x+a)^n/((d*x+c)^n)

Rubi [A] time = 0.48, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(f+gx)(ah+bhx)\left(A+B \log(e(a+bx)^n(c+dx)^{-n})\right)^2} dx$$

Verification is Not applicable to the result.

[In] Int[1/((f + g*x)*(a*h + b*h*x)*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^2), x]

[Out] (b*Defer[Int][1/((a + b*x)*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^2), x]) /((b*f - a*g)*h) - (g*Defer[Int][1/((f + g*x)*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^2), x]) /((b*f - a*g)*h)

Rubi steps

$$\begin{aligned} \int \frac{1}{(f+gx)(ah+bhx)\left(A+B \log(e(a+bx)^n(c+dx)^{-n})\right)^2} dx &= \int \left(\frac{b}{(bf-ag)h(a+bx)\left(A+B \log(e(a+bx)^n(c+dx)^{-n})\right)^2} \right. \\ &= \frac{b \int \frac{1}{(a+bx)\left(A+B \log(e(a+bx)^n(c+dx)^{-n})\right)^2} dx}{(bf-ag)h} - \frac{g \int \frac{1}{(f+g)} \end{aligned}$$

Mathematica [A] time = 0.35, size = 0, normalized size = 0.00

$$\int \frac{1}{(f+gx)(ah+bhx)\left(A+B \log(e(a+bx)^n(c+dx)^{-n})\right)^2} dx$$

Verification is Not applicable to the result.

[In] Integrate[1/((f + g*x)*(a*h + b*h*x)*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^2), x]

[Out] Integrate[1/((f + g*x)*(a*h + b*h*x)*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^2), x]

fricas [A] time = 0.60, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{1}{A^2 b g h x^2 + A^2 a f h + (A^2 b f + A^2 a g) h x + (B^2 b g h x^2 + B^2 a f h + (B^2 b f + B^2 a g) h x) \log \left(\frac{(b x + a)^n e}{(d x + c)^n} \right) + 2 \left(A B b g h x^2 + A B a f h + (A B b f + A B a g) h x \right) \log \left(\frac{(b x + a)^n e}{(d x + c)^n} \right)}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(g*x+f)/(b*h*x+a*h)/(A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^2,x, algorithm="fricas")

[Out] integral(1/(A^2*b*g*h*x^2 + A^2*a*f*h + (A^2*b*f + A^2*a*g)*h*x + (B^2*b*g*h*x^2 + B^2*a*f*h + (B^2*b*f + B^2*a*g)*h*x)*log((b*x + a)^n*e/(d*x + c)^n)^2 + 2*(A*B*b*g*h*x^2 + A*B*a*f*h + (A*B*b*f + A*B*a*g)*h*x)*log((b*x + a)^n*e/(d*x + c)^n)), x)

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(b h x + a h)(g x + f) \left(B \log \left(\frac{(b x + a)^n e}{(d x + c)^n} \right) + A \right)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(g*x+f)/(b*h*x+a*h)/(A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^2,x, algorithm="giac")

[Out] integrate(1/((b*h*x + a*h)*(g*x + f)*(B*log((b*x + a)^n*e/(d*x + c)^n) + A))^2), x)

maple [A] time = 8.96, size = 0, normalized size = 0.00

$$\int \frac{1}{(g x + f)(b h x + a h) \left(B \ln \left(e (b x + a)^n (d x + c)^{-n} \right) + A \right)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(1/(g*x+f)/(b*h*x+a*h)/(A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^2,x)

[Out] $\int \frac{1}{(g*x+f)/(b*h*x+a*h)/(A+B*\ln(e*(b*x+a)^n/((d*x+c)^n)))^2, x}$

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$(df - cg) \int \frac{1}{(bcf^2hn - adf^2hn)AB + (bcf^2hn \log(e) - adf^2hn \log(e))B^2 + ((bcg^2hn - adg^2hn)AB + (bcg^2hn$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate(1/(g*x+f)/(b*h*x+a*h)/(A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^2,x, algorithm="maxima")`

[Out] $(d*f - c*g)*\text{integrate}(1/((b*c*f^2*h*n - a*d*f^2*h*n)*A*B + (b*c*f^2*h*n*\log(e) - a*d*f^2*h*n*\log(e))*B^2 + ((b*c*g^2*h*n - a*d*g^2*h*n)*A*B + (b*c*g^2*h*n*\log(e) - a*d*g^2*h*n*\log(e))*B^2)*x^2 + 2*((b*c*f*g*h*n - a*d*f*g*h*n)*A*B + (b*c*f*g*h*n*\log(e) - a*d*f*g*h*n*\log(e))*B^2)*x + ((b*c*g^2*h*n - a*d*g^2*h*n)*B^2*x^2 + 2*(b*c*f*g*h*n - a*d*f*g*h*n)*B^2*x + (b*c*f^2*h*n - a*d*f^2*h*n)*B^2)*\log((b*x + a)^n) - ((b*c*g^2*h*n - a*d*g^2*h*n)*B^2*x^2 + 2*(b*c*f*g*h*n - a*d*f*g*h*n)*B^2*x + (b*c*f^2*h*n - a*d*f^2*h*n)*B^2)*\log((d*x + c)^n), x) - (d*x + c)/((b*c*f*h*n - a*d*f*h*n)*A*B + (b*c*f*h*n*\log(e) - a*d*f*h*n*\log(e))*B^2 + ((b*c*g*h*n - a*d*g*h*n)*A*B + (b*c*g*h*n*\log(e) - a*d*g*h*n*\log(e))*B^2)*x + ((b*c*g*h*n - a*d*g*h*n)*B^2*x + (b*c*f*h*n - a*d*f*h*n)*B^2)*\log((b*x + a)^n) - ((b*c*g*h*n - a*d*g*h*n)*B^2*x + (b*c*f*h*n - a*d*f*h*n)*B^2)*\log((d*x + c)^n))$

mupad [A] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{(f + g x) (a h + b h x) \left(A + B \ln \left(\frac{e^{(a+b x)^n}}{(c+d x)^n} \right) \right)^2 dx}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] `int(1/((f + g*x)*(a*h + b*h*x)*(A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^2), x)`

[Out] `int(1/((f + g*x)*(a*h + b*h*x)*(A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^2), x)`

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] `integrate(1/(g*x+f)/(b*h*x+a*h)/(A+B*ln(e*(b*x+a)**n/((d*x+c)**n)))**2,x)`

[Out] Timed out

$$3.255 \quad \int \frac{\log\left(\frac{c+dx}{a+bx}\right)}{(a+bx)((a-c)h+(b-d)hx)} dx$$

Optimal. Leaf size=33

$$-\frac{\text{Li}_2\left(1 - \frac{c+dx}{a+bx}\right)}{h(bc - ad)}$$

[Out] -polylog(2,1+(-d*x-c)/(b*x+a))/(-a*d+b*c)/h

Rubi [A] time = 0.10, antiderivative size = 33, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.050$, Rules used = {2502, 2315}

$$-\frac{\text{PolyLog}\left(2, 1 - \frac{c+dx}{a+bx}\right)}{h(bc - ad)}$$

Antiderivative was successfully verified.

[In] Int[Log[(c + d*x)/(a + b*x)]/((a + b*x)*((a - c)*h + (b - d)*h*x)),x]

[Out] -(PolyLog[2, 1 - (c + d*x)/(a + b*x)]/((b*c - a*d)*h))

Rule 2315

Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] := -Simp[PolyLog[2, 1 - c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]

Rule 2502

Int[Log[((e_.)*((c_.) + (d_.)*(x_)))/((a_.) + (b_.)*(x_))]*(u_), x_Symbol] := With[{g = Coeff[Simplify[1/(u*(a + b*x))], x, 0], h = Coeff[Simplify[1/(u*(a + b*x))], x, 1]}, -Dist[(b - d*e)/(h*(b*c - a*d)), Subst[Int[Log[e*x]/(1 - e*x), x], x, (c + d*x)/(a + b*x)], x] /; EqQ[g*(b - d*e) - h*(a - c*e), 0] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b*c - a*d, 0] && LinearQ[Simplify[1/(u*(a + b*x))], x]

Rubi steps

$$\int \frac{\log\left(\frac{c+dx}{a+bx}\right)}{(a+bx)((a-c)h+(b-d)hx)} dx = -\frac{\text{Subst}\left(\int \frac{\log(x)}{1-x} dx, x, \frac{c+dx}{a+bx}\right)}{(bc-ad)h}$$

$$= -\frac{\text{Li}_2\left(1 - \frac{c+dx}{a+bx}\right)}{(bc-ad)h}$$

Mathematica [B] time = 0.19, size = 298, normalized size = 9.03

$$2\text{Li}_2\left(\frac{d(a+bx)}{ad-bc}\right) + 2\text{Li}_2\left(-\frac{b(a-c+bx-dx)}{bc-ad}\right) - 2\text{Li}_2\left(-\frac{d(-a+c-bx+dx)}{ad-bc}\right) - \log^2\left(\frac{ad-bc}{d(a+bx)}\right) - 2\log\left(\frac{b(c+dx)}{bc-ad}\right)\log\left(\frac{ad-bc}{d(a+bx)}\right) + 2\log\left(\frac{ad-bc}{d(a+bx)}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[(c + d*x)/(a + b*x)]/((a + b*x)*((a - c)*h + (b - d)*h*x)), x]
[Out] (-Log[(-(b*c) + a*d)/(d*(a + b*x))]^2 + 2*Log[((b - d)*(a + b*x))/(b*c - a*d])*Log[a - c + b*x - d*x] - 2*Log[(-(b*c) + a*d)/(d*(a + b*x))]*Log[(b*(c + d*x))/(b*c - a*d)] - 2*Log[a - c + b*x - d*x]*Log[((b - d)*(c + d*x))/(b*c - a*d)] + 2*Log[(-(b*c) + a*d)/(d*(a + b*x))]*Log[(c + d*x)/(a + b*x)] + 2*Log[a - c + b*x - d*x]*Log[(c + d*x)/(a + b*x)] + 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)] + 2*PolyLog[2, -((b*(a - c + b*x - d*x))/(b*c - a*d))] - 2*PolyLog[2, -((d*(-a + c - b*x + d*x))/(-(b*c) + a*d))]/((2*b*c - 2*a*d)*h)
```

fricas [A] time = 0.91, size = 32, normalized size = 0.97

$$-\frac{\text{Li}_2\left(-\frac{dx+c}{bx+a} + 1\right)}{(bc-ad)h}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log((d*x+c)/(b*x+a))/(b*x+a)/((a-c)*h+(b-d)*h*x), x, algorithm="fricas")
```

```
[Out] -dilog(-(d*x + c)/(b*x + a) + 1)/((b*c - a*d)*h)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(log((d*x+c)/(b*x+a))/(b*x+a)/((a-c)*h+(b-d)*h*x),x, algorithm="giac")

[Out] Timed out

maple [A] time = 0.05, size = 42, normalized size = 1.27

$$\frac{\operatorname{dilog}\left(\frac{d}{b} - \frac{ad-bc}{(bx+a)b}\right)}{(ad-bc)h}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(ln((d*x+c)/(b*x+a))/(b*x+a)/((a-c)*h+(b-d)*h*x),x)

[Out] dilog(-(a*d-b*c)/b/(b*x+a)+d/b)/h/(a*d-b*c)

maxima [B] time = 0.85, size = 357, normalized size = 10.82

$$\left(\frac{\log(-(b-d)x-a+c)}{(bc-ad)h} - \frac{\log(bx+a)}{(bc-ad)h}\right) \log\left(\frac{dx+c}{bx+a}\right) + \frac{2 \log(-(b-d)x-a+c) \log(bx+a) - \log(bx+a)^2}{2(bch-adh)} + \dots$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(log((d*x+c)/(b*x+a))/(b*x+a)/((a-c)*h+(b-d)*h*x),x, algorithm="maxima")

[Out] (log(-(b-d)*x-a+c)/((b*c-a*d)*h) - log(b*x+a)/((b*c-a*d)*h))*log((d*x+c)/(b*x+a)) + 1/2*(2*log(-(b-d)*x-a+c)*log(b*x+a) - log(b*x+a)^2)/(b*c*h-a*d*h) + (log(b*x+a)*log((b*d*x+a*d)/(b*c-a*d)+1) + dilog(-(b*d*x+a*d)/(b*c-a*d)))/(b*c*h-a*d*h) - (log(b*x+a)*log(-(a*(b-d)+(b^2-b*d)*x)/(b*c-a*d)+1) + dilog((a*(b-d)+(b^2-b*d)*x)/(b*c-a*d)))/(b*c*h-a*d*h) - (log(-(b-d)*x-a+c)*log((a*d-c*d+(b*d-d^2)*x)/(b*c-a*d)+1) + dilog(-(a*d-c*d+(b*d-d^2)*x)/(b*c-a*d)))/(b*c*h-a*d*h)

mupad [F] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\ln\left(\frac{c+dx}{a+bx}\right)}{(h(a-c)+hx(b-d))(a+bx)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(log((c+d*x)/(a+b*x))/((h*(a-c)+h*x*(b-d))*(a+b*x)),x)

[Out] int(log((c+d*x)/(a+b*x))/((h*(a-c)+h*x*(b-d))*(a+b*x)),x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(ln((d*x+c)/(b*x+a))/(b*x+a)/((a-c)*h+(b-d)*h*x), x)

[Out] Timed out

$$3.256 \quad \int \frac{\log\left(\frac{a-cg+(b-dg)x}{a+bx}\right)}{(a+bx)(c+dx)} dx$$

Optimal. Leaf size=27

$$\frac{\text{Li}_2\left(\frac{g(c+dx)}{a+bx}\right)}{bc-ad}$$

[Out] polylog(2,g*(d*x+c)/(b*x+a))/(-a*d+b*c)

Rubi [A] time = 0.07, antiderivative size = 27, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}} = 0.053$, Rules used = {2502, 2315}

$$\frac{\text{PolyLog}\left(2, \frac{g(c+dx)}{a+bx}\right)}{bc-ad}$$

Antiderivative was successfully verified.

[In] Int[Log[(a - c*g + (b - d*g)*x)/(a + b*x)]/((a + b*x)*(c + d*x)),x]

[Out] PolyLog[2, (g*(c + d*x))/(a + b*x)]/(b*c - a*d)

Rule 2315

Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 - c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]

Rule 2502

Int[Log[((e_.)*((c_.) + (d_.)*(x_)))/((a_.) + (b_.)*(x_))]*(u_), x_Symbol] :> With[{g = Coeff[Simplify[1/(u*(a + b*x))], x, 0], h = Coeff[Simplify[1/(u*(a + b*x))], x, 1]}, -Dist[(b - d*e)/(h*(b*c - a*d)), Subst[Int[Log[e*x]/(1 - e*x), x], x, (c + d*x)/(a + b*x)], x] /; EqQ[g*(b - d*e) - h*(a - c*e), 0] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b*c - a*d, 0] && LinearQ[Simplify[1/(u*(a + b*x))], x]

Rubi steps

$$\int \frac{\log\left(\frac{a-cg+(b-dg)x}{a+bx}\right)}{(a+bx)(c+dx)} dx = -\frac{g \operatorname{Subst}\left(\int \frac{\log(x)}{1-x} dx, x, \frac{a-cg+(b-dg)x}{a+bx}\right)}{b(a-cg) - a(b-dg)}$$

$$= \frac{\operatorname{Li}_2\left(\frac{g(c+dx)}{a+bx}\right)}{bc-ad}$$

Mathematica [B] time = 0.26, size = 320, normalized size = 11.85

$$-2\operatorname{Li}_2\left(\frac{(b-dg)(a+bx)}{(bc-ad)g}\right) + 2\operatorname{Li}_2\left(\frac{(b-dg)(c+dx)}{bc-ad}\right) + \log^2\left(\frac{g(bc-ad)}{(a+bx)(b-dg)}\right) + 2\log\left(-\frac{b(a+bx-cg-dgx)}{g(bc-ad)}\right)\log\left(\frac{g(bc-ad)}{(a+bx)(b-dg)}\right) - 2\log\left(\frac{g(bc-ad)}{(a+bx)(b-dg)}\right)$$

Antiderivative was successfully verified.

[In] Integrate[Log[(a - c*g + (b - d*g)*x)/(a + b*x)]/((a + b*x)*(c + d*x)),x]

[Out] (Log[((b*c - a*d)*g)/((b - d*g)*(a + b*x))]^2 - 2*Log[(d*(a + b*x))/(-(b*c + a*d))]*Log[c + d*x] + 2*Log[c + d*x]*Log[-((d*(a - c*g + b*x - d*g*x))/(b*c - a*d))] + 2*Log[((b*c - a*d)*g)/((b - d*g)*(a + b*x))]*Log[-((b*(a - c*g + b*x - d*g*x))/(b*c - a*d)*g)] - 2*Log[((b*c - a*d)*g)/((b - d*g)*(a + b*x))]*Log[(a - c*g + b*x - d*g*x)/(a + b*x)] - 2*Log[c + d*x]*Log[(a - c*g + b*x - d*g*x)/(a + b*x)] - 2*PolyLog[2, ((b - d*g)*(a + b*x))/((b*c - a*d)*g)] - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)] + 2*PolyLog[2, ((b - d*g)*(c + d*x))/(b*c - a*d)]/(2*b*c - 2*a*d)

fricas [A] time = 1.03, size = 38, normalized size = 1.41

$$\frac{\operatorname{Li}_2\left(\frac{cg+(dg-b)x-a}{bx+a} + 1\right)}{bc-ad}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(log((a-c*g+(-d*g+b)*x)/(b*x+a))/(b*x+a)/(d*x+c),x, algorithm="fricas")

[Out] dilog((c*g + (d*g - b)*x - a)/(b*x + a) + 1)/(b*c - a*d)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(log((a-c*g+(-d*g+b)*x)/(b*x+a))/(b*x+a)/(d*x+c),x, algorithm="giac")

[Out] Timed out

maple [A] time = 0.05, size = 45, normalized size = 1.67

$$\frac{\operatorname{dilog}\left(\frac{(ad-bc)g}{(bx+a)b} + \frac{-dg+b}{b}\right)}{ad-bc}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(ln((a-c*g+(-d*g+b)*x)/(b*x+a))/(b*x+a)/(d*x+c),x)

[Out] -dilog((-d*g+b)/b+g*(a*d-b*c)/b/(b*x+a))/(a*d-b*c)

maxima [B] time = 0.76, size = 344, normalized size = 12.74

$$\left(\frac{\log(bx+a)}{bc-ad} - \frac{\log(dx+c)}{bc-ad}\right) \log\left(-\frac{cg+(dg-b)x-a}{bx+a}\right) + \frac{\log(bx+a)^2 - 2\log(bx+a)\log(dx+c)}{2(bc-ad)} - \frac{\log(bx+a)}{bc-ad}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(log((a-c*g+(-d*g+b)*x)/(b*x+a))/(b*x+a)/(d*x+c),x, algorithm="maxima")

[Out] (log(b*x + a)/(b*c - a*d) - log(d*x + c)/(b*c - a*d))*log(-(c*g + (d*g - b)*x - a)/(b*x + a)) + 1/2*(log(b*x + a)^2 - 2*log(b*x + a)*log(d*x + c))/(b*c - a*d) - (log(b*x + a)*log(((d*g - b)*a + (b*d*g - b^2)*x)/(b*c*g - a*d*g) + 1) + dilog(-((d*g - b)*a + (b*d*g - b^2)*x)/(b*c*g - a*d*g)))/(b*c - a*d) + (log(d*x + c)*log((c*d*g - b*c + (d^2*g - b*d)*x)/(b*c - a*d) + 1) + dilog(-(c*d*g - b*c + (d^2*g - b*d)*x)/(b*c - a*d)))/(b*c - a*d) + (log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d)))/(b*c - a*d)

mupad [F] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{\ln\left(\frac{a-cg+x(b-dg)}{a+bx}\right)}{(a+bx)(c+dx)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(log((a - c*g + x*(b - d*g))/(a + b*x))/((a + b*x)*(c + d*x)),x)

[Out] int(log((a - c*g + x*(b - d*g))/(a + b*x))/((a + b*x)*(c + d*x)), x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(ln((a-c*g+(-d*g+b)*x)/(b*x+a))/(b*x+a)/(d*x+c), x)

[Out] Timed out

$$3.257 \quad \int \frac{\log\left(1 - \frac{g(c+dx)}{a+bx}\right)}{(a+bx)(c+dx)} dx$$

Optimal. Leaf size=27

$$\frac{\text{Li}_2\left(\frac{g(c+dx)}{a+bx}\right)}{bc - ad}$$

[Out] polylog(2,g*(d*x+c)/(b*x+a))/(-a*d+b*c)

Rubi [A] time = 0.12, antiderivative size = 27, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {2517, 2502, 2315}

$$\frac{\text{PolyLog}\left(2, \frac{g(c+dx)}{a+bx}\right)}{bc - ad}$$

Antiderivative was successfully verified.

[In] Int[Log[1 - (g*(c + d*x))/(a + b*x)]/((a + b*x)*(c + d*x)),x]

[Out] PolyLog[2, (g*(c + d*x))/(a + b*x)]/(b*c - a*d)

Rule 2315

Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 - c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]

Rule 2502

Int[Log[((e_.)*((c_.) + (d_.)*(x_)))/((a_.) + (b_.)*(x_))]*(u_), x_Symbol] :> With[{g = Coeff[Simplify[1/(u*(a + b*x))], x, 0], h = Coeff[Simplify[1/(u*(a + b*x))], x, 1]}, -Dist[(b - d*e)/(h*(b*c - a*d)), Subst[Int[Log[e*x]/(1 - e*x), x], x, (c + d*x)/(a + b*x)], x] /; EqQ[g*(b - d*e) - h*(a - c*e), 0] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b*c - a*d, 0] && LinearQ[Simplify[1/(u*(a + b*x))], x]

Rule 2517

Int[Log[(e_.)*((f_.)*((g_) + (v_.)/(w_)))^(r_.)]^(s_.)*(u_), x_Symbol] :> Int[u*Log[e*((f*ExpandToSum[v + g*w, x])/ExpandToSum[w, x])^r]^s, x] /; FreeQ[{e, f, g, r, s}, x] && LinearQ[w, x] && (FreeQ[v, x] || LinearQ[v, x]) && AlgebraicFunctionQ[u, x]

Rubi steps

$$\begin{aligned} \int \frac{\log\left(1 - \frac{g(c+dx)}{a+bx}\right)}{(a+bx)(c+dx)} dx &= \int \frac{\log\left(\frac{a-cg+(b-dg)x}{a+bx}\right)}{(a+bx)(c+dx)} dx \\ &= \frac{g \operatorname{Subst}\left(\int \frac{\log(x)}{1-x} dx, x, \frac{a-cg+(b-dg)x}{a+bx}\right)}{b(a-cg) - a(b-dg)} \\ &= \frac{\operatorname{Li}_2\left(\frac{g(c+dx)}{a+bx}\right)}{bc - ad} \end{aligned}$$

Mathematica [B] time = 0.19, size = 320, normalized size = 11.85

$$\frac{-2\operatorname{Li}_2\left(\frac{(b-dg)(a+bx)}{(bc-ad)g}\right) + 2\operatorname{Li}_2\left(\frac{(b-dg)(c+dx)}{bc-ad}\right) + \log^2\left(\frac{g(bc-ad)}{(a+bx)(b-dg)}\right) + 2\log\left(-\frac{b(a+bx-cg-dgx)}{g(bc-ad)}\right)\log\left(\frac{g(bc-ad)}{(a+bx)(b-dg)}\right) - 2\log\left(\frac{g(bc-ad)}{(a+bx)(b-dg)}\right)}{bc - ad}$$

Antiderivative was successfully verified.

[In] Integrate[Log[1 - (g*(c + d*x))/(a + b*x)]/((a + b*x)*(c + d*x)), x]

[Out] (Log[((b*c - a*d)*g)/((b - d*g)*(a + b*x))]^2 - 2*Log[(d*(a + b*x))/(-(b*c + a*d))]*Log[c + d*x] + 2*Log[c + d*x]*Log[-((d*(a - c*g + b*x - d*g*x))/(b*c - a*d))] + 2*Log[((b*c - a*d)*g)/((b - d*g)*(a + b*x))]*Log[-((b*(a - c*g + b*x - d*g*x))/((b*c - a*d)*g))] - 2*Log[((b*c - a*d)*g)/((b - d*g)*(a + b*x))]*Log[(a - c*g + b*x - d*g*x)/(a + b*x)] - 2*Log[c + d*x]*Log[(a - c*g + b*x - d*g*x)/(a + b*x)] - 2*PolyLog[2, ((b - d*g)*(a + b*x))/((b*c - a*d)*g)] - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)] + 2*PolyLog[2, ((b - d*g)*(c + d*x))/(b*c - a*d)]/(2*b*c - 2*a*d)

fricas [A] time = 0.68, size = 38, normalized size = 1.41

$$\frac{\operatorname{Li}_2\left(\frac{cg+(dg-b)x-a}{bx+a} + 1\right)}{bc - ad}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(log(1-g*(d*x+c)/(b*x+a))/(b*x+a)/(d*x+c), x, algorithm="fricas")

[Out] dilog((c*g + (d*g - b)*x - a)/(b*x + a) + 1)/(b*c - a*d)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(log(1-g*(d*x+c)/(b*x+a))/(b*x+a)/(d*x+c),x, algorithm="giac")

[Out] Timed out

maple [A] time = 0.05, size = 45, normalized size = 1.67

$$-\frac{\operatorname{dilog}\left(\frac{(ad-bc)g}{(bx+a)b} + \frac{-dg+b}{b}\right)}{ad-bc}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(ln(1-g*(d*x+c)/(b*x+a))/(b*x+a)/(d*x+c),x)

[Out] -dilog((a*d-b*c)/(b*x+a)/b*g+(-d*g+b)/b)/(a*d-b*c)

maxima [B] time = 0.81, size = 336, normalized size = 12.44

$$\left(\frac{\log(bx+a)}{bc-ad} - \frac{\log(dx+c)}{bc-ad}\right) \log\left(-\frac{(dx+c)g}{bx+a} + 1\right) + \frac{\log(bx+a)^2 - 2\log(bx+a)\log(dx+c)}{2(bc-ad)} - \frac{\log(bx+a)\log(dx+c)}{bc-ad}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(log(1-g*(d*x+c)/(b*x+a))/(b*x+a)/(d*x+c),x, algorithm="maxima")

[Out] (log(b*x + a)/(b*c - a*d) - log(d*x + c)/(b*c - a*d))*log(-(d*x + c)*g/(b*x + a) + 1) + 1/2*(log(b*x + a)^2 - 2*log(b*x + a)*log(d*x + c))/(b*c - a*d) - (log(b*x + a)*log(((d*g - b)*a + (b*d*g - b^2)*x)/(b*c*g - a*d*g) + 1) + dilog(-((d*g - b)*a + (b*d*g - b^2)*x)/(b*c*g - a*d*g)))/(b*c - a*d) + (log(d*x + c)*log((c*d*g - b*c + (d^2*g - b*d)*x)/(b*c - a*d) + 1) + dilog(-(c*d*g - b*c + (d^2*g - b*d)*x)/(b*c - a*d)))/(b*c - a*d) + (log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d)))/(b*c - a*d)

mupad [F] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{\ln\left(1 - \frac{g(c+dx)}{a+bx}\right)}{(a+bx)(c+dx)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(log(1 - (g*(c + d*x))/(a + b*x))/((a + b*x)*(c + d*x)),x)

[Out] int(log(1 - (g*(c + d*x))/(a + b*x))/((a + b*x)*(c + d*x)), x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(ln(1-g*(d*x+c)/(b*x+a))/(b*x+a)/(d*x+c),x)

[Out] Timed out

$$3.258 \quad \int \frac{\log\left(\frac{a-cg+bx-dgx}{a+bx}\right)}{(a+bx)(c+dx)} dx$$

Optimal. Leaf size=27

$$\frac{\text{Li}_2\left(\frac{g(c+dx)}{a+bx}\right)}{bc-ad}$$

[Out] polylog(2,g*(d*x+c)/(b*x+a))/(-a*d+b*c)

Rubi [A] time = 0.12, antiderivative size = 27, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}} = 0.079$, Rules used = {2516, 2502, 2315}

$$\frac{\text{PolyLog}\left(2, \frac{g(c+dx)}{a+bx}\right)}{bc-ad}$$

Antiderivative was successfully verified.

[In] Int[Log[(a - c*g + b*x - d*g*x)/(a + b*x)]/((a + b*x)*(c + d*x)),x]

[Out] PolyLog[2, (g*(c + d*x))/(a + b*x)]/(b*c - a*d)

Rule 2315

Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 - c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]

Rule 2502

Int[Log[((e_.)*((c_.) + (d_.)*(x_)))/((a_.) + (b_.)*(x_))]*(u_), x_Symbol] :> With[{g = Coeff[Simplify[1/(u*(a + b*x))], x, 0], h = Coeff[Simplify[1/(u*(a + b*x))], x, 1]}, -Dist[(b - d*e)/(h*(b*c - a*d)), Subst[Int[Log[e*x]/(1 - e*x), x], x, (c + d*x)/(a + b*x)], x] /; EqQ[g*(b - d*e) - h*(a - c*e), 0] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b*c - a*d, 0] && LinearQ[Simplify[1/(u*(a + b*x))], x]

Rule 2516

Int[Log[(e_.)*((f_.)*(v_)^(p_.)*(w_)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] :> Int[u*Log[e*(f*ExpandToSum[v, x]^p*ExpandToSum[w, x]^q)^r]^s, x] /; FreeQ[{e, f, p, q, r, s}, x] && LinearQ[{v, w}, x] && !LinearMatchQ[{v, w}, x] && AlgebraicFunctionQ[u, x]

Rubi steps

$$\begin{aligned} \int \frac{\log\left(\frac{a-cg+bx-dgx}{a+bx}\right)}{(a+bx)(c+dx)} dx &= \int \frac{\log\left(\frac{a-cg+(b-dg)x}{a+bx}\right)}{(a+bx)(c+dx)} dx \\ &= -\frac{g \operatorname{Subst}\left(\int \frac{\log(x)}{1-x} dx, x, \frac{a-cg+(b-dg)x}{a+bx}\right)}{b(a-cg) - a(b-dg)} \\ &= \frac{\operatorname{Li}_2\left(\frac{g(c+dx)}{a+bx}\right)}{bc-ad} \end{aligned}$$

Mathematica [B] time = 0.18, size = 320, normalized size = 11.85

$$-2\operatorname{Li}_2\left(\frac{(b-dg)(a+bx)}{(bc-ad)g}\right) + 2\operatorname{Li}_2\left(\frac{(b-dg)(c+dx)}{bc-ad}\right) + \log^2\left(\frac{g(bc-ad)}{(a+bx)(b-dg)}\right) + 2\log\left(-\frac{b(a+bx-cg-dgx)}{g(bc-ad)}\right)\log\left(\frac{g(bc-ad)}{(a+bx)(b-dg)}\right) - 2\log\left(\frac{g(bc-ad)}{(a+bx)(b-dg)}\right)$$

Antiderivative was successfully verified.

[In] Integrate[Log[(a - c*g + b*x - d*g*x)/(a + b*x)]/((a + b*x)*(c + d*x)),x]

[Out] (Log[((b*c - a*d)*g)/((b - d*g)*(a + b*x))]^2 - 2*Log[(d*(a + b*x))/(-(b*c + a*d))*Log[c + d*x] + 2*Log[c + d*x]*Log[-((d*(a - c*g + b*x - d*g*x))/(b*c - a*d))] + 2*Log[((b*c - a*d)*g)/((b - d*g)*(a + b*x))]*Log[-((b*(a - c*g + b*x - d*g*x))/(b*c - a*d)*g)] - 2*Log[((b*c - a*d)*g)/((b - d*g)*(a + b*x))]*Log[(a - c*g + b*x - d*g*x)/(a + b*x)] - 2*Log[c + d*x]*Log[(a - c*g + b*x - d*g*x)/(a + b*x)] - 2*PolyLog[2, ((b - d*g)*(a + b*x))/((b*c - a*d)*g)] - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)] + 2*PolyLog[2, ((b - d*g)*(c + d*x))/(b*c - a*d)]/(2*b*c - 2*a*d)

fricas [A] time = 0.69, size = 38, normalized size = 1.41

$$\frac{\operatorname{Li}_2\left(\frac{cg+(dg-b)x-a}{bx+a} + 1\right)}{bc-ad}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(log((-d*g*x+b*x-c*g+a)/(b*x+a))/(b*x+a)/(d*x+c),x, algorithm="fricas")

[Out] dilog((c*g + (d*g - b)*x - a)/(b*x + a) + 1)/(b*c - a*d)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(log((-d*g*x+b*x-c*g+a)/(b*x+a))/(b*x+a)/(d*x+c),x, algorithm="giac")

[Out] Timed out

maple [A] time = 0.05, size = 45, normalized size = 1.67

$$-\frac{\operatorname{dilog}\left(\frac{(ad-bc)g}{(bx+a)b} + \frac{-dg+b}{b}\right)}{ad-bc}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(ln((-d*g*x+b*x-c*g+a)/(b*x+a))/(b*x+a)/(d*x+c),x)

[Out] -dilog((a*d-b*c)/(b*x+a)/b*g+(-d*g+b)/b)/(a*d-b*c)

maxima [B] time = 0.82, size = 343, normalized size = 12.70

$$\left(\frac{\log(bx+a)}{bc-ad} - \frac{\log(dx+c)}{bc-ad}\right) \log\left(-\frac{d gx + c g - b x - a}{bx+a}\right) + \frac{\log(bx+a)^2 - 2 \log(bx+a) \log(dx+c)}{2(bc-ad)} - \frac{\log(bx+a)}{\log(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(log((-d*g*x+b*x-c*g+a)/(b*x+a))/(b*x+a)/(d*x+c),x, algorithm="maxima")

[Out] (log(b*x + a)/(b*c - a*d) - log(d*x + c)/(b*c - a*d))*log(-(d*g*x + c*g - b*x - a)/(b*x + a)) + 1/2*(log(b*x + a)^2 - 2*log(b*x + a)*log(d*x + c))/(b*c - a*d) - (log(b*x + a)*log(((d*g - b)*a + (b*d*g - b^2)*x)/(b*c*g - a*d*g) + 1) + dilog(-((d*g - b)*a + (b*d*g - b^2)*x)/(b*c*g - a*d*g)))/(b*c - a*d) + (log(d*x + c)*log((c*d*g - b*c + (d^2*g - b*d)*x)/(b*c - a*d) + 1) + dilog(-(c*d*g - b*c + (d^2*g - b*d)*x)/(b*c - a*d)))/(b*c - a*d) + (log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d)))/(b*c - a*d)

mupad [F] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{\ln\left(\frac{a-cg+bx-dgx}{a+bx}\right)}{(a+bx)(c+dx)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(log((a - c*g + b*x - d*g*x)/(a + b*x))/((a + b*x)*(c + d*x)),x)


```
[Out] int(log((a - c*g + b*x - d*g*x)/(a + b*x))/((a + b*x)*(c + d*x)), x)
```

```
sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00
```

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln((-d*g*x+b*x-c*g+a)/(b*x+a))/(b*x+a)/(d*x+c), x)
```

```
[Out] Timed out
```

$$3.259 \quad \int \frac{\left(A+B \log(e(a+bx)^n(c+dx)^{-n})\right)^3}{afh+bghx^2+h(bfx+agx)} dx$$

Optimal. Leaf size=282

$$\frac{6B^2n^2\text{Li}_3\left(\frac{(bf-ag)(c+dx)}{(df-cg)(a+bx)}\right)\left(B \log(e(a+bx)^n(c+dx)^{-n})+A\right)}{h(bf-ag)} + \frac{3Bn\text{Li}_2\left(\frac{(bf-ag)(c+dx)}{(df-cg)(a+bx)}\right)\left(B \log(e(a+bx)^n(c+dx)^{-n})+A\right)}{h(bf-ag)}$$

[Out] $-(A+B*\ln(e*(b*x+a)^n/((d*x+c)^n)))^3*\ln(1-(-a*g+b*f)*(d*x+c)/(-c*g+d*f)/(b*x+a))/(-a*g+b*f)/h+3*B*n*(A+B*\ln(e*(b*x+a)^n/((d*x+c)^n)))^2*polylog(2,(-a*g+b*f)*(d*x+c)/(-c*g+d*f)/(b*x+a))/(-a*g+b*f)/h+6*B^2*n^2*(A+B*\ln(e*(b*x+a)^n/((d*x+c)^n)))^2*polylog(3,(-a*g+b*f)*(d*x+c)/(-c*g+d*f)/(b*x+a))/(-a*g+b*f)/h+6*B^3*n^3*polylog(4,(-a*g+b*f)*(d*x+c)/(-c*g+d*f)/(b*x+a))/(-a*g+b*f)/h$

Rubi [B] time = 1.31, antiderivative size = 656, normalized size of antiderivative = 2.33, number of steps used = 17, number of rules used = 11, integrand size = 51, $\frac{\text{number of rules}}{\text{integrand size}} = 0.216$, Rules used = {6688, 12, 6742, 36, 31, 2503, 2502, 2315, 2506, 6610, 2508}

$$\frac{3A^2Bn\text{PolyLog}\left(2, \frac{(f+gx)(bc-ad)}{(a+bx)(df-cg)} + 1\right)}{h(bf-ag)} + \frac{6AB^2n \log(e(a+bx)^n(c+dx)^{-n}) \text{PolyLog}\left(2, \frac{(f+gx)(bc-ad)}{(a+bx)(df-cg)} + 1\right)}{h(bf-ag)} + \frac{6AB^2n^2\text{PolyLog}\left(3, \frac{(f+gx)(bc-ad)}{(a+bx)(df-cg)} + 1\right)}{h(bf-ag)}$$

Antiderivative was successfully verified.

[In] Int[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^3/(a*f*h + b*g*h*x^2 + h*(b*f*x + a*g*x)), x]

[Out] $(A^3*\text{Log}[a + b*x])/((b*f - a*g)*h) - (A^3*\text{Log}[f + g*x])/((b*f - a*g)*h) - (3*A^2*B*\text{Log}[(e*(a + b*x)^n)/(c + d*x)^n]*\text{Log}[-(((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x)))])/((b*f - a*g)*h) - (3*A*B^2*\text{Log}[(e*(a + b*x)^n)/(c + d*x)^n]^2*\text{Log}[-(((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x)))])/((b*f - a*g)*h) - (B^3*\text{Log}[(e*(a + b*x)^n)/(c + d*x)^n]^3*\text{Log}[-(((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x)))])/((b*f - a*g)*h) + (3*A^2*B*n*\text{PolyLog}[2, 1 + ((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x))])/((b*f - a*g)*h) + (6*A*B^2*n*\text{Log}[(e*(a + b*x)^n)/(c + d*x)^n]*\text{PolyLog}[2, 1 + ((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x))])/((b*f - a*g)*h) + (3*B^3*n*\text{Log}[(e*(a + b*x)^n)/(c + d*x)^n]^2*\text{PolyLog}[2, 1 + ((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x))])/((b*f - a*g)*h) + (6*A*B^2*n^2*\text{PolyLog}[3, 1 + ((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x))])/((b*f - a*g)*h) + (6*B^3*n^2*\text{Log}[(e*(a + b*x)^n)/(c + d*x)^n]*\text{PolyLog}[3, 1 + ((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x))])/((b*f - a*g)*h) + (6*B^3*n^3*\text{PolyLog}[4, 1 + ((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x))])/((b*f - a*g)*h)$

Rule 12

```
Int[(a_)*(u_), x_Symbol] := Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_)*(x_))^(n_), x_Symbol] := Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_) + (b_)*(x_))*((c_) + (d_)*(x_))), x_Symbol] := Dist[b/(b*c
- a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 2315

```
Int[Log[(c_)*(x_)]/((d_) + (e_)*(x_)), x_Symbol] := -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2502

```
Int[Log[((e_)*((c_) + (d_)*(x_)))/((a_) + (b_)*(x_))]*(u_), x_Symbol]
:= With[{g = Coeff[Simplify[1/(u*(a + b*x))], x, 0], h = Coeff[Simplify[1/(
u*(a + b*x))], x, 1]}, -Dist[(b - d*e)/(h*(b*c - a*d)), Subst[Int[Log[e*x]/
(1 - e*x), x], x, (c + d*x)/(a + b*x)], x] /; EqQ[g*(b - d*e) - h*(a - c*e)
, 0] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b*c - a*d, 0] && LinearQ[Simplify
[1/(u*(a + b*x))], x]
```

Rule 2503

```
Int[Log[(e_)*((f_)*((a_) + (b_)*(x_))^(p_)*((c_) + (d_)*(x_))^(q_))
^(r_)]^(s_)*(u_), x_Symbol] := With[{g = Coeff[Simplify[1/(u*(a + b*x))],
x, 0], h = Coeff[Simplify[1/(u*(a + b*x))], x, 1]}, -Simp[(Log[e*(f*(a + b
*x)^p*(c + d*x)^q]^r]^s*Log[-(((b*c - a*d)*(g + h*x))/((d*g - c*h)*(a + b*x
))))]/(b*g - a*h), x] + Dist[(p*r*s*(b*c - a*d))/(b*g - a*h), Int[(Log[e*(f
*(a + b*x)^p*(c + d*x)^q]^r]^(s - 1)*Log[-(((b*c - a*d)*(g + h*x))/((d*g -
c*h)*(a + b*x))))]/((a + b*x)*(c + d*x)), x], x] /; NeQ[b*g - a*h, 0] && Ne
Q[d*g - c*h, 0] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a
*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0] && LinearQ[Simplify[1/(u*(a + b*x))],
x]
```

Rule 2506

```
Int[Log[v_]*Log[(e_)*((f_)*((a_) + (b_)*(x_))^(p_)*((c_) + (d_)*(x_))
^(q_)]^(r_)]^(s_)*(u_), x_Symbol] := With[{g = Simplify[((v - 1)*(c + d
```

```
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2508

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*(u_)*PolyLog[n_, v_], x_Symbol] := With[{g = Simplify[(v*(c +
d*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, Simp[(h*PolyLog[n
+ 1, v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s)/(b*c - a*d), x] - Dist[h*p*r
*s, Int[(PolyLog[n + 1, v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q]^r]^s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x] /; FreeQ[{a, b, c, d, e,
f, n, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] := With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /; !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] := With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] := With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A + B \log(e(a + bx)^n(c + dx)^{-n}))^3}{afh + bghx^2 + h(bfx + agx)} dx &= \int \frac{(A + B \log(e(a + bx)^n(c + dx)^{-n}))^3}{h(a + bx)(f + gx)} dx \\
&= \frac{\int \frac{(A + B \log(e(a + bx)^n(c + dx)^{-n}))^3}{(a + bx)(f + gx)} dx}{h} \\
&= \frac{\int \left(\frac{A^3}{(a + bx)(f + gx)} + \frac{3A^2B \log(e(a + bx)^n(c + dx)^{-n})}{(a + bx)(f + gx)} + \frac{3AB^2 \log^2(e(a + bx)^n(c + dx)^{-n})}{(a + bx)(f + gx)} \right) dx}{h} \\
&= \frac{A^3 \int \frac{1}{(a + bx)(f + gx)} dx}{h} + \frac{(3A^2B) \int \frac{\log(e(a + bx)^n(c + dx)^{-n})}{(a + bx)(f + gx)} dx}{h} + \frac{(3AB^2) \int \frac{\log^2(e(a + bx)^n(c + dx)^{-n})}{(a + bx)(f + gx)} dx}{h} \\
&= -\frac{3A^2B \log(e(a + bx)^n(c + dx)^{-n}) \log\left(-\frac{(bc - ad)(f + gx)}{(df - cg)(a + bx)}\right)}{(bf - ag)h} - \frac{3AB^2 \log^2\left(-\frac{(bc - ad)(f + gx)}{(df - cg)(a + bx)}\right)}{(bf - ag)h} \\
&= \frac{A^3 \log(a + bx)}{(bf - ag)h} - \frac{A^3 \log(f + gx)}{(bf - ag)h} - \frac{3A^2B \log(e(a + bx)^n(c + dx)^{-n})}{(bf - ag)h} \\
&= \frac{A^3 \log(a + bx)}{(bf - ag)h} - \frac{A^3 \log(f + gx)}{(bf - ag)h} - \frac{3A^2B \log(e(a + bx)^n(c + dx)^{-n})}{(bf - ag)h} \\
&= \frac{A^3 \log(a + bx)}{(bf - ag)h} - \frac{A^3 \log(f + gx)}{(bf - ag)h} - \frac{3A^2B \log(e(a + bx)^n(c + dx)^{-n})}{(bf - ag)h}
\end{aligned}$$

Mathematica [F] time = 2.86, size = 0, normalized size = 0.00

$$\int \frac{(A + B \log(e(a + bx)^n(c + dx)^{-n}))^3}{afh + bghx^2 + h(bfx + agx)} dx$$

Verification is Not applicable to the result.

[In] Integrate[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^3/(a*f*h + b*g*h*x^2 + h*(b*f*x + a*g*x)), x]

[Out] Integrate[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^3/(a*f*h + b*g*h*x^2 + h*(b*f*x + a*g*x)), x]

fricas [F] time = 0.76, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{B^3 \log \left(\frac{(bx+a)^n e}{(dx+c)^n} \right)^3 + 3 AB^2 \log \left(\frac{(bx+a)^n e}{(dx+c)^n} \right)^2 + 3 A^2 B \log \left(\frac{(bx+a)^n e}{(dx+c)^n} \right) + A^3}{bghx^2 + afh + (bf + ag)hx}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^3/(a*f*h+b*g*h*x^2+h*(a*g*x+b*f*x)),x, algorithm="fricas")

[Out] integral((B^3*log((b*x + a)^n*e/(d*x + c)^n)^3 + 3*A*B^2*log((b*x + a)^n*e/(d*x + c)^n)^2 + 3*A^2*B*log((b*x + a)^n*e/(d*x + c)^n) + A^3)/(b*g*h*x^2 + a*f*h + (b*f + a*g)*h*x), x)

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(B \log \left(\frac{(bx+a)^n e}{(dx+c)^n} \right) + A \right)^3}{bghx^2 + afh + (bf + ag)hx} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^3/(a*f*h+b*g*h*x^2+h*(a*g*x+b*f*x)),x, algorithm="giac")

[Out] integrate((B*log((b*x + a)^n*e/(d*x + c)^n) + A)^3/(b*g*h*x^2 + a*f*h + (b*f*x + a*g*x)*h), x)

maple [F] time = 3.68, size = 0, normalized size = 0.00

$$\int \frac{\left(B \ln \left(e (bx + a)^n (dx + c)^{-n} \right) + A \right)^3}{bghx^2 + afh + (agx + bxf)h} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^3/(a*f*h+b*g*h*x^2+h*(a*g*x+b*f*x)),x)

[Out] int((A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^3/(a*f*h+b*g*h*x^2+h*(a*g*x+b*f*x)),x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$A^3 \left(\frac{\log(bx + a)}{(bf - ag)h} - \frac{\log(gx + f)}{(bf - ag)h} \right) - \int \frac{B^3 \log \left((bx + a)^n \right)^3 - B^3 \log \left((dx + c)^n \right)^3 + B^3 \log(e)^3 + 3 AB^2 \log(e)^2 + 3}{bghx^2 + afh + (bf + ag)hx} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^3/(a*f*h+b*g*h*x^2+h*(a*g*x+b*f*x)),x, algorithm="maxima")
```

```
[Out] A^3*(log(b*x + a)/((b*f - a*g)*h) - log(g*x + f)/((b*f - a*g)*h)) - integrate(-(B^3*log((b*x + a)^n)^3 - B^3*log((d*x + c)^n)^3 + B^3*log(e)^3 + 3*A*B^2*log(e)^2 + 3*A^2*B*log(e) + 3*(B^3*log(e) + A*B^2)*log((b*x + a)^n)^2 + 3*(B^3*log((b*x + a)^n) + B^3*log(e) + A*B^2)*log((d*x + c)^n)^2 + 3*(B^3*log(e)^2 + 2*A*B^2*log(e) + A^2*B)*log((b*x + a)^n) - 3*(B^3*log((b*x + a)^n)^2 + B^3*log(e)^2 + 2*A*B^2*log(e) + A^2*B + 2*(B^3*log(e) + A*B^2)*log((b*x + a)^n))*log((d*x + c)^n)/(b*g*h*x^2 + a*f*h + (b*f*h + a*g*h)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(A + B \ln\left(\frac{e(a+bx)^n}{(c+dx)^n}\right)\right)^3}{h(agx + bfx) + afh + bghx^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^3/(h*(a*g*x + b*f*x) + a*f*h + b*g*h*x^2),x)
```

```
[Out] int((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^3/(h*(a*g*x + b*f*x) + a*f*h + b*g*h*x^2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)**n/((d*x+c)**n)))**3/(a*f*h+b*g*h*x**2+h*(a*g*x+b*f*x)),x)
```

```
[Out] Timed out
```

$$3.260 \quad \int \frac{(A+B \log(e(a+bx)^n(c+dx)^{-n}))^2}{afh+bghx^2+h(bfx+agx)} dx$$

Optimal. Leaf size=203

$$\frac{2Bn \operatorname{Li}_2\left(\frac{(bf-ag)(c+dx)}{(df-cg)(a+bx)}\right) \left(B \log(e(a+bx)^n(c+dx)^{-n}) + A\right) \log\left(1 - \frac{(c+dx)(bf-ag)}{(a+bx)(df-cg)}\right) \left(B \log(e(a+bx)^n(c+dx)^{-n}) + A\right)}{h(bf-ag)} - \frac{\log\left(1 - \frac{(c+dx)(bf-ag)}{(a+bx)(df-cg)}\right) \left(B \log(e(a+bx)^n(c+dx)^{-n}) + A\right)}{h(bf-ag)}$$

[Out] $-(A+B*\ln(e*(b*x+a)^n/((d*x+c)^n)))^2*\ln(1-(-a*g+b*f)*(d*x+c)/(-c*g+d*f)/(b*x+a))/(-a*g+b*f)/h+2*B*n*(A+B*\ln(e*(b*x+a)^n/((d*x+c)^n))*\operatorname{polylog}(2,(-a*g+b*f)*(d*x+c)/(-c*g+d*f)/(b*x+a))/(-a*g+b*f)/h+2*B^2*n^2*\operatorname{polylog}(3,(-a*g+b*f)*(d*x+c)/(-c*g+d*f)/(b*x+a))/(-a*g+b*f)/h$

Rubi [A] time = 0.82, antiderivative size = 371, normalized size of antiderivative = 1.83, number of steps used = 13, number of rules used = 10, integrand size = 51, $\frac{\text{number of rules}}{\text{integrand size}} = 0.196$, Rules used = {6688, 12, 6742, 36, 31, 2503, 2502, 2315, 2506, 6610}

$$\frac{2ABn \operatorname{PolyLog}\left(2, \frac{(f+gx)(bc-ad)}{(a+bx)(df-cg)} + 1\right)}{h(bf-ag)} + \frac{2B^2n \log(e(a+bx)^n(c+dx)^{-n}) \operatorname{PolyLog}\left(2, \frac{(f+gx)(bc-ad)}{(a+bx)(df-cg)} + 1\right)}{h(bf-ag)} + \frac{2B^2n^2 \operatorname{PolyLog}\left(3, \frac{(f+gx)(bc-ad)}{(a+bx)(df-cg)} + 1\right)}{h(bf-ag)}$$

Antiderivative was successfully verified.

[In] $\operatorname{Int}[(A + B*\operatorname{Log}[(e*(a + b*x)^n)/(c + d*x)^n])^2/(a*f*h + b*g*h*x^2 + h*(b*f*x + a*g*x)), x]$

[Out] $(A^2*\operatorname{Log}[a + b*x])/((b*f - a*g)*h) - (A^2*\operatorname{Log}[f + g*x])/((b*f - a*g)*h) - (2*A*B*\operatorname{Log}[(e*(a + b*x)^n)/(c + d*x)^n]*\operatorname{Log}[(-((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x)))]/((b*f - a*g)*h) - (B^2*\operatorname{Log}[(e*(a + b*x)^n)/(c + d*x)^n]^2*\operatorname{Log}[(-((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x)))]/((b*f - a*g)*h) + (2*A*B*n*\operatorname{PolyLog}[2, 1 + ((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x))])/((b*f - a*g)*h) + (2*B^2*n*\operatorname{Log}[(e*(a + b*x)^n)/(c + d*x)^n]*\operatorname{PolyLog}[2, 1 + ((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x))])/((b*f - a*g)*h) + (2*B^2*n^2*\operatorname{PolyLog}[3, 1 + ((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x))])/((b*f - a*g)*h)$

Rule 12

$\operatorname{Int}[(a_*)*(u_), x_Symbol] := \operatorname{Dist}[a, \operatorname{Int}[u, x], x] /; \operatorname{FreeQ}[a, x] \ \&\amp; \ !\operatorname{MatchQ}[u, (b_*)*(v_)] /; \operatorname{FreeQ}[b, x]$

Rule 31

$\operatorname{Int}[((a_*) + (b_*)*(x_))^{(-1)}, x_Symbol] := \operatorname{Simp}[\operatorname{Log}[\operatorname{RemoveContent}[a + b*x, x]]/b, x] /; \operatorname{FreeQ}[\{a, b\}, x]$

Rule 36

```
Int[1/((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_)), x_Symbol] := Dist[b/(b*c
- a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] := -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2502

```
Int[Log[((e_.)*((c_.) + (d_.)*(x_)))/((a_.) + (b_.)*(x_))]*(u_), x_Symbol]
:= With[{g = Coeff[Simplify[1/(u*(a + b*x))], x, 0], h = Coeff[Simplify[1/(
u*(a + b*x))], x, 1]}, -Dist[(b - d*e)/(h*(b*c - a*d)), Subst[Int[Log[e*x]/
(1 - e*x), x], x, (c + d*x)/(a + b*x)], x] /; EqQ[g*(b - d*e) - h*(a - c*e)
, 0] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b*c - a*d, 0] && LinearQ[Simplify
[1/(u*(a + b*x))], x]
```

Rule 2503

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*(u_), x_Symbol] := With[{g = Coeff[Simplify[1/(u*(a + b*x))],
x, 0], h = Coeff[Simplify[1/(u*(a + b*x))], x, 1]}, -Simp[(Log[e*(f*(a + b
*x))^p*(c + d*x)^q]^r]^s*Log[-(((b*c - a*d)*(g + h*x))/((d*g - c*h)*(a + b*x
))))]/(b*g - a*h), x] + Dist[(p*r*s*(b*c - a*d))/(b*g - a*h), Int[(Log[e*(f
*(a + b*x))^p*(c + d*x)^q]^r]^(s - 1)*Log[-(((b*c - a*d)*(g + h*x))/((d*g -
c*h)*(a + b*x))))]/((a + b*x)*(c + d*x)), x], x] /; NeQ[b*g - a*h, 0] && Ne
Q[d*g - c*h, 0] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a
*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0] && LinearQ[Simplify[1/(u*(a + b*x))],
x]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_
))^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] := With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x))^p*(c + d*x)^q]^r]^s/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x))^p*(c + d*x)^q]^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] := With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /; !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] := With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] := With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A + B \log(e(a + bx)^n(c + dx)^{-n}))^2}{afh + bghx^2 + h(bfx + agx)} dx &= \int \frac{(A + B \log(e(a + bx)^n(c + dx)^{-n}))^2}{h(a + bx)(f + gx)} dx \\
&= \frac{\int \frac{(A + B \log(e(a + bx)^n(c + dx)^{-n}))^2}{(a + bx)(f + gx)} dx}{h} \\
&= \frac{\int \left(\frac{A^2}{(a + bx)(f + gx)} + \frac{2AB \log(e(a + bx)^n(c + dx)^{-n})}{(a + bx)(f + gx)} + \frac{B^2 \log^2(e(a + bx)^n(c + dx)^{-n})}{(a + bx)(f + gx)} \right) dx}{h} \\
&= \frac{A^2 \int \frac{1}{(a + bx)(f + gx)} dx}{h} + \frac{(2AB) \int \frac{\log(e(a + bx)^n(c + dx)^{-n})}{(a + bx)(f + gx)} dx}{h} + \frac{B^2 \int \frac{\log^2(e(a + bx)^n(c + dx)^{-n})}{(a + bx)(f + gx)} dx}{h} \\
&= -\frac{2AB \log(e(a + bx)^n(c + dx)^{-n}) \log\left(-\frac{(bc - ad)(f + gx)}{(df - cg)(a + bx)}\right)}{(bf - ag)h} - \frac{B^2 \log^2(e(a + bx)^n(c + dx)^{-n})}{(bf - ag)h} \\
&= \frac{A^2 \log(a + bx)}{(bf - ag)h} - \frac{A^2 \log(f + gx)}{(bf - ag)h} - \frac{2AB \log(e(a + bx)^n(c + dx)^{-n})}{(bf - ag)h} \\
&= \frac{A^2 \log(a + bx)}{(bf - ag)h} - \frac{A^2 \log(f + gx)}{(bf - ag)h} - \frac{2AB \log(e(a + bx)^n(c + dx)^{-n})}{(bf - ag)h}
\end{aligned}$$

Mathematica [B] time = 0.90, size = 1415, normalized size = 6.97

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^2/(a*f*h + b*g*h*x^2 + h
*(b*f*x + a*g*x)),x]
```

```
[Out] (3*Log[a + b*x]*(A + B*(-(n*Log[a + b*x])) + n*Log[c + d*x] + Log[(e*(a + b*
x)^n)/(c + d*x)^n]))^2 - 3*(A + B*(-(n*Log[a + b*x])) + n*Log[c + d*x] + Log
[(e*(a + b*x)^n)/(c + d*x)^n])^2*Log[f + g*x] + 3*B*n*(A + B*(-(n*Log[a +
b*x])) + n*Log[c + d*x] + Log[(e*(a + b*x)^n)/(c + d*x)^n])*(Log[a + b*x]^2
- 2*(Log[a + b*x]*Log[(b*(f + g*x))/(b*f - a*g)] + PolyLog[2, (g*(a + b*x)
)/(-(b*f) + a*g)])) - 6*A*B*n*(Log[c + d*x]*(Log[(d*(a + b*x))/(-(b*c) + a*
d)] - Log[(d*(f + g*x))/(d*f - c*g)]) + PolyLog[2, (b*(c + d*x))/(b*c - a*d
)]) - PolyLog[2, (g*(c + d*x))/(-(d*f) + c*g)] + 6*B^2*n*(n*Log[a + b*x] -
n*Log[c + d*x] - Log[(e*(a + b*x)^n)/(c + d*x)^n])*(Log[c + d*x]*(Log[(d*(a
+ b*x))/(-(b*c) + a*d)] - Log[(d*(f + g*x))/(d*f - c*g)]) + PolyLog[2, (b*
(c + d*x))/(b*c - a*d)] - PolyLog[2, (g*(c + d*x))/(-(d*f) + c*g)] + B^2*n
^2*(Log[a + b*x]^2*(Log[a + b*x] - 3*Log[(b*(f + g*x))/(b*f - a*g)]) - 6*Lo
g[a + b*x]*PolyLog[2, (g*(a + b*x))/(-(b*f) + a*g)] + 6*PolyLog[3, (g*(a +
b*x))/(-(b*f) + a*g)] + 3*B^2*n^2*(Log[(d*(a + b*x))/(-(b*c) + a*d)]*Log[c
+ d*x]^2 - Log[c + d*x]^2*Log[(d*(f + g*x))/(d*f - c*g)] + 2*Log[c + d*x]*
PolyLog[2, (b*(c + d*x))/(b*c - a*d)] - 2*Log[c + d*x]*PolyLog[2, (g*(c + d
*x))/(-(d*f) + c*g)] - 2*PolyLog[3, (b*(c + d*x))/(b*c - a*d)] + 2*PolyLog[
3, (g*(c + d*x))/(-(d*f) + c*g)]) - 6*B^2*n^2*((Log[a + b*x]^2*(Log[c + d*x]
- Log[(b*(c + d*x))/(b*c - a*d)]))/2 - Log[a + b*x]*Log[c + d*x]*Log[(b*(
f + g*x))/(b*f - a*g)] - (Log[(g*(c + d*x))/(-(d*f) + c*g)]*(-2*Log[a + b*x]
+ Log[(g*(c + d*x))/(-(d*f) + c*g)]))*(Log[(b*(f + g*x))/(b*f - a*g)] - Lo
g[(d*(f + g*x))/(d*f - c*g)]))/2 + Log[(g*(c + d*x))/(-(d*f) + c*g)]*Log[((
b*f - a*g)*(c + d*x))/((d*f - c*g)*(a + b*x))]*(Log[(b*(f + g*x))/(b*f - a*
g)] - Log[(d*(f + g*x))/(d*f - c*g)] - (Log[((b*f - a*g)*(c + d*x))/((d*f
- c*g)*(a + b*x))])^2*(Log[(-(b*c) + a*d)/(d*(a + b*x))] + Log[(b*(f + g*x)
)/(b*f - a*g)] - Log[(-(b*c) + a*d)*(f + g*x)/((d*f - c*g)*(a + b*x))]))/2
- Log[a + b*x]*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)] - (Log[c + d*x] -
Log[((b*f - a*g)*(c + d*x))/((d*f - c*g)*(a + b*x))])*PolyLog[2, (g*(a + b*
x))/(-(b*f) + a*g)] - (Log[a + b*x] + Log[((b*f - a*g)*(c + d*x))/((d*f - c
*g)*(a + b*x))])*PolyLog[2, (g*(c + d*x))/(-(d*f) + c*g)] - Log[((b*f - a*g
)*(c + d*x))/((d*f - c*g)*(a + b*x))]*(PolyLog[2, (b*(c + d*x))/(d*(a + b*x
))]) - PolyLog[2, ((b*f - a*g)*(c + d*x))/((d*f - c*g)*(a + b*x))]) + PolyLo
g[3, (d*(a + b*x))/(-(b*c) + a*d)] + PolyLog[3, (g*(a + b*x))/(-(b*f) + a*g
)] + PolyLog[3, (g*(c + d*x))/(-(d*f) + c*g)] + PolyLog[3, (b*(c + d*x))/(d
*(a + b*x))] - PolyLog[3, ((b*f - a*g)*(c + d*x))/((d*f - c*g)*(a + b*x)))]
)/(3*(b*f - a*g)*h)
```

fricas [F] time = 1.00, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{B^2 \log \left(\frac{(bx+a)^n e}{(dx+c)^n} \right)^2 + 2 AB \log \left(\frac{(bx+a)^n e}{(dx+c)^n} \right) + A^2}{bghx^2 + afh + (bf + ag)hx}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^2/(a*f*h+b*g*h*x^2+h*(a*g*x+b*f*x)),x, algorithm="fricas")

[Out] integral((B^2*log((b*x + a)^n*e/(d*x + c)^n)^2 + 2*A*B*log((b*x + a)^n*e/(d*x + c)^n) + A^2)/(b*g*h*x^2 + a*f*h + (b*f + a*g)*h*x), x)

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(B \log \left(\frac{(bx+a)^n e}{(dx+c)^n} \right) + A \right)^2}{bghx^2 + afh + (bf + ag)hx} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^2/(a*f*h+b*g*h*x^2+h*(a*g*x+b*f*x)),x, algorithm="giac")

[Out] integrate((B*log((b*x + a)^n*e/(d*x + c)^n) + A)^2/(b*g*h*x^2 + a*f*h + (b*f + a*g)*h), x)

maple [F] time = 4.40, size = 0, normalized size = 0.00

$$\int \frac{\left(B \ln \left(e (bx + a)^n (dx + c)^{-n} \right) + A \right)^2}{bghx^2 + afh + (agx + bxf)h} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^2/(b*g*h*x^2+a*f*h+(a*g*x+b*f*x)*h), x)

[Out] int((A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^2/(b*g*h*x^2+a*f*h+(a*g*x+b*f*x)*h), x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$A^2 \left(\frac{\log(bx+a)}{(bf-ag)h} - \frac{\log(gx+f)}{(bf-ag)h} \right) + \int \frac{B^2 \log \left(\frac{(bx+a)^n}{(dx+c)^n} \right)^2 + B^2 \log \left(\frac{(dx+c)^n}{(bx+a)^n} \right)^2 + B^2 \log(e)^2 + 2 AB \log(e) + 2 (B}{bghx^2 +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^2/(a*f*h+b*g*h*x^2+h*(a*g*x+b*f*x)),x, algorithm="maxima")
```

```
[Out] A^2*(log(b*x + a)/((b*f - a*g)*h) - log(g*x + f)/((b*f - a*g)*h)) + integrate((B^2*log((b*x + a)^n)^2 + B^2*log((d*x + c)^n)^2 + B^2*log(e)^2 + 2*A*B*log(e) + 2*(B^2*log(e) + A*B)*log((b*x + a)^n) - 2*(B^2*log((b*x + a)^n) + B^2*log(e) + A*B)*log((d*x + c)^n))/(b*g*h*x^2 + a*f*h + (b*f*h + a*g*h)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(A + B \ln\left(\frac{e^{(a+bx)^n}}{(c+dx)^n}\right)\right)^2}{h(agx + bfx) + afh + bghx^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^2/(h*(a*g*x + b*f*x) + a*f*h + b*g*h*x^2),x)
```

```
[Out] int((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^2/(h*(a*g*x + b*f*x) + a*f*h + b*g*h*x^2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)**n/((d*x+c)**n)))**2/(a*f*h+b*g*h*x**2+h*(a*g*x+b*f*x)),x)
```

```
[Out] Timed out
```

$$3.261 \quad \int \frac{A+B \log(e(a+bx)^n(c+dx)^{-n})}{afh+bghx^2+h(bfx+agx)} dx$$

Optimal. Leaf size=123

$$\frac{Bn\text{Li}_2\left(\frac{(bf-ag)(c+dx)}{(df-cg)(a+bx)}\right) - \log\left(1 - \frac{(c+dx)(bf-ag)}{(a+bx)(df-cg)}\right) \left(B \log(e(a+bx)^n(c+dx)^{-n}) + A\right)}{h(bf-ag)}$$

[Out] $-(A+B*\ln(e*(b*x+a)^n/((d*x+c)^n)))*\ln(1-(-a*g+b*f)*(d*x+c)/(-c*g+d*f)/(b*x+a))/(-a*g+b*f)/h+B*n*\text{polylog}(2, (-a*g+b*f)*(d*x+c)/(-c*g+d*f)/(b*x+a))/(-a*g+b*f)/h$

Rubi [A] time = 0.39, antiderivative size = 163, normalized size of antiderivative = 1.33, number of steps used = 10, number of rules used = 8, integrand size = 49, $\frac{\text{number of rules}}{\text{integrand size}} = 0.163$, Rules used = {6688, 12, 6742, 36, 31, 2503, 2502, 2315}

$$\frac{Bn\text{PolyLog}\left(2, \frac{(f+gx)(bc-ad)}{(a+bx)(df-cg)} + 1\right)}{h(bf-ag)} + \frac{A \log(a+bx)}{h(bf-ag)} - \frac{A \log(f+gx)}{h(bf-ag)} - \frac{B \log(e(a+bx)^n(c+dx)^{-n}) \log\left(\frac{(f+gx)(bc-ad)}{(a+bx)(df-cg)}\right)}{h(bf-ag)}$$

Antiderivative was successfully verified.

[In] $\text{Int}[(A + B*\text{Log}[(e*(a + b*x)^n]/(c + d*x)^n])/(a*f*h + b*g*h*x^2 + h*(b*f*x + a*g*x)), x]$

[Out] $(A*\text{Log}[a + b*x])/((b*f - a*g)*h) - (A*\text{Log}[f + g*x])/((b*f - a*g)*h) - (B*\text{Log}[(e*(a + b*x)^n]/(c + d*x)^n]*\text{Log}[-(((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x)))])/((b*f - a*g)*h) + (B*n*\text{PolyLog}[2, 1 + ((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x))])/((b*f - a*g)*h)$

Rule 12

$\text{Int}[(a_*)(u_), x_Symbol] \rightarrow \text{Dist}[a, \text{Int}[u, x], x] /; \text{FreeQ}[a, x] \ \&\& \ !\text{MatchQ}[u, (b_*)(v_)] /; \text{FreeQ}[b, x]$

Rule 31

$\text{Int}[((a_) + (b_.)*(x_))^{(-1)}, x_Symbol] \rightarrow \text{Simp}[\text{Log}[\text{RemoveContent}[a + b*x, x]]/b, x] /; \text{FreeQ}[\{a, b\}, x]$

Rule 36

$\text{Int}[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] \rightarrow \text{Dist}[b/(b*c - a*d), \text{Int}[1/(a + b*x), x], x] - \text{Dist}[d/(b*c - a*d), \text{Int}[1/(c + d*x), x], x] /; \text{FreeQ}[\{a, b, c, d\}, x] \ \&\& \ \text{NeQ}[b*c - a*d, 0]$

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] := -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2502

```
Int[Log[((e_.)*((c_.) + (d_.)*(x_)))/((a_.) + (b_.)*(x_))]*(u_), x_Symbol]
:= With[{g = Coeff[Simplify[1/(u*(a + b*x))], x, 0], h = Coeff[Simplify[1/(
u*(a + b*x))], x, 1]}, -Dist[(b - d*e)/(h*(b*c - a*d)), Subst[Int[Log[e*x]/
(1 - e*x), x], x, (c + d*x)/(a + b*x)], x] /; EqQ[g*(b - d*e) - h*(a - c*e)
, 0] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b*c - a*d, 0] && LinearQ[Simplify
[1/(u*(a + b*x))], x]
```

Rule 2503

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*(u_), x_Symbol] := With[{g = Coeff[Simplify[1/(u*(a + b*x))],
x, 0], h = Coeff[Simplify[1/(u*(a + b*x))], x, 1]}, -Simp[(Log[e*(f*(a + b
*x))^p*(c + d*x)^q]^r]^s*Log[-(((b*c - a*d)*(g + h*x))/((d*g - c*h)*(a + b*x
))))]/(b*g - a*h), x] + Dist[(p*r*s*(b*c - a*d))/(b*g - a*h), Int[(Log[e*(f
*(a + b*x))^p*(c + d*x)^q]^r]^(s - 1)*Log[-(((b*c - a*d)*(g + h*x))/((d*g -
c*h)*(a + b*x))))]/((a + b*x)*(c + d*x)), x], x] /; NeQ[b*g - a*h, 0] && Ne
Q[d*g - c*h, 0] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a
*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0] && LinearQ[Simplify[1/(u*(a + b*x))],
x]
```

Rule 6688

```
Int[u_, x_Symbol] := With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] := With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\begin{aligned}
\int \frac{A + B \log(e(a + bx)^n(c + dx)^{-n})}{afh + bghx^2 + h(bfx + agx)} dx &= \int \frac{A + B \log(e(a + bx)^n(c + dx)^{-n})}{h(a + bx)(f + gx)} dx \\
&= \frac{\int \frac{A + B \log(e(a + bx)^n(c + dx)^{-n})}{(a + bx)(f + gx)} dx}{h} \\
&= \frac{\int \left(\frac{A}{(a + bx)(f + gx)} + \frac{B \log(e(a + bx)^n(c + dx)^{-n})}{(a + bx)(f + gx)} \right) dx}{h} \\
&= \frac{A \int \frac{1}{(a + bx)(f + gx)} dx}{h} + \frac{B \int \frac{\log(e(a + bx)^n(c + dx)^{-n})}{(a + bx)(f + gx)} dx}{h} \\
&= -\frac{B \log(e(a + bx)^n(c + dx)^{-n}) \log\left(-\frac{(bc - ad)(f + gx)}{(df - cg)(a + bx)}\right)}{(bf - ag)h} + \frac{(Ab) \int \frac{1}{a + bx} dx}{(bf - ag)h} - \frac{A \log(a + bx)}{(bf - ag)h} \\
&= \frac{A \log(a + bx)}{(bf - ag)h} - \frac{A \log(f + gx)}{(bf - ag)h} - \frac{B \log(e(a + bx)^n(c + dx)^{-n}) \log\left(-\frac{(bc - ad)(f + gx)}{(df - cg)(a + bx)}\right)}{(bf - ag)h} \\
&= \frac{A \log(a + bx)}{(bf - ag)h} - \frac{A \log(f + gx)}{(bf - ag)h} - \frac{B \log(e(a + bx)^n(c + dx)^{-n}) \log\left(-\frac{(bc - ad)(f + gx)}{(df - cg)(a + bx)}\right)}{(bf - ag)h}
\end{aligned}$$

Mathematica [B] time = 0.27, size = 303, normalized size = 2.46

$$\frac{-2A \log(a + bx) + 2B \log(f + gx) \log(e(a + bx)^n(c + dx)^{-n}) - 2B \log(a + bx) \log(e(a + bx)^n(c + dx)^{-n}) + 2Bn \log(a + bx) \log(f + gx)}{(bf - ag)h}$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])/(a*f*h + b*g*h*x^2 + h*(b*f*x + a*g*x)), x]

[Out] -((-2*A*Log[a + b*x] + B*n*Log[a + b*x]^2 - 2*B*n*Log[a + b*x]*Log[c + d*x] + 2*B*n*Log[(d*(a + b*x))/(-b*c + a*d)]*Log[c + d*x] - 2*B*Log[a + b*x]*Log[(e*(a + b*x)^n)/(c + d*x)^n] + 2*A*Log[f + g*x] - 2*B*n*Log[a + b*x]*Log[f + g*x] + 2*B*n*Log[c + d*x]*Log[f + g*x] + 2*B*Log[(e*(a + b*x)^n)/(c + d*x)^n]*Log[f + g*x] + 2*B*n*Log[a + b*x]*Log[(b*(f + g*x))/(b*f - a*g)] - 2*B*n*Log[c + d*x]*Log[(d*(f + g*x))/(d*f - c*g)] + 2*B*n*PolyLog[2, (g*(a + b*x))/(-b*f + a*g)] + 2*B*n*PolyLog[2, (b*(c + d*x))/(b*c - a*d)] - 2*B*n*PolyLog[2, (g*(c + d*x))/(-d*f + c*g)])/((2*b*f - 2*a*g)*h)

fricas [F] time = 0.97, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{B \log \left(\frac{(bx+a)^n e}{(dx+c)^n} \right) + A}{bghx^2 + afh + (bf + ag)hx}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))/(a*f*h+b*g*h*x^2+h*(a*g*x+b*f*x)),x, algorithm="fricas")

[Out] integral((B*log((b*x + a)^n*e/(d*x + c)^n) + A)/(b*g*h*x^2 + a*f*h + (b*f + a*g)*h*x), x)

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{B \log \left(\frac{(bx+a)^n e}{(dx+c)^n} \right) + A}{bghx^2 + afh + (bf + ag)h} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))/(a*f*h+b*g*h*x^2+h*(a*g*x+b*f*x)),x, algorithm="giac")

[Out] integrate((B*log((b*x + a)^n*e/(d*x + c)^n) + A)/(b*g*h*x^2 + a*f*h + (b*f*x + a*g*x)*h), x)

maple [C] time = 0.34, size = 1447, normalized size = 11.76

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int((A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))/(b*g*h*x^2+a*f*h+(a*g*x+b*f*x)*h),x)

[Out] 1/2*I/h/(a*g-b*f)*ln(b*x+a)*B*Pi*csgn(I*(b*x+a)^n)*csgn(I/((d*x+c)^n))*csgn(I*(b*x+a)^n/((d*x+c)^n))-1/2*I/h/(a*g-b*f)*ln(g*x+f)*B*Pi*csgn(I*(b*x+a)^n/((d*x+c)^n)^3+1/(a*g-b*f)*A/h*ln(g*x+f)-1/(a*g-b*f)*A/h*ln(b*x+a)+1/2*I/h/(a*g-b*f)*ln(g*x+f)*B*Pi*csgn(I*(b*x+a)^n)*csgn(I*(b*x+a)^n/((d*x+c)^n))^2+1/2*I/h/(a*g-b*f)*ln(g*x+f)*B*Pi*csgn(I*e)*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)^2-1/2*I/h/(a*g-b*f)*ln(b*x+a)*B*Pi*csgn(I*(b*x+a)^n)*csgn(I*(b*x+a)^n/((d*x+c)^n))^2+1/(a*g-b*f)*B/h*n*ln((c*g-d*f+(g*x+f)*d)/(c*g-d*f))*ln(g*x+f)-1/(a*g-b*f)*B/h*n*ln((-a*d+b*c+(b*x+a)*d)/(-a*d+b*c))*ln(b*x+a)-1/(a*g-b*f)*B/h*n*ln((a*g-b*f+(g*x+f)*b)/(a*g-b*f))*ln(g*x+f)-1/2*I/h/(a*g-b*f)*ln(g*x+f)*B*Pi*csgn(I*(b*x+a)^n)*csgn(I/((d*x+c)^n))*csgn(I*(b*x+a)^n/((d*x+c)^n))+

$$\frac{1}{2}I/h/(a*g-b*f)*\ln(g*x+f)*B*Pi*csgn(I/((d*x+c)^n))*csgn(I*(b*x+a)^n/((d*x+c)^n))^2-1/2*I/h/(a*g-b*f)*\ln(b*x+a)*B*Pi*csgn(I*e)*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)^2-1/(a*g-b*f)*B/h*\ln((b*x+a)^n)*\ln(b*x+a)-1/(a*g-b*f)*B/h*\ln((d*x+c)^n)*\ln(g*x+f)-1/2*I/h/(a*g-b*f)*\ln(b*x+a)*B*Pi*csgn(I*(b*x+a)^n/((d*x+c)^n))*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)^2-1/2*I/h/(a*g-b*f)*\ln(g*x+f)*B*Pi*csgn(I*e)*csgn(I*(b*x+a)^n/((d*x+c)^n))*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)-1/2*I/h/(a*g-b*f)*\ln(b*x+a)*B*Pi*csgn(I/((d*x+c)^n))*csgn(I*(b*x+a)^n/((d*x+c)^n))^2+1/2*I/h/(a*g-b*f)*\ln(g*x+f)*B*Pi*csgn(I*(b*x+a)^n/((d*x+c)^n))*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)^2+1/2*I/h/(a*g-b*f)*\ln(b*x+a)*B*Pi*csgn(I*e)*csgn(I*(b*x+a)^n/((d*x+c)^n))*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)+1/2*I/h/(a*g-b*f)*\ln(b*x+a)*B*Pi*csgn(I*(b*x+a)^n/((d*x+c)^n))^3-1/2*I/h/(a*g-b*f)*\ln(g*x+f)*B*Pi*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)^3+1/(a*g-b*f)*B/h*\ln((d*x+c)^n)*\ln(b*x+a)+1/(a*g-b*f)*B/h*\ln((b*x+a)^n)*\ln(g*x+f)+1/2*I/h/(a*g-b*f)*\ln(b*x+a)*B*Pi*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)^3+1/h*B*n/(a*g-b*f)*dilog((c*g-d*f+(g*x+f)*d)/(c*g-d*f))-1/h*B*n/(a*g-b*f)*dilog((a*g-b*f+(g*x+f)*b)/(a*g-b*f))+1/2/(a*g-b*f)*B/h*n*\ln(b*x+a)^2-1/h*B*n/(a*g-b*f)*dilog((-a*d+b*c+(b*x+a)*d)/(-a*d+b*c))+1/(a*g-b*f)*B/h*\ln(e)*\ln(g*x+f)-1/(a*g-b*f)*B/h*\ln(e)*\ln(b*x+a)$$

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$A \left(\frac{\log(bx+a)}{(bf-ag)h} - \frac{\log(gx+f)}{(bf-ag)h} \right) - B \int \frac{\log((bx+a)^n) - \log((dx+c)^n) + \log(e)}{bghx^2 + afh + (bfh + agh)x} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))/(a*f*h+b*g*h*x^2+h*(a*g*x+b*f*x)),x, algorithm="maxima")

[Out] A*(log(b*x + a)/((b*f - a*g)*h) - log(g*x + f)/((b*f - a*g)*h)) - B*integrate(-log((b*x + a)^n) - log((d*x + c)^n) + log(e))/(b*g*h*x^2 + a*f*h + (b*f*h + a*g*h)*x), x)

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A + B \ln\left(\frac{e(a+bx)^n}{(c+dx)^n}\right)}{h(ax+bfx) + afh + bghx^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))/(h*(a*g*x + b*f*x) + a*f*h + b*g*h*x^2), x)

[Out] int((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))/(h*(a*g*x + b*f*x) + a*f*h + b*g*h*x^2), x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*ln(e*(b*x+a)**n/((d*x+c)**n)))/(a*f*h+b*g*h*x**2+h*(a*g*x+b*f*x)),x)

[Out] Timed out

$$3.262 \quad \int \frac{1}{(afh + bghx^2 + h(bfx + agx))(A + B \log(e(a + bx)^n(c + dx)^{-n}))} dx$$

Optimal. Leaf size=83

$$\frac{\text{Subst} \left(\text{Int} \left(\frac{1}{(a+bx)(f+gx) \left(B \log \left(e \left(\frac{a+bx}{c+dx} \right)^n \right) + A \right)}, x \right), e \left(\frac{a+bx}{c+dx} \right)^n, e(a + bx)^n(c + dx)^{-n} \right)}{h}$$

[Out] `_eval(Unintegrable(1/(b*x+a)/(g*x+f)/(A+B*ln(e*((b*x+a)/(d*x+c))^n)),x),e*((b*x+a)/(d*x+c))^n = e*(b*x+a)^n/((d*x+c)^n))/h`

Rubi [A] time = 0.43, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(afh + bghx^2 + h(bfx + agx))(A + B \log(e(a + bx)^n(c + dx)^{-n}))} dx$$

Verification is Not applicable to the result.

[In] `Int[1/((a*f*h + b*g*h*x^2 + h*(b*f*x + a*g*x))*(A + B*Log[(e*(a + b*x)^n)/(c + d*x]^n))],x]`

[Out] `(b*Defer[Int][1/((a + b*x)*(A + B*Log[(e*(a + b*x)^n)/(c + d*x]^n))], x)]/(b*f - a*g)*h - (g*Defer[Int][1/((f + g*x)*(A + B*Log[(e*(a + b*x)^n)/(c + d*x]^n))], x)]/((b*f - a*g)*h)`

Rubi steps

$$\begin{aligned} \int \frac{1}{(afh + bghx^2 + h(bfx + agx))(A + B \log(e(a + bx)^n(c + dx)^{-n}))} dx &= \int \frac{1}{h(a + bx)(f + gx)(A + B \log(e(a + bx)^n(c + dx)^{-n}))} dx \\ &= \frac{\int \frac{1}{(a+bx)(f+gx)(A+B \log(e(a+bx)^n(c+dx)^{-n}))} dx}{h} \\ &= \frac{\int \left(\frac{b}{(bf-ag)(a+bx)(A+B \log(e(a+bx)^n(c+dx)^{-n}))} \right) dx}{h} \\ &= \frac{b \int \frac{1}{(a+bx)(A+B \log(e(a+bx)^n(c+dx)^{-n}))} dx}{(bf-ag)h} \end{aligned}$$

Mathematica [A] time = 0.13, size = 0, normalized size = 0.00

$$\int \frac{1}{(afh + bghx^2 + h(bfx + agx))(A + B \log(e(a + bx)^n(c + dx)^{-n}))} dx$$

Verification is Not applicable to the result.

[In] Integrate[1/((a*f*h + b*g*h*x^2 + h*(b*f*x + a*g*x))*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])),x]

[Out] Integrate[1/((a*f*h + b*g*h*x^2 + h*(b*f*x + a*g*x))*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])), x]

fricas [A] time = 0.68, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{1}{Abghx^2 + Aafh + (Abf + Aag)hx + (Bbghx^2 + Bafh + (Bbf + Bag)hx) \log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right)}, x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(a*f*h+b*g*h*x^2+h*(a*g*x+b*f*x))/(A+B*log(e*(b*x+a)^n/((d*x+c)^n))),x, algorithm="fricas")

[Out] integral(1/(A*b*g*h*x^2 + A*a*f*h + (A*b*f + A*a*g)*h*x + (B*b*g*h*x^2 + B*a*f*h + (B*b*f + B*a*g)*h*x)*log((b*x + a)^n*e/(d*x + c)^n)), x)

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(bghx^2 + afh + (bfx + agx)h) \left(B \log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right) + A \right)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(a*f*h+b*g*h*x^2+h*(a*g*x+b*f*x))/(A+B*log(e*(b*x+a)^n/((d*x+c)^n))),x, algorithm="giac")

[Out] integrate(1/((b*g*h*x^2 + a*f*h + (b*f*x + a*g*x)*h)*(B*log((b*x + a)^n*e/(d*x + c)^n) + A)), x)

maple [A] time = 12.99, size = 0, normalized size = 0.00

$$\int \frac{1}{(bghx^2 + afh + (agx + bxf)h) \left(B \ln\left(e(bx + a)^n(dx + c)^{-n}\right) + A \right)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(1/(b*g*h*x^2+a*f*h+(a*g*x+b*f*x)*h)/(A+B*ln(e*(b*x+a)^n/((d*x+c)^n))),x
)

[Out] int(1/(b*g*h*x^2+a*f*h+(a*g*x+b*f*x)*h)/(A+B*ln(e*(b*x+a)^n/((d*x+c)^n))),x
)

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(bghx^2 + afh + (bf x + agx)h) \left(B \log \left(\frac{(bx+a)^n e}{(dx+c)^n} \right) + A \right)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(a*f*h+b*g*h*x^2+h*(a*g*x+b*f*x))/(A+B*log(e*(b*x+a)^n/((d*x+c)^n))),x, algorithm="maxima")

[Out] integrate(1/((b*g*h*x^2 + a*f*h + (b*f*x + a*g*x)*h)*(B*log((b*x + a)^n*e/(d*x + c)^n) + A)), x)

mupad [A] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\left(A + B \ln \left(\frac{e^{(a+bx)^n}}{(c+dx)^n} \right) \right) (h (agx + bfx) + afh + bghx^2)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(1/((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))*(h*(a*g*x + b*f*x) + a*f*h + b*g*h*x^2)),x)

[Out] int(1/((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))*(h*(a*g*x + b*f*x) + a*f*h + b*g*h*x^2)), x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(a*f*h+b*g*h*x**2+h*(a*g*x+b*f*x))/(A+B*ln(e*(b*x+a)**n/((d*x+c)**n))),x)

[Out] Timed out

$$3.263 \quad \int \frac{1}{(afh + bghx^2 + h(bfx + agx))(A + B \log(e(a + bx)^n(c + dx)^{-n}))^2} dx$$

Optimal. Leaf size=83

$$\frac{\text{Subst}\left(\text{Int}\left(\frac{1}{(a+bx)(f+gx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}, x\right), e\left(\frac{a+bx}{c+dx}\right)^n, e(a+bx)^n(c+dx)^{-n}\right)}{h}$$

[Out] _eval(Unintegrable(1/(b*x+a)/(g*x+f)/(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2,x), e*((b*x+a)/(d*x+c))^n = e*(b*x+a)^n/((d*x+c)^n)/h

Rubi [A] time = 0.46, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int \frac{1}{(afh + bghx^2 + h(bfx + agx))(A + B \log(e(a + bx)^n(c + dx)^{-n}))^2} dx$$

Verification is Not applicable to the result.

[In] Int[1/((a*f*h + b*g*h*x^2 + h*(b*f*x + a*g*x))*(A + B*Log[(e*(a + b*x)^n)/(c + d*x]^n))^2), x]

[Out] (b*Defer[Int][1/((a + b*x)*(A + B*Log[(e*(a + b*x)^n)/(c + d*x]^n))^2), x]) / ((b*f - a*g)*h) - (g*Defer[Int][1/((f + g*x)*(A + B*Log[(e*(a + b*x)^n)/(c + d*x]^n))^2), x]) / ((b*f - a*g)*h)

Rubi steps

$$\begin{aligned} \int \frac{1}{(afh + bghx^2 + h(bfx + agx))(A + B \log(e(a + bx)^n(c + dx)^{-n}))^2} dx &= \int \frac{1}{h(a + bx)(f + gx)(A + B \log(e(a + bx)^n(c + dx)^{-n}))^2} dx \\ &= \frac{\int \frac{1}{(a+bx)(f+gx)(A+B \log(e(a+bx)^n(c+dx)^{-n}))}}{h} \\ &= \frac{\int \left(\frac{b}{(bf-ag)(a+bx)(A+B \log(e(a+bx)^n(c+dx)^{-n}))} \right)}{h} \\ &= \frac{b \int \frac{1}{(a+bx)(A+B \log(e(a+bx)^n(c+dx)^{-n}))^2} dx}{(bf-ag)h} \end{aligned}$$

Mathematica [A] time = 0.27, size = 0, normalized size = 0.00

$$\int \frac{1}{(afh + bghx^2 + h(bfx + agx)) \left(A + B \log(e(a + bx)^n (c + dx)^{-n}) \right)^2} dx$$

Verification is Not applicable to the result.

[In] Integrate[1/((a*f*h + b*g*h*x^2 + h*(b*f*x + a*g*x))*(A + B*Log[(e*(a + b*x)^n)/(c + d*x]^n))^2), x]

[Out] Integrate[1/((a*f*h + b*g*h*x^2 + h*(b*f*x + a*g*x))*(A + B*Log[(e*(a + b*x)^n)/(c + d*x]^n))^2), x]

fricas [A] time = 0.88, size = 0, normalized size = 0.00

$$\text{integral} \left(\frac{1}{A^2 b g h x^2 + A^2 a f h + (A^2 b f + A^2 a g) h x + (B^2 b g h x^2 + B^2 a f h + (B^2 b f + B^2 a g) h x) \log\left(\frac{(b x + a)^n e}{(d x + c)^n}\right) + 2} \right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(a*f*h+b*g*h*x^2+h*(a*g*x+b*f*x))/(A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^2,x, algorithm="fricas")

[Out] integral(1/(A^2*b*g*h*x^2 + A^2*a*f*h + (A^2*b*f + A^2*a*g)*h*x + (B^2*b*g*h*x^2 + B^2*a*f*h + (B^2*b*f + B^2*a*g)*h*x)*log((b*x + a)^n*e/(d*x + c)^n)^2 + 2*(A*B*b*g*h*x^2 + A*B*a*f*h + (A*B*b*f + A*B*a*g)*h*x)*log((b*x + a)^n*e/(d*x + c)^n)), x)

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(bghx^2 + afh + (bfx + agx)h) \left(B \log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right) + A \right)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(a*f*h+b*g*h*x^2+h*(a*g*x+b*f*x))/(A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^2,x, algorithm="giac")

[Out] integrate(1/((b*g*h*x^2 + a*f*h + (b*f*x + a*g*x)*h)*(B*log((b*x + a)^n*e/(d*x + c)^n) + A)^2), x)

maple [A] time = 5.41, size = 0, normalized size = 0.00

$$\int \frac{1}{(bghx^2 + afh + (agx + bxf)h) \left(B \ln\left(e(bx + a)^n (dx + c)^{-n}\right) + A \right)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(1/(b*g*h*x^2+a*f*h+(a*g*x+b*f*x)*h)/(A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^2, x)

[Out] int(1/(b*g*h*x^2+a*f*h+(a*g*x+b*f*x)*h)/(A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^2, x)

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$(df - cg) \int \frac{1}{(bcf^2hn - adf^2hn)AB + (bcf^2hn \log(e) - adf^2hn \log(e))B^2 + ((bcg^2hn - adg^2hn)AB + (bcg^2hn$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(a*f*h+b*g*h*x^2+h*(a*g*x+b*f*x))/(A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^2, x, algorithm="maxima")

[Out] (d*f - c*g)*integrate(1/((b*c*f^2*h*n - a*d*f^2*h*n)*A*B + (b*c*f^2*h*n*log(e) - a*d*f^2*h*n*log(e))*B^2 + ((b*c*g^2*h*n - a*d*g^2*h*n)*A*B + (b*c*g^2*h*n*log(e) - a*d*g^2*h*n*log(e))*B^2)*x^2 + 2*((b*c*f*g*h*n - a*d*f*g*h*n)*A*B + (b*c*f*g*h*n*log(e) - a*d*f*g*h*n*log(e))*B^2)*x + ((b*c*g^2*h*n - a*d*g^2*h*n)*B^2*x^2 + 2*(b*c*f*g*h*n - a*d*f*g*h*n)*B^2*x + (b*c*f^2*h*n - a*d*f^2*h*n)*B^2)*log((b*x + a)^n) - ((b*c*g^2*h*n - a*d*g^2*h*n)*B^2*x^2 + 2*(b*c*f*g*h*n - a*d*f*g*h*n)*B^2*x + (b*c*f^2*h*n - a*d*f^2*h*n)*B^2)*log((d*x + c)^n), x) - (d*x + c)/((b*c*f*h*n - a*d*f*h*n)*A*B + (b*c*f*h*n*log(e) - a*d*f*h*n*log(e))*B^2 + ((b*c*g*h*n - a*d*g*h*n)*A*B + (b*c*g*h*n*log(e) - a*d*g*h*n*log(e))*B^2)*x + ((b*c*g*h*n - a*d*g*h*n)*B^2*x + (b*c*f*h*n - a*d*f*h*n)*B^2)*log((b*x + a)^n) - ((b*c*g*h*n - a*d*g*h*n)*B^2*x + (b*c*f*h*n - a*d*f*h*n)*B^2)*log((d*x + c)^n))

mupad [A] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\left(A + B \ln\left(\frac{e^{(a+bx)^n}}{(c+dx)^n}\right)\right)^2 (h(agx + bfx) + afh + bghx^2)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(1/((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^2*(h*(a*g*x + b*f*x) + a*f*h + b*g*h*x^2)), x)

[Out] int(1/((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^2*(h*(a*g*x + b*f*x) + a*f*h + b*g*h*x^2)), x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a*f*h+b*g*h*x**2+h*(a*g*x+b*f*x))/(A+B*ln(e*(b*x+a)**n/((d*x+c)**n)))**2,x)
```

```
[Out] Timed out
```

Chapter 4

Listing of Grading functions

The following are the current version of the grading functions used for grading the quality of the antiderivative with reference to the optimal antiderivative included in the test suite.

There is a version for Maple and for Mathematica/Rubi. There is a version for grading Sympy and version for use with Sagemath.

The following are links to the current source code.

The following are the listings of source code of the grading functions.

4.0.1 Mathematica and Rubi grading function

```
(* Original version thanks to Albert Rich emailed on 03/21/2017 *)
(* ::Package:: *)

(* ::Subsection:: *)
(*GradeAntiderivative[result,optimal]*)

(* ::Text:: *)
(*If result and optimal are mathematical expressions, *)
(*      GradeAntiderivative[result,optimal] returns*)
(* "F" if the result fails to integrate an expression that*)
(*      is integrable*)
(* "C" if result involves higher level functions than necessary*)
(* "B" if result is more than twice the size of the optimal*)
(*      antiderivative*)
(* "A" if result can be considered optimal*)

GradeAntiderivative[result_,optimal_] :=
  If[ExpnType[result]<=ExpnType[optimal],
```

```

If[FreeQ[result,Complex] || Not[FreeQ[optimal,Complex]],
  If[LeafCount[result]<=2*LeafCount[optimal],
    "A",
    "B"],
  "C"],
If[FreeQ[result,Integrate] && FreeQ[result,Int],
  "C",
"F"]]

```

```

(* ::Text:: *)
(*The following summarizes the type number assigned an *)
(*expression based on the functions it involves*)
(*1 = rational function*)
(*2 = algebraic function*)
(*3 = elementary function*)
(*4 = special function*)
(*5 = hyperpergeometric function*)
(*6 = appell function*)
(*7 = rootsum function*)
(*8 = integrate function*)
(*9 = unknown function*)

```

```

ExpnType[expn_] :=
  If[AtomQ[expn],
    1,
  If[ListQ[expn],
    Max[Map[ExpnType,expn]],
  If[Head[expn]===Power,
    If[IntegerQ[expn[[2]]],
      ExpnType[expn[[1]]],
    If[Head[expn[[2]]]===Rational,
      If[IntegerQ[expn[[1]]] || Head[expn[[1]]]===Rational,
        1,
        Max[ExpnType[expn[[1]],2]],
      Max[ExpnType[expn[[1]],ExpnType[expn[[2]],3]],
    If[Head[expn]===Plus || Head[expn]===Times,
      Max[ExpnType[First[expn]],ExpnType[Rest[expn]]],
    If[ElementaryFunctionQ[Head[expn]],
      Max[3,ExpnType[expn[[1]]],
    If[SpecialFunctionQ[Head[expn]],
      Apply[Max,Append[Map[ExpnType,Apply[List,expn]],4]],
    If[HypergeometricFunctionQ[Head[expn]],
      Apply[Max,Append[Map[ExpnType,Apply[List,expn]],5]],
    If[AppellFunctionQ[Head[expn]],
      Apply[Max,Append[Map[ExpnType,Apply[List,expn]],6]],

```

```

If[Head[expn]===RootSum,
  Apply[Max,Append[Map[ExpnType,Apply[List,expn]],7]],
If[Head[expn]===Integrate || Head[expn]===Int,
  Apply[Max,Append[Map[ExpnType,Apply[List,expn]],8]],
9]]]]]]]]]]

ElementaryFunctionQ[func_] :=
MemberQ[{
  Exp,Log,
  Sin,Cos,Tan,Cot,Sec,Csc,
  ArcSin,ArcCos,ArcTan,ArcCot,ArcSec,ArcCsc,
  Sinh,Cosh,Tanh,Coth,Sech,Csch,
  ArcSinh,ArcCosh,ArcTanh,ArcCoth,ArcSech,ArcCsch
},func]

SpecialFunctionQ[func_] :=
MemberQ[{
  Erf, Erfc, Erfi,
  FresnelS, FresnelC,
  ExpIntegralE, ExpIntegralEi, LogIntegral,
  SinIntegral, CosIntegral, SinhIntegral, CoshIntegral,
  Gamma, LogGamma, PolyGamma,
  Zeta, PolyLog, ProductLog,
  EllipticF, EllipticE, EllipticPi
},func]

HypergeometricFunctionQ[func_] :=
MemberQ[{Hypergeometric1F1,Hypergeometric2F1,HypergeometricPFQ},func]

AppellFunctionQ[func_] :=
MemberQ[{AppellF1},func]

```

4.0.2 Maple grading function

```

# File: GradeAntiderivative.mpl
# Original version thanks to Albert Rich emailed on 03/21/2017

#Nasser 03/22/2017 Use Maple leaf count instead since buildin
#Nasser 03/23/2017 missing 'ln' for ElementaryFunctionQ added
#Nasser 03/24/2017 corrected the check for complex result
#Nasser 10/27/2017 check for leafsize and do not call ExpnType()
#
# if leaf size is "too large". Set at 500,000

```

```

#Nasser 12/22/2019 Added debug flag, added 'dilog' to special functions
# see problem 156, file Apostol_Problems

GradeAntiderivative := proc(result,optimal)
local leaf_count_result, leaf_count_optimal,ExpnType_result,ExpnType_optimal,
    debug:=false;

    leaf_count_result:=leafcount(result);
    #do NOT call ExpnType() if leaf size is too large. Recursion problem
    if leaf_count_result > 500000 then
        return "B";
    fi;

    leaf_count_optimal:=leafcount(optimal);

    ExpnType_result:=ExpnType(result);
    ExpnType_optimal:=ExpnType(optimal);

    if debug then
        print("ExpnType_result",ExpnType_result," ExpnType_optimal=",
            ExpnType_optimal);
    fi;

# If result and optimal are mathematical expressions,
# GradeAntiderivative[result,optimal] returns
# "F" if the result fails to integrate an expression that
# is integrable
# "C" if result involves higher level functions than necessary
# "B" if result is more than twice the size of the optimal
# antiderivative
# "A" if result can be considered optimal

#This check below actually is not needed, since I only
#call this grading only for passed integrals. i.e. I check
#for "F" before calling this. But no harm of keeping it here.
#just in case.

if not type(result,freeof('int')) then
    return "F";
end if;

if ExpnType_result<=ExpnType_optimal then
    if debug then
        print("ExpnType_result<=ExpnType_optimal");
    fi;

```

```

if is_contains_complex(result) then
  if is_contains_complex(optimal) then
    if debug then
      print("both result and optimal complex");
    fi;
    #both result and optimal complex
    if leaf_count_result<=2*leaf_count_optimal then
      return "A";
    else
      return "B";
    end if
  else #result contains complex but optimal is not
    if debug then
      print("result contains complex but optimal is not");
    fi;
    return "C";
  end if
else # result do not contain complex
  # this assumes optimal do not as well
  if debug then
    print("result do not contain complex, this assumes optimal do not
as well");
  fi;
  if leaf_count_result<=2*leaf_count_optimal then
    if debug then
      print("leaf_count_result<=2*leaf_count_optimal");
    fi;
    return "A";
  else
    if debug then
      print("leaf_count_result>2*leaf_count_optimal");
    fi;
    return "B";
  end if
end if
else #ExpnType(result) > ExpnType(optimal)
  if debug then
    print("ExpnType(result) > ExpnType(optimal)");
  fi;
  return "C";
end if

end proc:

#
# is_contains_complex(result)
# takes expressions and returns true if it contains "I" else false

```

```

#
#Nasser 032417
is_contains_complex:= proc(expression)
  return (has(expression,I));
end proc:

# The following summarizes the type number assigned an expression
# based on the functions it involves
# 1 = rational function
# 2 = algebraic function
# 3 = elementary function
# 4 = special function
# 5 = hyperpergeometric function
# 6 = appell function
# 7 = rootsum function
# 8 = integrate function
# 9 = unknown function

ExpnType := proc(expn)
  if type(expn,'atomic') then
    1
  elif type(expn,'list') then
    apply(max,map(ExpnType,expn))
  elif type(expn,'sqrt') then
    if type(op(1,expn),'rational') then
      1
    else
      max(2,ExpnType(op(1,expn)))
    end if
  elif type(expn,'^^') then
    if type(op(2,expn),'integer') then
      ExpnType(op(1,expn))
    elif type(op(2,expn),'rational') then
      if type(op(1,expn),'rational') then
        1
      else
        max(2,ExpnType(op(1,expn)))
      end if
    else
      max(3,ExpnType(op(1,expn)),ExpnType(op(2,expn)))
    end if
  elif type(expn,'`+`') or type(expn,'`*`') then
    max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
  elif ElementaryFunctionQ(op(0,expn)) then
    max(3,ExpnType(op(1,expn)))
  elif SpecialFunctionQ(op(0,expn)) then
    max(4,apply(max,map(ExpnType,[op(expn)])))
  end if
end proc:

```



```

elif HypergeometricFunctionQ(op(0,expn)) then
  max(5,apply(max,map(ExpnType,[op(expn)])))
elif AppellFunctionQ(op(0,expn)) then
  max(6,apply(max,map(ExpnType,[op(expn)])))
elif op(0,expn)='int' then
  max(8,apply(max,map(ExpnType,[op(expn)]))) else
9
end if
end proc:

ElementaryFunctionQ := proc(func)
  member(func,[
    exp,log,ln,
    sin,cos,tan,cot,sec,csc,
    arcsin,arccos,arctan,arccot,arcsec,arccsc,
    sinh,cosh,tanh,coth,sech,csch,
    arcsinh,arccosh,arctanh,arccoth,arcsech,arccsch])
end proc:

SpecialFunctionQ := proc(func)
  member(func,[
    erf,erfc,erfi,
    FresnelS,FresnelC,
    Ei,Ei,Li,Si,Ci,Shi,Chi,
    GAMMA,lnGAMMA,Psi,Zeta,polylog,dilog,LambertW,
    EllipticF,EllipticE,EllipticPi])
end proc:

HypergeometricFunctionQ := proc(func)
  member(func,[Hypergeometric1F1,hypergeom,HypergeometricPFQ])
end proc:

AppellFunctionQ := proc(func)
  member(func,[AppellF1])
end proc:

# u is a sum or product. rest(u) returns all but the
# first term or factor of u.
rest := proc(u) local v;
  if nops(u)=2 then
    op(2,u)
  else
    apply(op(0,u),op(2..nops(u),u))
  end if
end proc:

```

```
#leafcount(u) returns the number of nodes in u.
#Nasser 3/23/17 Replaced by build-in leafCount from package in Maple
leafcount := proc(u)
  MmaTranslator[Mma][LeafCount](u);
end proc:
```

4.0.3 Sympy grading function

```
#Dec 24, 2019. Nasser M. Abbasi:
#           Port of original Maple grading function by
#           Albert Rich to use with Sympy/Python
#Dec 27, 2019 Nasser. Added `RootSum`. See problem 177, Timofeev file
#           added 'exp_polar'
from sympy import *

def leaf_count(expr):
    #sympy do not have leaf count function. This is approximation
    return round(1.7*count_ops(expr))

def is_sqrt(expr):
    if isinstance(expr,Pow):
        if expr.args[1] == Rational(1,2):
            return True
        else:
            return False
    else:
        return False

def is_elementary_function(func):
    return func in [exp,log,ln,sin,cos,tan,cot,sec,csc,
        asin,acos,atan,acot,asec,acsc,sinh,cosh,tanh,coth,sech,csch,
        asinh,acosh,atanh,acoth,asech,acsch
        ]

def is_special_function(func):
    return func in [ erf,erfc,erfi,
        fresnels,fresnelc,Ei,Ei,Li,Si,Ci,Shi,Chi,
        gamma,loggamma,digamma,zeta,polylog,LambertW,
        elliptic_f,elliptic_e,elliptic_pi,exp_polar
        ]

def is_hypergeometric_function(func):
    return func in [hyper]

def is_appell_function(func):
    return func in [appellf1]
```

```

def is_atom(expn):
    try:
        if expn.isAtom or isinstance(expn,int) or isinstance(expn,float):
            return True
        else:
            return False

    except AttributeError as error:
        return False

def expnType(expn):
    debug=False
    if debug:
        print("expn=",expn,"type(expn)=",type(expn))

    if is_atom(expn):
        return 1
    elif isinstance(expn,list):
        return max(map(expnType, expn)) #apply(max,map(ExpnType,expn))
    elif is_sqrt(expn):
        if isinstance(expn.args[0],Rational): #type(op(1,expn),'rational')
            return 1
        else:
            return max(2,expnType(expn.args[0])) #max(2,ExpnType(op(1,expn)))
    elif isinstance(expn,Pow): #type(expn,'`^`')
        if isinstance(expn.args[1],Integer): #type(op(2,expn),'integer')
            return expnType(expn.args[0]) #ExpnType(op(1,expn))
        elif isinstance(expn.args[1],Rational): #type(op(2,expn),'rational')
            if isinstance(expn.args[0],Rational): #type(op(1,expn),'rational')
                return 1
            else:
                return max(2,expnType(expn.args[0])) #max(2,ExpnType(op(1,expn)
))
        else:
            return max(3,expnType(expn.args[0]),expnType(expn.args[1])) #max(3,
ExpnType(op(1,expn)),ExpnType(op(2,expn)))
    elif isinstance(expn,Add) or isinstance(expn,Mul): #type(expn,'`+`') or type
(expn,'`*`')
        m1 = expnType(expn.args[0])
        m2 = expnType(list(expn.args[1:]))
        return max(m1,m2) #max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
    elif is_elementary_function(expn.func): #ElementaryFunctionQ(op(0,expn))
        return max(3,expnType(expn.args[0])) #max(3,ExpnType(op(1,expn)))
    elif is_special_function(expn.func): #SpecialFunctionQ(op(0,expn))
        m1 = max(map(expnType, list(expn.args)))
        return max(4,m1) #max(4,apply(max,map(ExpnType,[op(expn)])))

```

```

elif is_hypergeometric_function(expn.func): #HypergeometricFunctionQ(op(0,
expn))
    m1 = max(map(expnType, list(expn.args)))
    return max(5,m1) #max(5,apply(max,map(ExpnType,[op(expn)])))
elif is_appell_function(expn.func):
    m1 = max(map(expnType, list(expn.args)))
    return max(6,m1) #max(5,apply(max,map(ExpnType,[op(expn)])))
elif isinstance(expn,RootSum):
    m1 = max(map(expnType, list(expn.args))) #Apply[Max,Append[Map[ExpnType,
Apply[List,expn]],7]],
    return max(7,m1)
elif str(expn).find("Integral") != -1:
    m1 = max(map(expnType, list(expn.args)))
    return max(8,m1) #max(5,apply(max,map(ExpnType,[op(expn)])))
else:
    return 9

#main function
def grade_antiderivative(result,optimal):

    leaf_count_result = leaf_count(result)
    leaf_count_optimal = leaf_count(optimal)

    expnType_result = expnType(result)
    expnType_optimal = expnType(optimal)

    if str(result).find("Integral") != -1:
        return "F"

    if expnType_result <= expnType_optimal:
        if result.has(I):
            if optimal.has(I): #both result and optimal complex
                if leaf_count_result <= 2*leaf_count_optimal:
                    return "A"
                else:
                    return "B"
            else: #result contains complex but optimal is not
                return "C"
        else: # result do not contain complex, this assumes optimal do not as
well
            if leaf_count_result <= 2*leaf_count_optimal:
                return "A"
            else:
                return "B"
    else:
        return "C"

```

4.0.4 SageMath grading function

```

#Dec 24, 2019. Nasser: Ported original Maple grading function by
#           Albert Rich to use with Sagemath. This is used to
#           grade Fracas, Giac and Maxima results.
#Dec 24, 2019. Nasser: Added 'exp_integral_e' and 'sng', 'sin_integral'
#           'arctan2','floor','abs','log_integral'

from sage.all import *
from sage.symbolic.operators import add_vararg, mul_vararg

debug=False;

def tree_size(expr):
    r"""
    Return the tree size of this expression.
    """
    if expr not in SR:
        # deal with lists, tuples, vectors
        return 1 + sum(tree_size(a) for a in expr)
    expr = SR(expr)
    x, aa = expr.operator(), expr.operands()
    if x is None:
        return 1
    else:
        return 1 + sum(tree_size(a) for a in aa)

def is_sqrt(expr):
    if expr.operator() == operator.pow: #isinstance(expr,Pow):
        if expr.operands()[1]==1/2: #expr.args[1] == Rational(1,2):
            if debug: print ("expr is sqrt")
            return True
        else:
            return False
    else:
        return False

def is_elementary_function(func):
    debug=False
    m = func.name() in ['exp','log','ln',
        'sin','cos','tan','cot','sec','csc',
        'arcsin','arccos','arctan','arccot','arcsec','arccsc',
        'sinh','cosh','tanh','coth','sech','csch',
        'arcsinh','arccosh','arctanh','arccoth','arcsech','arccsch','sgn',
        'arctan2','floor','abs'
    ]
    if debug:
        if m:

```

```

        print ("func ", func , " is elementary_function")
    else:
        print ("func ", func , " is NOT elementary_function")

    return m

def is_special_function(func):
    debug=False
    if debug: print ("type(func)=", type(func))

    m= func.name() in ['erf','erfc','erfi','fresnel_sin','fresnel_cos','Ei',
        'Ei','Li','Si','sin_integral','Ci','cos_integral','Shi','
sinh_integral'
        'Chi','cosh_integral','gamma','log_gamma','psi,zeta',
        'polylog','lambert_w','elliptic_f','elliptic_e',
        'elliptic_pi','exp_integral_e','log_integral']

    if debug:
        print ("m=",m)
        if m:
            print ("func ", func ," is special_function")
        else:
            print ("func ", func ," is NOT special_function")

    return m

def is_hypergeometric_function(func):
    return func.name() in ['hypergeometric','hypergeometric_M','hypergeometric_U
']

def is_appell_function(func):
    return func.name() in ['hypergeometric']    #[appellf1] can't find this in
sagemath

def is_atom(expn):

    debug=False
    if debug: print ("Enter is_atom")

    #thanks to answer at https://ask.sagemath.org/question/49179/what-is-sagemath-equivalent-to-atomic-type-in-maple/
    try:
        if expn.parent() is SR:

```

```

        return expn.operator() is None
    if expn.parent() in (ZZ, QQ, AA, QQbar):
        return expn in expn.parent() # Should always return True
    if hasattr(expn.parent(), "base_ring") and hasattr(expn.parent(), "gens"):
        return expn in expn.parent().base_ring() or expn in expn.parent().
gens()
    return False

except AttributeError as error:
    return False

def expnType(expn):

    if debug:
        print(">>>>Enter expnType, expn=", expn)
        print(">>>>is_atom(expn)=", is_atom(expn))

    if is_atom(expn):
        return 1
    elif type(expn)==list: #instance(expn,list):
        return max(map(expnType, expn)) #apply(max,map(ExpnType,expn))
    elif is_sqrt(expn):
        if type(expn.operands()[0])==Rational: #type(instance(expn.args[0],
Rational):
            return 1
        else:
            return max(2,expnType(expn.operands()[0])) #max(2,expnType(expn.
args[0]))
    elif expn.operator() == operator.pow: #instance(expn,Pow)
        if type(expn.operands()[1])==Integer: #instance(expn.args[1],Integer)
            return expnType(expn.operands()[0]) #expnType(expn.args[0])
        elif type(expn.operands()[1])==Rational: #instance(expn.args[1],
Rational)
            if type(expn.operands()[0])==Rational: #instance(expn.args[0],
Rational)
                return 1
            else:
                return max(2,expnType(expn.operands()[0])) #max(2,expnType(expn.
args[0]))
        else:
            return max(3,expnType(expn.operands()[0]),expnType(expn.operands()
[1])) #max(3,expnType(expn.operands()[0]),expnType(expn.operands()[1]))
    elif expn.operator() == add_vararg or expn.operator() == mul_vararg: #
instance(expn,Add) or instance(expn,Mul)
        m1 = expnType(expn.operands()[0]) #expnType(expn.args[0])
        m2 = expnType(expn.operands()[1:]) #expnType(list(expn.args[1:]))

```

```

    return max(m1,m2) #max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
elif is_elementary_function(expn.operator()): #is_elementary_function(expn.
func)
    return max(3,expnType(expn.operands()[0]))
elif is_special_function(expn.operator()): #is_special_function(expn.func)
    m1 = max(map(expnType, expn.operands())) #max(map(expnType, list(
expn.args)))
    return max(4,m1) #max(4,m1)
elif is_hypergeometric_function(expn.operator()): #
is_hypergeometric_function(expn.func)
    m1 = max(map(expnType, expn.operands())) #max(map(expnType, list(
expn.args)))
    return max(5,m1) #max(5,m1)
elif is_appell_function(expn.operator()):
    m1 = max(map(expnType, expn.operands())) #max(map(expnType, list(
expn.args)))
    return max(6,m1) #max(6,m1)
elif str(expn).find("Integral") != -1: #this will never happen, since it
#is checked before calling the grading function that is passed.
#but kept it here.
    m1 = max(map(expnType, expn.operands())) #max(map(expnType, list(
expn.args)))
    return max(8,m1) #max(5,apply(max,map(ExpnType,[op(expn)])))
else:
    return 9

```

```
#main function
```

```
def grade_antiderivative(result,optimal):
```

```

    if debug: print ("Enter grade_antiderivative for sagemath")

    leaf_count_result = tree_size(result) #leaf_count(result)
    leaf_count_optimal = tree_size(optimal) #leaf_count(optimal)

    if debug: print ("leaf_count_result=", leaf_count_result, "
leaf_count_optimal=",leaf_count_optimal)

```

```

    expnType_result = expnType(result)
    expnType_optimal = expnType(optimal)

```

```

    if debug: print ("expnType_result=", expnType_result, "expnType_optimal=",
expnType_optimal)

```

```

    if expnType_result <= expnType_optimal:
        if result.has(I):
            if optimal.has(I): #both result and optimal complex

```



```
        if leaf_count_result <= 2*leaf_count_optimal:
            return "A"
        else:
            return "B"
    else: #result contains complex but optimal is not
        return "C"
else: # result do not contain complex, this assumes optimal do not as
well
    if leaf_count_result <= 2*leaf_count_optimal:
        return "A"
    else:
        return "B"
else:
    return "C"
```